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Development of A Practical Teaching Framework in Identifying Elements of Teacher Competence

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Abstract

Current technological changes in the industry result in a demand for human capital with a high level of employability. The country needs to have a highly skilled workforce to suit the current work environment and needs of an increasingly complex industry. The mastery of industry -based skills can produce skilled workers in line with the needs of the country. Effective teaching and learning help to produce highly skilled manpower in keeping up with current technological changes in the industry. The concept of teaching is an action that can be described as giving instructions or sharing one's knowledge with others. Competent and quality instructors can produce a skilled workforce by using efficient delivery skills to ensure a quality training delivery process. Therefore, this analysis is done systematically to identify the elements of the competence of the teaching staff, which consists of elements of knowledge, elements of skills and elements of the attitude of the teaching staff that influence the practical teaching methods of the teaching staff. This literature review uses several databases such as Australian Research Council (ERA), Google Scholar, Google Search, ScienceDirect and Scopus to obtain refereed materials published in the last ten years of 2010 - 2020. A total of 54 refereed materials were selected using the technique 'snowballing' which is a technique for obtaining articles related to the article obtained. The results of this study found that there is agreement of previous researchers in planning and implementing practical teaching. The selection of elements for the development of an appropriate practical teaching framework in teaching will result in high -impact learning.

Keywords: Practical Teaching, Lecturer Competence, Knowledge, Skills, Attitudes

Introduction

The country needs to produce highly skilled, knowledgeable and innovative human capital with the current needs in Technical and Vocational Education (TVET) in order to compete with developed countries globally. TVET is a platform where students are prepared according to a real career mold equipped with specific expertise (MOE, 2013). Instructors are important individuals who help with the current technological changes in the industry to produce highly skilled manpower. Effective teaching and learning stems from competent

teaching staff. This is supported by Kleickmann (2012) where competent educators act as drivers in the teaching and learning process. According to Siraj & Ibrahim (2012) teachers need to be prepared for all changes in the industry, where teachers need to be prepared for changes and reforms of the curriculum and the use of effective teaching methods because knowledge and skills transferred to students need to increase student interest and talent. Competent and quality instructors can produce a skilled workforce by using efficient delivery skills to ensure a quality training delivery process and meet the criteria of industry requirements (Institute of Labor Market Information & Analysis, 2018).

In empowering Technical and Vocational Education (TVET) in Malaysia, there is no single model or framework for practical teaching that is held by the teaching staff. All instructors are capable of implementing practical teaching but the teaching and learning process will be more effective if there is a standard operating procedure for practical teaching. This can indirectly help teachers in improving teaching strategies that are commonly used before. Elements of knowledge, skills and attitudes of instructors is one of the most important requirements in determining strategies for practical teaching methods that will be used by instructors in order to form students' skills that meet the objectives and directly meet the needs of the industry. Effective teaching strategies cannot be implemented if the level of knowledge of the teaching staff and mastery of the skills of the teaching staff are still weak (Fahimah et al., 2014). This is evidenced by Salihuddin et al (2014) where the mastery of the teaching staff is a major factor in determining student competence. Therefore, this study will be conducted by focusing on important aspects to identify the elements of knowledge, elements of skills and elements of attitudes of teachers in determining practical teaching strategies. The results of the study will suggest a practical teaching framework that will be used as a guide in effective vocational teaching methods for teachers.

Many researchers have studied the level of competence of teachers towards teaching and learning such as (Zaiha, 2014; Saedah & Mohammed, 2012; Bloom, 1956; Mestry & Grobler, 2004; Anusca et al., 2009). Although there are many studies that focus on the level of competence of teachers on teaching and learning but not many researchers have systematically studied the level of competence of teachers on teaching and practical learning.

Objective

This study aims to fill the gap by reviewing relevant past studies to gain more understanding to recognize the components of instructor competence in practical teaching and learning. Next, list the elements for each component of instructor competence. this study was conducted based on the four objectives that have been identified. The objectives are as follows:

1) Identify the components of teaching staff competencies in practical teaching methods.
2) Identify the elements of knowledge that influence the practical teaching methods of instructors.
3) Identify the elements of skills that influence the practical teaching methods of instructors.
4) Identify the elements of attitude that influence the practical teaching methods of instructors.

Methodology

The search strategy is designed to ensure that data collection is carried out comprehensively. This search is limited to articles published between 2010 to 2021. This

article is a literature review study that aims to examine the components of competencies that should be present in the teaching staff in practical teaching. The following databases were used during the systematic search process conducted using Google Scholar, Web of Science, ERIC and Scopus databases. The study was conducted by evaluating 54 articles that were relevant and met general criteria such as teaching staff competence, knowledge, skills, attitudes and teaching strategies. After screening the information from the title and abstract of the article, only 18 articles were selected and categorized into 3 components of competence, namely the elements of knowledge, elements of skills and attitudes that must be present in each teaching staff to conduct practical teaching. The keywords used in this search were such as 'practical teaching', 'knowledge competence', 'skills competence' and 'teaching strategy'. Researchers also use the 'snowballing' technique, which is to obtain articles that are related to the articles obtained.

Figure 1 shows the competency components for instructors in the practical teaching of instructors obtained from the literature review and it will be used to guide the writing of this article.

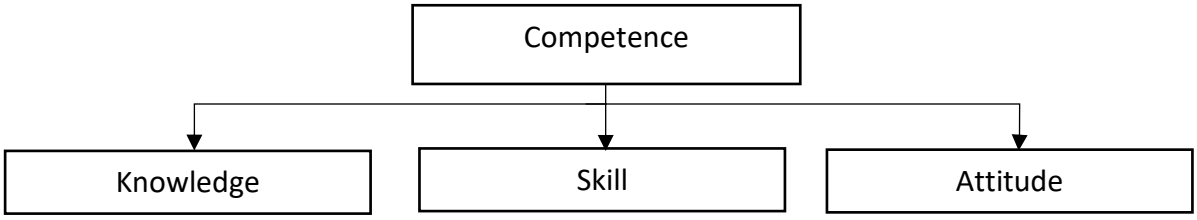

Figure 1: Components of Teacher Competence

Finding

Data extraction was carried out based on the objectives of the study, it showed that the data obtained from previous studies could meet the objectives of the study and were collected in tabular form. The following is a list of articles obtained through a search of various sources such as Google Scholar, ScienceDirect, ERIC and Scopus.

Table 1
Past studies related to the competence of teachers in practical teaching

Author / Year	Knowledge	Skill	Attitude
Mc Kee & Eraut (2012)	/	/	
Harun (2014)	/	/	
Kenkel (2011)	/	/	
Safwandi, 2017)	/	/	
Jonathan (2017)	/	/	
Saedah Siraj & Mohammed Sani Ibrahim (2012)	/	/	/
Bloom (1956)	/	/	/
Mestry & Grobler (2004)	/	/	/
Romina et. al (2010)	/	/	/
Yu et. al (2012)	/	/	/
Schmeichel (2012)	/	/	/
Abdullah (2017)	/	/	/
Ramdhani et. al (2011)	/	/	/

Based on the highlights of the study made on articles from previous studies related to the components of competence that must exist for an instructor in conducting practical teaching in the workshop based on Table 1 above, it was found that 8 studies (57%) stated the three elements of knowledge, skills and attitudes necessary for measuring the competence of an educator (Saedah & Mohammed, 2012; Bloom, 1956; Mestry & Grobler, 2004; Anusca et al., 2009; Yu et al., 2012; Scheichel, 2012;). 4 studies (100%) agreed that the knowledge element and the skills element are the most important elements that an educator must have (Saedah & Mohammed, 2012; Bloom, 1956; Mestry & Grobler, 2004; Anusca et al., 2010; Mc Kee & Eraut, 2012; Harun, 2014; Kenkel, 2011).

Table 2
Past studies related to the elements of knowledge, skills and attitudes of teachers in practical teaching

Author / Year	Knowledge			Skill				Attitude	
	Content	Pedagogy	ICT	Methods	Strategies	Tools	Assessment	Negative	Positive
Safwandi & Suadi (2017)	/			/					
Yu et al (2012)	/		/	/		/		/	/
American Manufacturing (2015)	/		/	/		/			
Abdullah (2017)	/					/		/	/
Nabila (2014)	/	/		/	/	/			/
Habsah (2014)		/				/			
Nazrul et al (2017)			/	/	/				
Jonathan (2017)	/	/		/					
Ahmad & Jinggan (2015)					/		/		
Ramdhani et al (2011)	/			/				/	/
Schmeichel (2012)	/	/			/		/	/	/

Based on the literature review conducted on 11 studies related to the competency elements of teaching staff in Table 2 above, it is found that the knowledge element is divided into 3 important components, namely the mastery of Curriculum 7 studies (63%), the use of ICT and pedagogical approach each 3 studies (27 %). For the Skills element, the researcher described 4 components related to the skills element of the teaching staff, namely the selection of appropriate teaching methods 6 studies (54%), skilled in the use of tools such as hand tools, machines and teaching aids are 5 studies (45%), the use of teaching strategies appropriate 3 studies (27%) and the last component is the evaluation of the effectiveness of teaching and learning 2 studies (18%). As for the attitude element, 3 studies (27%) describe attitudes divided into 2 aspects, namely negative attitudes and positive attitudes. The state of attitude of the teaching staff that will determine the values to be exhibited

Teaching Staff Knowledge

Knowledge is an element of teaching staff competence in teaching and practical learning that has a strong influence on the teaching practice of teaching staff. Instructors need to master content knowledge well to be effective instructors (Yu et al., 2012; American Manufacturing, 2015; Safwandi & Suadi, 2017; Jonathan, 2017; Norazita, 2017; Schmeichel, 2012 and Ramdhani, 2011). Moreover, the pedagogical approach is also closely related in determining the correct teaching method during the practical teaching process carried out (Schmeichel, 2012; Habsah, 2014; Jonathan, 2017). The last component in the knowledge element of the teaching force in the use of ICT in practical teaching and learning (Yu et al., 2012; American Manufacturing, 2015; Wan et al., 2017). Past studies show that the aspects that strengthen the knowledge element of teachers in practical teaching are in the mastery of the content of the subjects to be delivered, the pedagogical approach used and the level of good use of ICT by teachers. The mastery of good use of ICT by educators can improve student learning and performance (Wan et al., 2017) and appear more confident (Yu et al., 2012).

Instructor Skills

The skills of an instructor can influence the process of teaching and practical learning. Teaching methods, teaching strategies, instructor skills, use of hand tools and machines as well as the assessment process will influence practical teaching and learning. Instructors need to be skilled in determining appropriate teaching methods for practical teaching (Ramdhani, 2011; Yu et al., 2012; American Manufacturing, 2015; Safwandi & Suadi, 2017; Jonathan, 2017 and Wan et al., 2017). This means that the selection of the right teaching method can ensure effective teaching and practical learning. Teaching strategy is defined as wisdom in selecting, planning, and managing the right teaching methods and techniques (Wan et al., 2017; Anuar & Jinggan, 2015; Schmeichel, 2012). The use of tools such as Teaching Aids (BBM), hand tools and machines have been shown to create effective practical teaching (Yu et al., 2012; American Manufacturing, 2015; Norazita, 2017; Habsah, 2014; Zaiha, 2014). The last item in the skills element is assessment because assessment determines in Providing information on the effectiveness of learning and teaching (Anuar & Jinggan, 2015; Schmeichel, 2012). The planning and preparation of the teaching staff before implementing the teaching process is very important. The determination of teaching methods and strategies to be used will influence the impact of practical teaching on students (Wan et al., 2017). This means that in ensuring that practical teaching is effective, an educator needs to be wise in determining the teaching methods that will be used and what strategies will be applied. In addition, instructors who efficiently operate hand tools and machines increase students 'confidence levels in learning new applied skills (Habsah, 2014). In addition, assessment is an important aspect in identifying learning outcomes and student performance to determine the effectiveness of practical teaching (Wan et al., 2017).

Teachers Attitude

The attitude of an educator influences the strategies and methods that will be used in teaching. It is difficult to implement effective teaching if one has a negative attitude. Positive attitudes can create a more interesting and vibrant learning environment (Norazita, 2017; Yu et al., 2012; Schmeichel, 2012; Ramdhani, 2011). This indicates the competence of an instructor. A positive attitude of the teaching staff will result in a more effective teaching environment. The attitude of educators who are willing to try, willing to learn new things

(Schmeichel, 2012) and confident in delivery achieve teaching objectives as well as produce an effective teaching process (Yu et al., 2012). Students are more confident with the teaching delivered by the instructors who are more confident (Ramdhani, 2011).

Discussion

Competence as a learning process that occurs based on the individual's ability to perform something (Lefrancois, 2011). A person's competence in performing a task through education and performance as well as rational actions in meeting specifications is interpreted as competence (Fauzi, 2008). The combination of knowledge, skills, abilities, traits and behaviors enabling an individual to perform a task in a particular function or job is classified as a characteristic of competence. An instructor must have high competence before carrying out the teaching process. However, one of the contributing factors for the less effective teaching process is due to the less competent teaching staff in the content delivery process (Sendag et al., 2015).

Past studies have shown that the element of competence involves the knowledge, skills and attitudes of an instructor. This is in line with the Malaysian Teacher Standards where teacher competencies include three professional standards, namely professional attitude, professional knowledge and professional practice. The findings of this study are shown through 8 studies in the form of literature review and meta -analysis conducted by Saedah & Mohamad (2012); Bloom (1956); Mestry & Grobler (2004); Anusca et al (2009); Yu et al (2012) and Schmeichel (2012) who stated that elements of knowledge, skills and attitudes must be present to measure the level of competence of teachers. Knowledge is expertise in a subject, expertise in theory related to teaching and learning (Siraj, 2012). While Skills is a teaching strategy that can facilitate teaching activities carried out more systematically (Yu et al., 2012). However, the attitude of playing a role in teaching is also very important for creating effective teaching (Schmeichel, 2012).

There are a number of teachers who are not ready to diversify teaching techniques that make it difficult for students to understand the knowledge imparted by teachers. This is supported by Wan et al (2017) where the determination of teaching methods and strategies of instructors will influence the effect of practical teaching of students. Competencies that include elements of knowledge and skills are the basis in planning effective teaching strategies to ensure balanced curriculum delivery in terms of achievement of objectives, teaching methods and student assessment. The relationship between competencies and the development of teaching strategies needs to be more focused and constructive to form an effective teaching set. A review of the literature shows past studies related to the elements of competence that must be present in producing an effective teaching and learning process. The elements described above can be used to form a practical teaching framework that can be used as a guide in the practical teaching methods of instructors.

Conclusion

This study provides a contribution from the aspect of identifying the elements of teacher competence for practical teaching. This study provides some important contributions to identify the components of each element of knowledge, element of skills and element of attitude for an educator in implementing practical teaching. The results offer some basics on some of the components that will be used in the construction of a practical teaching framework to assist educators in conducting practical teaching. In addition to strong knowledge elements, skills elements and attitude elements are elements that can produce

effective practical teaching (Saedah & Mohammed, 2012; Bloom, 1956; Mestry & Grobler, 2004; Anusca et al., 2010; Kee & Eraut, 2012; Harun, 2014 and Kenkel, 2011). Instructors need to be prepared in learning new things (Yu et al., 2012) in the pursuit of technological change to ensure practical teaching in line with industrial technological changes (Norazita, 2017).

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