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Factors Influencing Instruction Competencies as Perceived by Technical and Vocational Education and Training Students in Malaysia

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Abstract

The purpose of the study was to identify and describe factors influencing instruction competencies as perceived by Technical and Vocational Education and Training (TVET) students in Malaysia. The study described the students' self-perceived level of knowledge and their perceived importance of instruction competencies for TVET courses conducted by a private vocational college in Kuala Lumpur and a public institution in Selangor. The study employed a mixed-method explanatory sequential study design. Data were gathered from a sample of 171 TVET students using the Instruction Competency Questionnaire (ICS). Descriptive statistics and Spearman correlation were used to analyses the data. This was followed by individual semi-structured interviews with 3 TVET students from the Selangor public institution. Feedback from the respondents of the ICS showed that 68.4% indicated that they had knowledge on scientific, interpretative, and critical paradigms. Significant correlations ($p < .05$) were reported (a) between perceived knowledge of experience in designing instruction and perceived knowledge of need for further education in instruction competence, and (b) between perceived importance of training on designing instruction and perceived importance of the need for further education in instruction competence. The study also showed that perceived importance of instruction competencies and perceived knowledge of instruction competencies were predictors for the need for further education on instruction competencies. The findings indicated that instruction competence was important for the overall quality of educational experience since it was shaped by expectations about the educational outcomes that students should manifest upon their graduation.

Keywords: Technical and Vocational Education and Training (TVET) Students, Perceived Level of Knowledge of Instruction Competencies, Perceived Importance of Instruction Competencies, Instruction Competencies, Perceived Need for Further Education

Introduction

Technical and vocational education and training (TVET) in Malaysia has undergone major changes since its introduction in the period just before the country (formerly Malaya)

obtained her independence in 1957. Since then, TVET has expanded to include computer technology, culinary arts, graphic design, healthcare, mechanics, tourism and so forth to provide skills aimed at propelling the country to produce 1.3 million skilled workers by 2020 (Ministry of Higher Education, 2017). However, the current curriculum has been criticized for being inadequate and outdated to meet industry needs. The general perception is that there is a mismatch of skills that students are trained for and those demanded by the industry. Hence, it is upon this critical observation that this research is conducted to identify and investigate the factors that might influence instruction competencies as perceived by TVET students, as they are the ones who would benefit from a better TVET curriculum.

The TVET curriculum should be designed to equip students with specialized skills for specific jobs so that they will be gainfully employed upon graduation. It is the government's objective to ensure that by 2020, the workforce will comprise adequate skilled workers to drive the economy to greater heights. As students have diverse needs and different ways of learning, research regarding methods of instruction for today's TVET education is extremely important. In Malaysia, it is unlikely that TVET lecturers lack the skills to instruct students effectively as they are certified as experts in their respective fields. Nevertheless, past studies show evidence that lecturers' lesson preparation and their ability to design instruction are issues of great concern among students (Menon, 2019; Cheong & Lee, 2016; Ismail & Hassan, 2013). Lecturers in today's classroom setting must engage students actively throughout the instruction process to ensure that effective learning takes place. There is also a need to identify what students perceive as important instruction competencies, in particular, their level of knowledge on designing instruction, and the factors affecting instruction competencies (Abu Karim, 2018). Instruction competence as used in this study is 'the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning' (Seels & Richey, 1994).

Problem Statement

Although the TVET curriculum is constructed and implemented to ensure that students are equipped with the requisite skills for gainful employment upon graduation, TVET students are usually excluded from the process of its development (Ahmad & Yimie, 2018). According to Alghazo (2015) and Konings, et al. (2010), it is uncommon for any institution to involve students actively in the design and construction of the course curriculum. Students rarely, if at all, participate in deciding the course content, type of coursework through which the material will be mastered, and grades they will be assigned (Bovill, Cook-Sather & Felter, 2011). Instead, students must accept the course curriculum prepared by professionals who have much greater proficiency and knowledge in their disciplines than students. Therefore, the course curriculum is prepared by professionals, delivered by instructors to be imbibed by students. As a result, we do not know how students perceive the design of the course curriculum; they might wonder whether it would equip them with appropriate skills and expertise, or whether they would be able to apply the new knowledge or skills when they join the workforce. Have we failed to take into account the needs and interests of students, especially those in colleges or public institutions offering TVET? Will the participation of students help improve the TVET curriculum and course content in the Malaysian context? Hence, there is arguably a need to involve students in designing the TVET curriculum so that learning would become more meaningful and effective.

Objectives

The purpose of the study was to identify and describe factors that influenced the perceptions of Malaysian TVET students regarding instruction competencies. More specifically, the study intended to answer the following research questions:

(1) What are the philosophies or philosophical paradigms applicable to TVET education in Malaysia?

(2) What are TVET students' perceptions regarding their need for further education on instruction competencies?

(3) What is the TVET' students' perceived level of knowledge competence in instruction competencies?

(4) What is the TVET' students' perceived importance of instruction competencies?

(5) Do perceived knowledge of instruction competencies and perceived importance of instruction competencies serve as predictors for perceived educational needs among TVET students?

(6) How do TVET students perceive their competence level in instruction?

Review of Literature

Participants' Perceptions Regarding Perceived Importance and Perceived Need for Training in Relation to Instruction Competencies

In a study conducted by Polkinghorne and Arnett-Harwick (2014) to determine the perception of educators in family and consumer sciences (FACS) on the integration of reading skill instructions in secondary FACS courses, the results revealed that most FACS teacher educators reported positive perceptions towards the integration of reading skills into FACS courses. However, they lacked pedagogical skills to provide reading skill instruction in the FACS curriculum. Therefore, they acknowledged the need for ongoing teaching reading skill development in order to equip students with proficient literacy and reading skills to succeed in school. Konings et al. (2011) found that novice band directors in Texas perceived the importance of teaching experience in the core music curriculum. In addition, pre-service teachers might benefit from training in the skills/knowledge components as well as being provided with opportunities to acquire skills/knowledge in varying contexts.

Schorpp (2008) conducted a study involving 171 senior baccalaureate nursing students to appraise their input on perceived importance of educational needs and satisfaction with their educational experience. The study also investigated the inter-relationships of nursing students' perceived importance of educational needs, satisfaction with educational experience, and self-actualization. The study showed that there was a statistically significant, although weak positive correlation between educational needs identified as important by nursing students and their level of satisfaction.

Participants' Perceptions Regarding Perceived Knowledge and Perceived Need for Training as Related to Instruction Competencies

Research indicates that the level of knowledge of pedagogy and curriculum content that lecturers possess influences how effectively they can deliver the course content to their students. Lecturers need to have mastery of the subject matter to be able to present clear explanations of concepts and procedures. Sethi (2016) found that in a Southern California Unified School District, teachers were clearly identified as experts qualified to create high-quality lessons; they had experience in initial professional development on the practical

aspects of the prescribed commercially-prepared curriculum on Language Arts Intervention, and also an overview of the research behind it. Yet, these teachers felt they lacked the knowledge and skills required to participate fully in a perceived partnership with curriculum authors. They felt they needed to be trained to increase their knowledge base of Language Arts.

Allen (2016) studied the experiences and needs of an allied health faculty that designed and developed online instruction even though faculty members had no formal training in instructional design. The findings revealed that the experience of designing and developing online allied health classes was described as a time-consuming, complex, and often challenging task. The findings also indicated a need for ongoing training to increase knowledge of the subject for allied health faculty designers, as the lack of training had impeded their work as designers, as well as the delivery of allied health classes in an online environment.

In another study, Abdelmalak (2013) employed a qualitative case study methodology to better understand the processes and experiences of an instructor who involved students in curriculum design. The study also sought to appreciate the meanings students assigned to their experiences when designing course curriculum, also to understand the relationship between student participation in curriculum design and student empowerment. The findings revealed that (1) the instructor felt her experiences involving students in creating the course content enabled her to meet the students' different learning needs; (2) Students involved in course curriculum design found that it made their course content more meaningful and increased their motivation to learn. It also gave them a sense of ownership and control of their learning. All the participating students perceived the collaborative design of the course curriculum as an empowering experience. Nevertheless, some students expressed their concern that they might lack the right kind of knowledge and skills to participate in course curriculum design. Hence, educators may need to provide students with adequate training or guidance to help them effectively transit away from reality to the classroom environment. In addition, there is a need for further studies on how educators can break students' conditioned dependence on teachers, as well as convince educators that involving students in course curriculum design would impact learning and achievement of their course objectives.

Methodology

This study used a mixed-method sequential explanatory research design to assess the philosophical paradigms, namely TVET students' perceived level of knowledge in instruction competencies, perceived importance of instruction competencies, and the factors that affected perceived need for further education on designing course instruction. A Spearman's Rank-Order Correlation in SPSS was performed with perceived need for further education as the dependent variable. A primary goal of this research was to lay the foundation for the study of instruction competencies among TVET students, a largely unstudied population, especially in the Malaysian context. Another goal was to detect any significant correlation between perceived level of knowledge and importance of training on instruction competencies, experience in designing instruction, and perceived need for further education on designing course instruction. Cohen (1988) suggested 0.30 as the lowest correlation that most researchers should be interested in.

Sampling Procedures

The target population for this study were TVET students enrolled in Malaysia. A purposive sample of vocational colleges and public higher education institutions were selected according to the type and location of the institutions, and according to the criteria proposed by Deursen and Dijk (2009). Key informants were identified at each institution to act as drivers of data collection for this study. The researchers used the follow-up procedures established by Dillman (2000) to increase the response rate.

Instrumentation

A paper-based survey, the Instruction Competence Survey (ICS), was developed by the researchers in this study to record demographic information and to solicit feedback from students, focusing on their perception about their need for further education/training on instruction competencies, and their perceptions on their current level of knowledge and importance of instruction competencies in their studies. These competencies were derived by adopting and adapting questionnaires from previous related literature (Alyaseen, 2017; Sanders, 2016; Kasilingam et al., 2014; Sulaiman, 2012). The questionnaire was developed in the English language, with back translation from English to Malay. The questionnaire consisted of 31 questions in five categories, viz. (1) Learning Domains in Reasoning Skills (18 questions on affective, cognitive skills, psychomotor skills domains, (2) Training on Designing Instruction (4 questions), (3) Experience in Designing Instruction (5 questions), (4) Perceived Needs (4 questions), and (5) Demographic Characteristics (6 questions). A 5-point Likert scale was provided as response options for all the items. Only one response was allowed per item. Participants were asked to indicate the importance of each competency and self-perceived knowledge of each competency by selecting one of the following responses for each competency: 1) *none,* 2) *very little*, 3) *somewhat*, 4) *very* or 5) *a great deal*. In Part E, students were also asked to state their age, gender, experience in designing instruction, number of formal training courses and workshops on designing instruction they had attended, and vocational education programs attended.

The ICS was developed and validated through a small-scale pilot study with 30 TVET students from one public TVET institution in Selangor, Malaysia, to ensure the suitability of wordings, formatting, and layout. These 30 students were excluded from the main study. Format corrections were made to the total survey as suggested by the pilot participants to improve the readability of the instrument. Typographical errors were also corrected. The Cronbach Alpha for both perceived level of knowledge and importance of instruction competencies were .96, indicating very high instrument reliability. The findings from the survey questionnaire provided basic guidelines for the preparation of interview questions to explore further the characteristics of perceived knowledge competence, perceived importance, and perceived need for training/further education. Three open-ended questions were designed as a semi-structured guide to obtain perceptions of students on what factors they considered important for (1) designing of instruction, (2) level of knowledge of designing instruction, and (3) educational needs to render the learning process more successful. Each interview took approximately 30 – 45 minutes; an audio recording of the interview (with consent from the interviewees) was made for the purpose of analysis.

Data Collection Procedures

Contact was made with Technical and Vocational Colleges and public higher education institutions by mailing each of them a copy of the approval letter by the Educational Planning and Research Division (EPRD) and Technical and Vocational Education Division (TVED) of the Ministry of Education, Malaysia, together with the cover letter and the instrument for their comments and approval. After approval was received from one vocational college in Kuala Lumpur and one public higher education institution in Selangor, a survey administrator was appointed to liaise with students for survey and interview arrangements. There was a brief introduction of the research on the cover page of the survey instrument. Students were requested to give their consent in order to participate in the research. The competed survey questionnaires were then collected from the participants.

Administration of Survey Instrument and Interviews

After permission was granted from selected vocational colleges and public higher education institution to carry out the survey, a cover letter and the instrument were hand-delivered to the survey administrator appointed by the headmaster or head of department. The cover letter explained the objective of the study, an invitation to students to participate in the study, explanation of the instructions pertaining to the completion and return of the instruments. The respondents were also given a written assurance that their identities and feedback would be kept confidential, and that the intent of the study was simply to collect data for the purpose of evaluating students' perceptions of instruction competencies.

The next step was to seek the assistance of survey administrators to select students from each year of study who had earlier participated in answering the questionnaire to be interviewed for this study. The third step of the procedure was to interview the selected students. Each participant received a RM5 gift voucher as an incentive to participate in the interview.

Data Analysis

Scores were entered for the thirty-one items of the ICS and analyzed using descriptive statistics and the Spearman's rank-order correlation. Descriptive statistics were used to determine the mean and standard deviation of the perceived importance and knowledge of students on learning domains in reasoning skills, training on designing instruction, experience in designing instruction, and the educational needs they perceived as necessary for instruction competence. Spearman's rank-order correlation was used to determine the strength and direction of the monotonic associations between variables, as well as to identify the predictive variables that influenced the perceived need for further education in course instruction competencies. All statistical tests used a 95 percent confidence level.

Originally, the research plan was to use the Pearson r for correlation studies. However, after reviewing the data by using histograms and the Kolmogorov-Smirnov test, the researchers determined that the assumptions needed to use parametric tests such as the Pearson r were not present since the p value was not significant and the data were negatively skewed. Therefore, the researchers selected the Spearman regression analysis using rank transformation as the alternative test in this study. Raw scores were converted into rank data and tested for correlations between variables. As the Spearman rho was less robust as compared to the Pearson r, it was more difficult to reject the null hypotheses with the former.

The Spearman rho correlation was used to examine inter-relationships between the following variables: the perceived level of knowledge and importance of learning domains in reasoning skills, instruction competencies, experience in designing competencies, and perceived need for further education and training. The smallest correlation considered useful was 0.30 (Borenstein, Rothstein, & Cohen, 1997; Cohen, 1988). In addition, regression analysis using rank transformation was used to determine the relationships between perceived need and the perceived level of knowledge and importance of the three components. The results of the questionnaire were then used to guide the design of questions for interviews with three TVET students from one public higher education institution in Selangor.

The content of the interviews was analyzed using thematic analysis (Joffe & Yardley, 2004) to identify word frequencies and their inter correlations. The categories were compared across scripts; further themes emerged as the data were coded. Later, key themes were identified from the transcripts and were categorized under the design of instruction, level of knowledge, and educational needs.

Findings

The study yielded several significant findings. Results related to the research questions and the hypotheses are as follows.

Characteristics of the Sample

The 171 students who participated in this study were enrolled in a TVET public institution in Selangor and a private vocational college in Kuala Lumpur. Of the participants who completed the survey, 59.6% (f:102) of the participants were female and 40.4% (f:69) of them were male. The ages of 53.8% of the participants were between 21-24, while 36.3% of them were between 17-20 and 9.9% over 24. Of the participants, 70.2% had attended workshops or training on designing instruction as part of their programs. In addition, 57.3% (f:98) of the participants had experience in designing instruction in their programs. The vocational education programs included in the study were in the following areas: Industrial & Engineering Systems (n = 46); Home Science Education (n= 37); Environmental & Agricultural Systems (n= 28); Business & Management (n=10); Human Resources/Services (n=10); Air Conditioning Services & Repairs (n= 8); Technical Science (n=6); Fashion Design (n=4); and Cosmetology (n=3). About 8% of the participants did not know what program they had enrolled in and so they did not provide any answer in this survey. As for the interview, three vocational students (19 and 20 years old), comprising two males and one female who were from year 1, 2 and 3, were selected as representatives of the sample population.

Research Questions

Six research questions and their corresponding hypotheses were examined.

Research Question 1: What are the philosophies or philosophical paradigms applicable to TVET education in Malaysia?

To answer Research Question 1, the participants were asked to rank the level of knowledge and importance of 3 domains of instruction competencies using the following five-point Likert-type scale from 1 to 5, with 5 being the highest possible response. Table 1 shows the frequencies and percentages of responses of the students' perception of the knowledge of philosophical paradigms that were applicable to their studies.

Table 1
Students' Perception of their Knowledge of Philosophies or Philosophical Paradigms that were Applicable to TVET Education in Malaysia

Paradigm(s)	**Institution A**		**Institution B**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Scientific	37	29.6	0	0	37	21.6
Interpretive	32	25.6	19	41.3	51	29.8
Critical	5	4.0	15	32.6	20	11.7
Scientific and Interpretive	3	2.4	0	0	3	1.8
Scientific, Interpretive & Critical	6	4.8	0	0	6	3.5
Do not know	42	33.6	12	26.1	54	31.6

In the research, 29.8% (f:51) of the students indicated that they had knowledge of the interpretive paradigm. The results also showed that 21.6% of the students had knowledge of the scientific paradigm, while 11.7% had knowledge of the critical paradigm. Moreover, 3.5% and 1.8% of the students had knowledge of the scientific & interpretive & critical paradigms and scientific & interpretive paradigms, respectively. On the other hand, 31.6% (f: 20) of the students indicated that they did not have any knowledge about any paradigm. Overall, most students (68.4%, n=117) did have some knowledge of the philosophical paradigms. The reason why there were some (n=54) who did not have knowledge of any philosophical paradigm was probably because of the failure of the related party in clarifying the level requirements for philosophical paradigm knowledge which was expected of the students.

Research Question 2: What are the perceived educational needs of TVET students in Malaysia for further education on instruction competencies?
In general, the overall mean and standard deviation for perceived levels of knowledge and importance of educational needs for further education were 4.09 and 0.49 respectively. Students rated their knowledge with an average of 3.98 (SD =.57) and importance 4.18 (SD= .60) respectively. The items "There is a need for teachers to become better informed about the course subjects" (M= 3.92, SD =.73 was rated lowest for perceived knowledge. At the same time, "There is a need to improve teacher's skills and expansion of prior knowledge about subjects before conducting the lesson in class/laboratory" (M = 4.08, SD =.74 was rated lowest in perceived importance by the students. Items were rated by participants on a 5-point Likert scale (1–none, 2–very little, 3–somewhat, 4–very, 5–a great deal). The item rated highest for perceived level of knowledge and level of importance was "There is a need for teachers to improve existing skills on instructions in order to make the contents more readable and understandable" 4.02 (SD =.73) and 4.24 (SD =.71) for 'knowledge' and 'importance' respectively. The results are presented in Table 2.

Table 2
Students' Ratings for Perceived Knowledge and Importance

Knowledge/Importance	Mean	Standard Deviation
Overall	4.09	.49
Overall Knowledge	3.98	.57
There is a need to increase students' interest in course subjects	3.99	.66
There is a need to improve teaching skills and expansion of prior knowledge about subjects before conducting the lesson in class/laboratory	3.97	.69
There is a need for teachers to be better informed about course subjects	3.92	.73
There is a need for teachers to improve existing skills on instructions in order to make the contents more readable and understandable	4.02	.73
Overall Importance	4.18	.60
There is a need to increase students' interest in course subjects	4.21	.68
There is a need to improve teaching skills and expansion of prior knowledge about subjects before conducting the lesson in class/laboratory	4.08	.74
There is a need for teachers to be better informed about the course subjects	4.20	.72
There is a need for teachers to improve existing skills on instructions in order to make the contents more readable and understandable	4.24	.71

Research Question 3: What is the TVET' students' perceived level of knowledge competence in instruction competencies?

Null hypothesis 1(a) ("There is no significant relationship between perceived level of knowledge of experience in designing instruction and perceived level of knowledge of the need for further education in instruction competence") was rejected using Spearman rho. Rejecting the null hypothesis with a significance level of .05 led to the conclusion that there was significant evidence to say a positive correlation (0.697, p = .000) was found between perceived level of knowledge of experience in designing instruction and perceived level of knowledge of need for further education in instruction competence, as shown in Table 3. Figure 1 scatter plot below visually demonstrates a significant positive correlation was found between perceived level of knowledge of experience in designing instruction and perceived level of knowledge of need for further education in instruction competence. The R^2 = .282 meaning that 28.2% of the variance in the perceived level of knowledge of experience in designing instruction scale was explained by the variance in perceived level of knowledge of need for further education in instruction competence.

Table 3
Spearman rank order correlation coefficient – Perceived level of knowledge of experience in designing instruction and perceived level of knowledge of need for further education in instruction competence

			Knowledge of experience in designing instruction	**Knowledge of need for further education in instruction competence**
Spearman's rho	Knowledge of experience in designing instruction	Correlation Coefficient	1.000	.697**
		Sig. (2-tailed)	.	.000
		N	171	171
	Knowledge of need for further education in instruction competence	Correlation Coefficient	.697**	1.000
		Sig. (2-tailed)	.000	.
		N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).
Note: p<.05 Spearman rho was the nonparametric test used

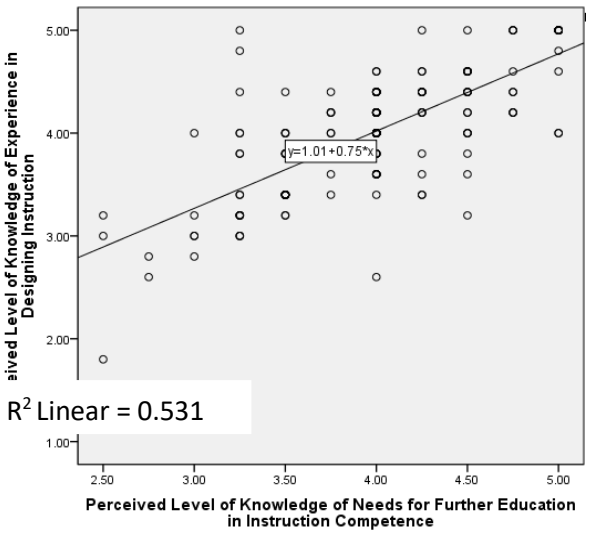

Figure 1. Perceived level of knowledge of experience in designing instruction and perceived level of knowledge of need for further education in instruction competence scatter plot.

Null hypothesis 1(b) ("There is no significant relationship between perceived level of knowledge of training in designing instruction and perceived level of knowledge of the need for further education in instruction competence") was rejected on the basis of the Spearman correlation coefficient of .638 (p = .000) (Table 4). Figure 2 scatter plot below visually demonstrates a significant positive correlation was found between perceived level of knowledge of training on designing instruction and perceived level of knowledge of needs for further education in instruction competence. The R^2 = .150 and means that 15.0% of the

variance in the perceived level of knowledge of experience in designing instruction scale was determined by the variance in perceived level of knowledge of need for further education in the instruction competence scale. There was enough evidence to say that a significant correlation did exist between perceived level of knowledge of training on designing instruction and perceived level of knowledge of need for further education in instruction competence.

Table 4
Spearman rank order correlation coefficient – Perceived level of knowledge of training on designing instruction and perceived level of knowledge of need for further education in instruction competence

			Knowledge of training in designing instruction	**Knowledge of need for further education in instruction competence**
Spearman's rho	Knowledge of training on designing instruction	Correlation Coefficient	1.000	.638**
		Sig. (2-tailed)	.	.000
		N	171	171
	Knowledge of need for further education in instruction competence	Correlation Coefficient	.638**	1.000
		Sig. (2-tailed)	.000	.
		N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).
Note: p<.05 Spearman rho was the nonparametric test used

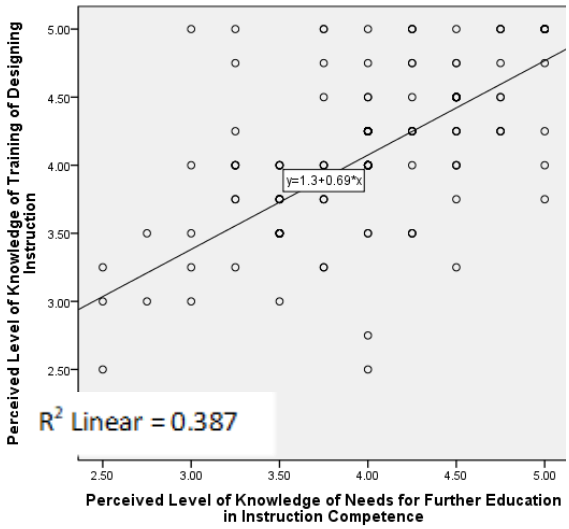

Figure 2. Perceived level of knowledge of training on designing instruction and perceived level of knowledge of need for further education in instruction competence scatter plot.

Research Question 4: What is the TVET' students' perceived importance of instruction competencies?

Hypothesis 2 (a). proposed that "there is no significant relationship between perceived level of importance of training on designing instruction and perceived level of importance of need for further education in instruction competence".

Table 5 summarizes the Spearman rank order correlation coefficient between perceived level of importance of training on designing instruction and perceived level of importance of need for further education in instruction competence. With a significance level of .05, the null hypothesis was rejected with the Spearman rank order correlation coefficient .590, as shown in Table 5. There was enough evidence to say a correlation did exist between perceived level of importance of training on designing instruction and perceived level of importance of need for further education in instruction competence. Figure 3 scatter plot below visually demonstrates a significant positive correlation was found between perceived level of importance of training on designing instruction and perceived level of importance of need for further education in instruction competence. The R^2 = .135 and means that 13.5% of the variance in the perceived level of importance of training on designing instruction scale was determined by the variance in perceived level of importance of needs for further education in instruction competence scale.

Table 5

Spearman rank order correlation coefficient – Perceived level of importance of training on designing instruction and perceived level of importance of need for further education in instruction competence

			Importance of training on designing instruction	**Importance of need for further education in instruction competence**
Spearman's rho	Importance of training on designing instruction	Correlation Coefficient	1.000	.590**
		Sig. (2-tailed)	.	.000
		N	171	171
	Importance of need for further education in instruction competence	Correlation Coefficient	.590**	1.000
		Sig. (2-tailed)	.000	.
		N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).
Note: p<.05 Spearman rho was the nonparametric test used

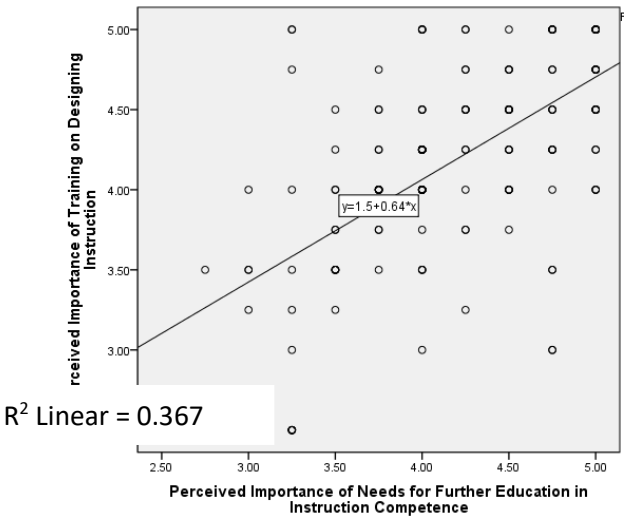

Figure 3. Perceived level of importance of training on designing instruction and perceived level of importance of need for further education in instruction competence scatter plot

Hypothesis 2 (b) proposes that "there is no significant relationship between perceived level of importance of experience in designing instruction and perceived level of importance of need for further education in instruction competence".

With the pre-determined cut-off significance level of .05, the null hypothesis was rejected since the Spearman rank order correlation coefficient obtained was .742 (p =.000), as shown in Table 6. There was hence sufficient evidence to say a relationship did exist between perceived level of importance of experience in designing instruction and perceived level of importance of need for further education in instruction competence. Figure 4 scatter plot below visually demonstrates there was a significant correlation did exist between perceived level of importance of experience in designing instruction and perceived level of importance of need for further education in instruction competence. The R^2 = .329 means that 32.9% of the variance in perceived level of importance of experience in designing instruction scale was explained by the variance in perceived level of importance of need for further education in instruction competence scale.

Table 6
Spearman rank order correlation coefficient – Perceived level of importance of experience in designing instruction and perceived level of importance of need for further education in instruction competence

			Importance of experience in designing instruction	Importance of need for further education in instruction competence
Spearman's rho	Importance of experience in designing instruction	Correlation Coefficient	1.000	.742**
		Sig. (2-tailed)	.	.000
		N	171	171
	Importance of need for further education in instruction competence	Correlation Coefficient	.742**	1.000
		Sig. (2-tailed)	.000	.
		N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).
Note: p<.05 Spearman rho was the nonparametric test used

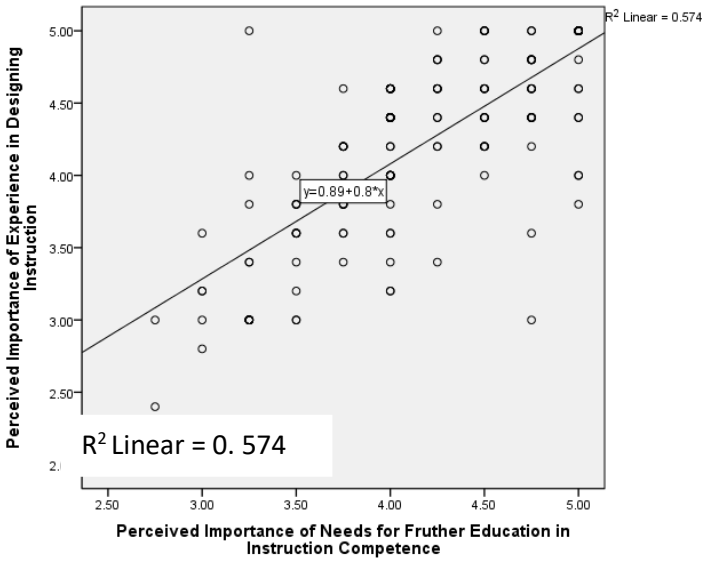

Figure 4. Perceived level of importance of experience in designing instruction and perceived level of importance of need for further education in instruction competence scatter plot

Research Question 5: Do perceived knowledge of instruction competencies and perceived importance of instruction competencies serve as predictors for perceived educational needs among TVET students?

Hypothesis 3 posits that "there is no significant relationship between perceived level of importance of instruction competence, perceived level of knowledge of instruction competence and perceived need for further education in instruction competence". A Spearman's Rank-Order Correlation in SPSS was performed with perceived need for further education as the dependent variable. Perceived level of knowledge of instruction

competencies, and perceived level of importance of instruction competencies were the possible independent variables evaluated. The result of a Spearman's rank-order correlation (Table 7) showed there was a strong, positive correlation between importance of instruction competencies and perceived need for further education, which was statistically significant (rs = .822, p = .000). Additionally, there was a strong, positive correlation between knowledge of instruction competencies and perceived need for further education, which was also statistically significant (rs = .769, p = .000). Therefore, perceived level of importance of instruction competencies and perceived level of knowledge of instruction competencies were significant predictors of perceived need for further education in instruction competencies.

Table 7
Correlations between perceived level of importance of instruction competencies, perceived level of knowledge on instruction competencies, and perceived need for further education in instruction competence

			Importance of Instruction Competencies	**Knowledge of Instruction Competencies**	**Perceived need**
Spearman's rho	Importance of Instruction Competencies	Correlation Coefficient	1.000	.684**	.822**
		Sig. (2-tailed)	.	.000	.000
		N	171	171	171
	Knowledge of Instruction Competencies	Correlation Coefficient	.684**	1.000	.769**
		Sig. (2-tailed)	.000	.	.000
		N	171	171	171
	Perceived Need	Correlation Coefficient	.822**	.769**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	171	171	171

**. Correlation is significant at the 0.01 level (2-tailed).
Note: p<.05 Spearman rho was the nonparametric test used

Research Question 6: How do technical education and vocational training (TVET) students perceive their competencies level in instruction?

Perception of students on what were considered important factors influencing instruction competence. The following section describes the feedback among three TVET students regarding their personal perception of designing of instruction, level of knowledge of designing instruction, and educational need to render the learning process more successful.

Perception of designing of instruction. All three students agreed that, with regard to designing instruction, it was important for lecturers to have prior knowledge and past working experience, especially in relevant industry backgrounds, affiliation to local industries and businesses. According to the interviewees, lecturers should be practitioners who used expert knowledge and curriculum tools to facilitate the students' acquisition of real-world knowledge that might assist them embark on successful careers upon graduation.

Perception of level of knowledge of designing instruction. Two students stated that their lecturers were 'very" knowledgeable in designing course instruction and so students either fully or almost fully understood what was taught. However, one student said that his lecturers had a 'somewhat' level of knowledge of designing course instruction, especially when working on a real-world project. Therefore, such a lecturer might not be able to provide adequate instruction or equip his students with the skills needed to be competitive in the job market after the completion of their studies.

Personal beliefs about educational needs to render the learning process more successful. Students felt that the training needs for lecturers should be about acquiring relevant technical skill/knowledge to enable them to improve their teaching. Lecturers also needed to keep up to date with in latest knowledge and skills in their fields by attending the professional workshops, conferences, and seminars. Furthermore, students also stated that institutions should recruit new lecturers who had the relevant experience so as to enable students become more aware of current career opportunities in the fast-changing Malaysian job market.

Discussion

We used a questionnaire that measured the self-perceived instruction competencies of TVET students from one vocational college in Kuala Lumpur and one public institution in Selangor. Our findings indicated that on average, students had a moderate level of knowledge of instruction competence, thus suggesting a need to raise lecturers' current level of knowledge in designing instruction. This is especially important because lecturers are responsible for teaching varied content areas and, hence, there is a need for professional and skill development to improve their ability to teach the subjects assigned. The study also reported that the majority of the students from both institutions knew the importance of instruction competence and recognized the need to improve it.

Using a significance level of .05, the rejection of 1(a) null hypothesis indicated a significant relationship between perceived level of knowledge of experience in designing instruction and perceived level of knowledge of the need for further education in designing instruction (Spearman's rho = .697, p = .000). There was sufficient evidence to say that a significant correlation existed between the two variables. This result indicated that students believed that they had moderate knowledge level of experience in designing instruction.

The correlation between perceived level of knowledge of training on designing instruction and perceived level of knowledge of the need for further education in instruction competence was statistically significant at the .05 level (Spearman's rho = .638, p = .000). This finding revealed that students had a moderate knowledge of instruction competence, thus suggesting the need for lecturers to attend more training in the content areas utilized in the TVET curriculum, in order to increase students' knowledge in designing instruction. The analysis outcome is consistent with those of Calico (2014), Calico et al. (2013a), Adobe (2012), all of whom expressed the need for additional training to increase students' knowledge in course instruction in vocational education.

For Hypothesis 2 (a), perceived level of importance of training on designing instruction was significantly correlated with perceived level of importance of the need for further education in instruction competencies at .590. This showed that the students displayed a moderate level

of understanding of the need for training in designing instruction they had identified as important. Hence, there was a need to attend more training workshops or related training sessions to become more competent in course instruction.

For Hypothesis 2 (b), perceived level of importance of experience in designing instruction was significantly correlated with perceived level of importance of the need for further training in instruction competence at .740, indicating that students' perceptions of experience in designing instruction were important indicators that exhibited moderately high levels of the need for further training in instruction competence. These findings are consistent with those of Schorpp (2008), and Davis et al (2003), who expressed the need for lecturers to attend more workshops to increase their training experience in designing instruction before actually designing and developing course instruction.

The findings concerning Hypothesis 3 indicated that the perceived level of importance of instruction competence and perceived need for further education in instruction competence were correlated at .822. At the same time, the perceived level of knowledge of instruction competence and perceived need for further education in instruction competence were similarly correlated at .769. This result indicated that the perceived level of importance and perceived level of knowledge of instruction competencies were very good predictors of the perceived need for further education in instruction competencies. The findings of this research also support previous findings pertaining to the essence of the perceived experience in designing instruction, training on designing instruction, and the need for further training in designing and developing online course instruction classes (Allen, 2016; Lammers, 2011; Ramasamy, Rahman, Manaf, & Said, 2018; Colombos, 2018; Masengeli, Kiragu, Kamau, 2018)

Training should be focused on acquiring technical skills/knowledge and participation in workshops, conferences, or seminars in order to meet the constantly changing needs of vocational education. In addition, it is important to recruit new lecturers who possess professional competencies and have sufficient teaching knowledge and real-world working experience to provide students with the necessary knowledge, skills, and aptitude to empower them to succeed in the world of work as well as to encourage them to continue to improve themselves professionally.

Limitations

Despite making some valuable findings, this study has several limitations. Firstly, the students who participated in the study were from only two Malaysian educational institutions offering vocational and technical training and education, i.e. one in Selangor and one in Kuala Lumpur. Therefore, future studies should include many other vocational colleges and public higher education institutions, while also considering lecturers' perspectives. Secondly, the current study was limited to a sequential exploratory research design, where data were collected from 171 students from various fields of study. As such, future studies could involve larger sample sizes to ensure the findings are generalisable. Furthermore, interviews with more students and with lecturers are needed to explore further the possible reasons to explain the findings. Another limitation of this study was the use of nonparametric tests, on account of the non-normative nature of the collected data. Using nonparametric tests might have resulted in lower correlation between variables.

Contribution of the Study

The significance of this study lies in the understanding of students' perspectives of their instruction competencies and preparation for a career in the competitive job market. The findings of this study would help policy-makers, vocational college administrators, lecturers, and related parties to identify and meet the prevailing perceptions of TVET students' needs. This study contributes to the research literature on students' instruction competencies in the TVET curriculum. This study also extends current research beyond the existing knowledge of TVET curriculum and provides a more thorough understanding of students' mastery of TVET programs to improve their employability upon graduation.

Conclusion

More than half of the students had some knowledge of the philosophies or philosophical paradigms. The studies also indicated that a significant correlation did exist between perceived level of knowledge of training on designing instruction, perceived level of knowledge of experience in designing instruction and perceived level of knowledge of need for further education in instruction competence. In addition, students rated experience in designing instruction as an important indicator of the need for further training in instruction competence. Perceived level of importance and perceived level of knowledge of instruction competencies were significant predictors of perceived need for further education in instruction competencies. Both students and lecturers require more training in designing course instruction, and ongoing training and feedback by students are important to guide changes in the TVET curriculum.

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