

Competencies of Vocational Teacher: A Personnel Measurement Framework

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Abstract

Recently, Transforming Technical Vocational Education and Training has been strategized by the Malaysian government to meet the industry demand and future economic growth. In the context of competency-based human resources and vocational education, the purpose of this study is to identify and map competencies for effective job performance required for vocational teachers towards developing a competency model and the measurement instrument. Discussion in this study gathered through related literature review of this competency and vocational teaching profession. The proposed measurement model for vocational teacher builds on the four competency domains namely "teaching competence", "professional competence", "communication competence" and "personal competence". Once the model and measurement instrument tested for robustness on the psychometrics properties, it could be a reference among HR researcher and practitioner in designing the new curricula and training for professional development. Hence, the proposed personnel measurement model in this study would differentiate from other teacher competencies and provide new insights on individual effective job performance specific for vocational teaching profession.

Keywords: Competencies, Competency model, Competency instrument, Technical Vocational education and Training, Vocational Teacher

Introduction

The Malaysian government and related agencies has strategized Technical Vocational Education and training (TVET) as the main platform to cater the demand of skilled worker for high income nation in 2020. In the five years' period of 10th Malaysian plan (2010 – 2015), mainstreaming and broadening were undertaken to support the industry for skilled worker (Economic Planning Unit, 2010). Thus, it has resulted the biggest shifted in the vocational education in Malaysia through the conversion of 72 vocational schools plus eight technical schools to vocational colleges and established another eight new colleges (Rasul et al., 2015).

For the next 5 years (2016 -2020), transforming TVET in the 11th Malaysian Plan become one of the game changer to continue meet the demand of the industry as well as to support the economic growth. The main focus is to improve the TVET delivery system and increase the student's enrolment (Economic Planning Unit & Prime Minister's Department, 2015). Taking considerations that efforts to mainstream was successfully reach the objectives, however, four issues and challenges has been highlighted and addressed including the competency gaps among instructors (Economic Planning Unit & Prime Minister's Department, 2015) as summarized and presented in figure 1.

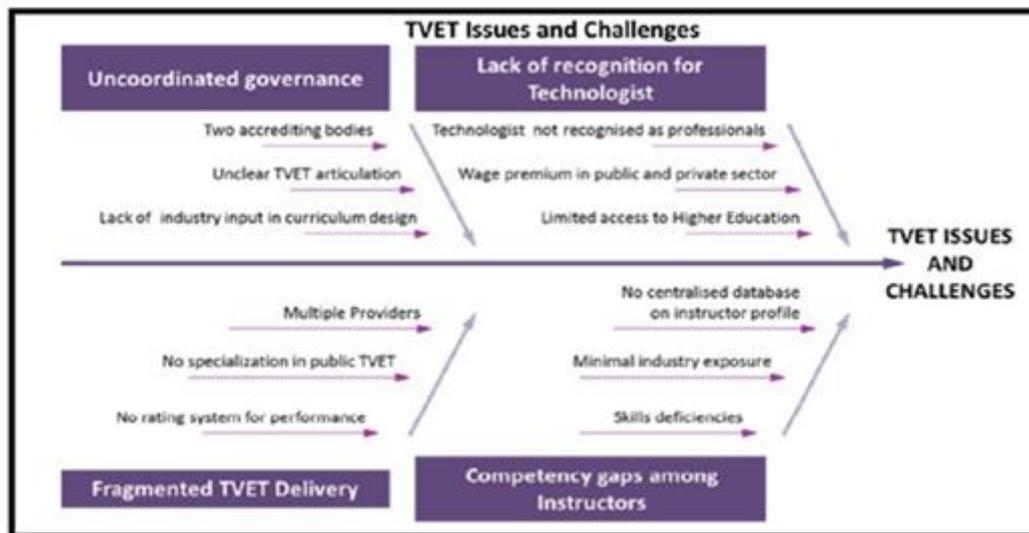


Figure 1. Malaysia TVET issues and challenges

Source: Economic Planning Unit & Prime Minister's Department (2015)

In general or in vocational education, teachers are the main mechanism of education system (Paryono, 2015). Thus, the competencies of TVET teacher are the key points that reflects the quality of vocational education and graduates in the job market. However, the quality and quantity of teachers has seriously discussed among the experts in Southeast Asia (Paryono, 2015; Soysouvanh et al., 2013) including Malaysia (Lee & Lai, 2016; Mohamad, Saud, & Ahmad, 2009; Paryono, 2015). Such phenomenon need a new shifted for vocational teaching profession. TVET related bodies, must develop teacher with required competencies which specific to overcome the issues and challenges of TVET in Malaysia.

Approach to the Study

The contents of this conceptual paper are through the previous literature review conducted on competencies on vocational teaching profession. The literature review focused on the concept of competencies, competency model, competency measurement instrument towards effective job performance (EJP). Thereafter, research and literature discussed to identify potential domains to be constructed which are deemed important to be included in the measurement model. Four competencies domains are used to develop and proposed "new sounds to illustrates a preliminary conceptual framework". Prior to that, the four main constructs listed the competencies that are deemed required by TVET teacher area to support their individual performance.

Rationale of the Study

As competency instruments or standards practically used to improve the qualification of general teacher more transparent, this approach also applies to vocational teacher as to improve the quality of education, to guide the development of new curriculum, strengthen the training programmed as well as towards the assessment of teaching performance (Diep & Hartmann, 2016). However, the quality technical education is contradicted with the general education where cannot simply measured through the academic achievement (Soysouvanh et al., 2013).

Instead, the quality of the TVET is how the vocational graduates perform in the world of work. In this situation, most of the developed countries faced with the problem of the TVET institutions where the supply of graduates failed to meet the demands from the industry. One of the important factor is due to the situation where teachers are recruited from fresh graduates of vocational and technical colleges and universities, thus lacking industrial experiences (Paryono, 2015). The lack of industrial working culture among TVET hindered the efforts of transferring the working culture to the students.

In such phenomenon, a new paradigm of TVET is needed, which greater interest to bring the education philosophy closely to the real world of work. A robust competency instruments are one of the tools to support the management of change. Measurement development bodies need to decide either to develop and implement general instruments for all teachers or with specific intention on the different nature of profession with vocational education (Soysouvanh et al., 2013).

The subjects to be taught in vocational education also is different with general education where vocational education should take place outside the classroom, namely in workshops and in real world production environment. The content to be imparted is different in type to the content of general education, since it is not purely academic but strictly related to the world of work. Vocational learning must be practical learning as opposed to more academic learning in general education, and for that different modes of learning are required.

In addition, the modes of learning for different occupational areas are at least as different as those for foreign languages and mathematics. It is obvious that TVET teachers need competences in the professional area they must teach, like a foreign language teacher must be fluent in his language. TVET teachers deal with young adult learners on their way to the labor market and not with students on their way to the next educational institution (Soysouvanh et al., 2013).

The challenges of vocational teacher's role demand more knowledge, skills and abilities in view of globalization, knowledge economy, technology advances and global labor mobility. Despite the importance of vocational teacher vocational teacher role, there is still limited research undertaken towards required competencies by them in a profession in the context of vocational education. As employees, effective job performance is a central "identifying teacher essential competencies through personnel measurement instrument applicable in supporting the quality of education of vocational teachers". In effort to support the Malaysian government on transforming TVET delivery system, this study proposed an effective job performance measurement model for vocational teaching profession in Malaysia.

Understanding Competency

The Meaning of Competency

“Competentia” comes from the Latin words as the “*ability to judge and speak*” (Internacional Project Management Association, 2006). Meanwhile, in English dictionary, the competence means the “*state of being suitably sufficient or fit*”. Previous researcher and practitioner works has resulted more competency dimension such as such as proficiency, capability and capacity are not suitable to relate with the term as it creates difficulty and confusion (Hoffmann, 1999; Vikram Singh Chouhan & Sandeep Srivastava, 2014).

Defining a Competency

Since the early pioneering work of McClelland (1973), there is no single definition accepted until now as summarizes in table 1. The term was operationalize based on different theory and targeted profession. This caused multi – faceted positions and confusion (Hoffmann, 1999) from specific job area to general definitions (Moore, Cheng, Dainty, Moore, & Cheng, 2006).

Table. 1:

Definition of Competency by Previous Authors (1973 – 2007) in Competency Study

Authors	Definitions
McClelland (1973)	A set of behavior related to effective job performance
Boyatzis (1982, 2008)	Underlying set of traits that leads to effective job performance
Spencer & Spencer (1993)	Ability and skills developed through training, job and life experience
Evarts (1987)	Managers underlying characteristic towards superior performance
Hager, Gonczi, & Athanasou (1994)	The standard or quality as the outcome of the individual’s performance
Hoffmann (1999)	Underlying quality or attributes of a person, observable behaviors, and standard on a person performance
Dubois & Rothwell (2004)	A person underlying traits that are required for individual performance
Cernusca & Dima (2007)	The right positions for an employee linked to performance and one ‘s career development

In general, the term competencies can be defined in three different positions as either;

Table. 2:

Three Different Positions of the Competency Term

Definitions	Authors
<i>To measures individual performance</i>	(Cernusca & Dima, 2007; McClelland, 1973)
<i>The important criteria or elements of the outcome of the person's performance</i>	(Bartram, Robertson, & Callinan, 2008; DeVellis, 2012; Hoffmann, 1999; Spencer & Spencer, 1993; Suhairom, Musta'amal, Amin, & Johari, 2014)
<i>The characteristics of a person to perform in job or profession</i>	(Boyatzis, 1982; Mohd Ridhuan Mohd Jamil, Shariza Said, & Mohd Ibrahim K. Azeez, 2014; Wahba, 2010)

For this study, we used another different 'competencies' definition by Bartram, Robertson, & Callinan (2008) as "the sets of underlying traits as a tool towards effective outcome. Competency is the list of knowledge, skills, abilities, behaviors, and personal ability towards effective job performance in profession"

Behavior Related (Competencies) Can Be Developed

The advantage of competencies as behavior related practice involved the "domain of talent" (Boyatzis, 2008) which can be developed for future. Previous study in various field shown that people can improve their behavior and self-image. Despites most of the study focuses on the single outcome such as to measure the anxiety, few studies proved that a set of Knowledge, skills behavior can influence the job performance and lasting for years (Boyatzis, 1982).

Development and Importance of Competency Model and Measurement Instrument

Previous study in competency based human resources resulted with the practice of competency models such as in the area of culinary (Suhairom, Musta'amal, Amin, & Johari, 2014), hospitality (Bharwani & Talib, 2017) and education (Bohne, Eicker, & Haseloff, 2017) as well as vocational teaching profession (Diep & Hartmann, 2016; Kamis, Mohamed, Hanapi, Che Kob, & Jamaluddin, 2016; Soysouvanh et al., 2013; Spöttl & Steinbeis, 2016). Competency modelling practices could a reference in human resource development departments in organization. The significance of modelling become of the comprehensive approach (Mansfield, 1996; McLagan, 1980; Rothwell & Lindholm, 1999) which can be developed to understand employees required knowledge, skills and abilities on specific profession.

Having a specific model reflects individual employees towards the need or required characteristics of traits for superior or effective job performance. As mentioned by Boyatzis, (1982), competency model often used as one of the strategy for HR division in "selection or recruitment process" ..

Despites the practice of measurement instrument cause several issues, the value is quite substantial not only in those specific professions but also to the community. In the measurement instrument, other make judgement to the current employees level of competencies (Hager et al., 1994; Spöttl & Steinbeis, 2016).

As mentioned by Nicholson, Griffin, Gillis, Wu, & Dunning (2013), there are various methodology reported in the literatures. For instance, Suhairom et al. (2014), Kamis, Mohamed, Hanapi, Che Kob, & Jamaluddin (2016) and Taskinen et al. (2015) emphasized on

psychometric requirements in developing their competency assessment. However, the basic criteria for each assessment to be an accurate measure of the person's knowledge, skills, abilities, or performance. Accuracy means that the scores from the assessment are reliable and a valid measure of that person's current performance (Cruz, Colet, Bashtawi, Mesde, & Cruz, 2017). This study based on the (Boyatzis, 1982) and (Spencer & Spencer, 1993) towards developing and validating the competency model.

There is important to expand the competency modelling to the measurement instrument especially in vocational teaching profession. (Spöttl & Steinbeis, 2016). The outcome provide evidence of an individual teacher strengths and weakness on certain competency area (Aqtash et al., 2017; Cumberland, Herd, Alagaraja, & Kerrick, 2016; Greenstein, 2012; Rothwell & Lindholm, 1999; Tognazzo, Gubitta, & Gerli, 2017).

However, past studies lack on empirical studies with the measurement instrument for in service vocational teacher in Malaysia. There is also limited literature with regards to the required competency of vocational teacher in profession at workplace. The primary objectives of this paper are to develop and validate competency model and an instrument to measure the required competencies of Vocational College Teacher in Malaysia.

Competency Based Effective Job Performance Model

A theory of performance is the basic concept for competency. Using a basic competency theory as in figure 4, maximum performance is believed to occur when the person's ability is congruent with the need of job and organization (Boyatzis, 1982). The person's ability is explained by personal philosophy, vision, values; knowledge; competencies; life and career stage; style and interest.

Job demands including the task needed as well as the role responsibilities of employees. Finally, on the aspects of organizational by the combination of culture and climate; maturity of the industry; strategic positioning within it; aspects of the economic, political, social, environmental, and religious milieu surrounding the organization also structure and systems.

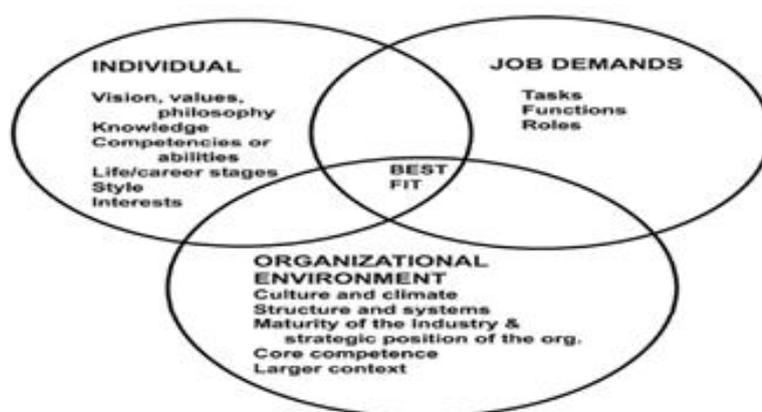


Figure 2. Theory of action and job performance: best fit (maximum performance, stimulation, and commitment = % area of maximum overlap or integration

Source: Adopted from Boyatzis (1982)

Research Objectives

Thus, in the view of globalization, knowledge economy, technology advances and global labor mobility, there is a need to develop the required competencies for vocational teacher effective job performance in Malaysia. This raises a research objective and questions in this study such as;

- To develop a competency model for Vocational College Teacher effective job performance (MaVCTCM)
- To develop a valid instrument to measure Vocational College Teacher for effective job performance (MaVCTCI)

Research Questions

- What is the competency model for Vocational College Teacher Effective Job Performance in profession?
- What is the instrument to measure Vocational College Teacher competencies for effective job performance in profession?

Discussion on Competence Models in TVET

Based on previous literature analysis, we provide useful knowledge related to vocational teacher competencies. Diep & Hartmann (2016) mentioned that competences are practical due to the elements of broad knowledge. Someone is knowing the required knowledge and able to verbalize. The well-known American educator Shulman listed the important domain of teaching profession namely (1) Pedagogical knowledge (2) subject-matter content knowledge, (3) pedagogical content knowledge, (4) curricular knowledge, (5) other knowledge (educator, learners, educational purposes) (Gudmundsdottir & Shulman, 1987). Other authors added consulting knowledge as the sixth dimension into this classification (Kleickmann et al., 2012).

In promoting excellence in education, National Board for Professional Teaching Standards (1987) in the United State, include professional competence representing (1) professional knowledge and skills and (2) professional values, beliefs, subjective theories, normative preferences and objectives. Another study by Kunter et al. (2013) in framework of their COACTIV-study for PISA 2003 produce a professional competence model for mathematics teacher based on the Schulman's theory and combining the domains of NBPTS 2002 (Goldhaber, Perry, & Anthony, 2004). The domains of this model comprise of personal competencies (beliefs, values, goals, motivational orientations, self-regulation), knowledge and skills based on five professional knowledge areas (subject-matter knowledge, pedagogical content knowledge, pedagogical psychological knowledge, knowledge of organization and consulting knowledge), each area is continuously classified into many other facets (Kunter et al., 2013).

However, this model was not only adopted by even discusses and criticized by other authors. The main issue with this model is due the connections between the domains especially with the classrooms were not included. In different, other scholar focus more on the classrooms domains. Emphasize on the elements of vocational teachers' planning and preparation competencies pedagogical basic competence, Zulkifli (2016) used five dimensions; (1) knowledge of content and pedagogy (2) knowledge of students (3) setting instructional outcomes (4) knowledge of resources (5) designing coherent instruction (6) designing student assessment. In 2012, Soysouvanh et al. (2013) and his research team provide a specific

instrument consists of five competence area to overcome the teacher competence issue of Lao PDR. The area includes (1) Competence area of Acting in an exemplary manner; (2) competence area of Teaching, (3) competence area of Educating, (4) competence area of Assessment, (5) competence area of Self-Development and Innovation. As this framework represents the actual situation in Lao, this can be a reference to understand the required competence of vocational teacher practices in nature. This outcome based on the understanding of what the profession need.

Research Methodology

The author will use two methods using the Winstep software and Analysis of Moment Structure (AMOS) for data analysis. For the measurement model, Winstep software, software based on Rasch measurement model seeks for the psychometrics properties on (1) The reliability of the respondent as well as the reliability of item (ii) The point of polarity items where the point measure correlation coefficient of each item (iii) Range of infit mean-square as well as the range outfit mean-square value (iv) The value of standardized residual variance through the unidimensionality test and (V) The most difficult item as well as the easiest item.

Next, for the measurement model, the author will use AMOS software through Structural Equation Model (SEM) for the purpose confirmatory factor analysis and model validity. AMOS will be used to test between the propose constructs in this research. The author use the combination of Rasch and CFA to increase the confidence related to suitability of items and construct dimensionality to answer the research questions as in the research.

A Measurement Model

Since several decades, the practice of instrument in education has been under research and discussed for technical vocational education and training (TVET). This is due to the teachers in vocational area faced a bunch of challenges in a profession worldwide. In TVET, the instrument usually used to reflect the quality of education, training programmed, tools for teacher performance measurement as well as improve the contents of curricula. The main different between general and vocational teacher is the vocational education related to the practice of the work process. This is the reason why we need a different perspective on the measurement instrument.

Previous international practice shows the competency measurement instruments derived from competency models. Moreover, literatures agree that measurement instrument should be developed in the long term. An instrument should determine the required competencies at certain time, include important domain, derive from the models as well as describe competencies which can basically be recorded by testing procedures. The quality instrument need to be developed from the view of members in profession and domains in day to day work. The competency measure instrument should be designed in a way that describe the knowledge, skills, abilities or attitude. Prior to that, it represents the competency development rather than tools for “teaching to the test”.

Respecting the idea that competence of vocational teacher is still a complex and still under research, we suggest a personnel competence model of vocational teacher to reflect the current needs in a profession.

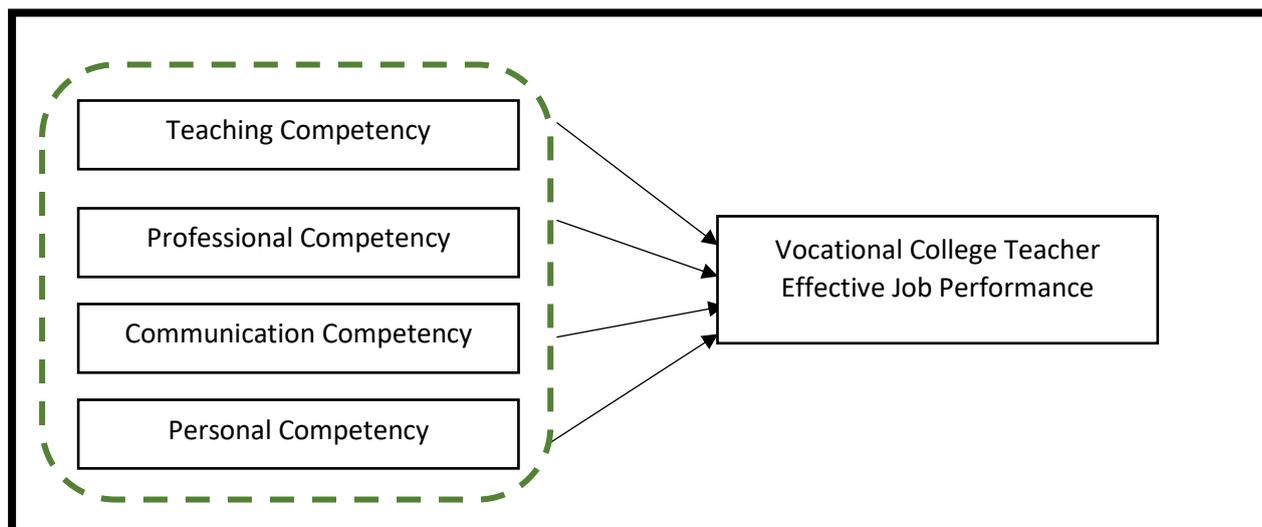


Figure 3. The Proposed Domains for Measurement Model of Vocational College Teacher Effective Job Performance

Competency Domains

The first domain in the measurement framework, **teaching competency** requires teacher ability to integrate the theory and practice in classrooms activities. (Diep & Hartmann, 2016). Vocational teacher must be able to design the objective of teaching and learning (Ball et al., 2008), considering vocational learner background. Vocational teachers also need to use different teaching technique and use practical approach to reflect the teaching objectives. **Professional Competency** as the second competency domains ensure vocational teachers master the contents of knowledge with the latest information required by vocational learners (Grollmann, 2008). They need to master the knowledge and skills related to the current industry needs. Failure to impart this, resulted with the graduates who can't perform in the world of work (Oluwasola, 2014). To impart the knowledge to vocational learner as well to give advice and to convince, teacher also requires a **communication competence** (Oluwasola, 2014). This ability help teachers to perform effective communication not only with learners, but including the parents of learners, colleague and the industry. However, the most important communication happened in the classrooms of conveying learning contents, controlling the classrooms and consulting the learners (Amiruddin et al., 2015; Diep & Hartmann, 2016). The last domains to represents the work of vocational teacher is **personal competency**. Self – images, ethics and personal goals is the personal traits that might enhance vocational teacher level of competency for effective job performance (Yusof, Roddin, & Awang, 2015). Prior to that teacher need to keep themselves on new relevant theory and new technologies to use in classrooms especially in the new environmentally friendly technologies (Roberts, Dooley, Harlin, & Murphrey, 2006).

Conclusion

In the previous section of this paper, four interrelated domains were discussing through the perspective of effective job performance (EJP), to produce a competent vocational teacher. In doing so, this paper has come out with another contribution to competency theory by proposing a new competency study for vocational teacher and utilizing effective job

performance theory towards the development of measurement model as well as the items in the measurement instrument.

However, some of these competencies domains have only received awareness in the competencies literature which is yet been investigated. In addition, there are supposedly to support each other of these four domains. Future research is necessary on each of these domains and competencies for EJP. Furthermore, how competent teacher practice need to be established to test EJP process that is propose here. In conclusion, against a backdrop on reflecting the competent vocational teacher in TVET, the concept of competency based competency-based human resources has been developed here from EJP theory perspective. Further effort need to tied up in developing and measuring this framework where the researcher idea has been presented in this regard.

Theoretical Implications

Theoretically, this study intents to contribute on the body of knowledge through a personnel measurement model (MaVCTCM) to represents the vocational college teacher in Malaysia of which still not yet exist. Besides, based on the measurement model, a competency measurement instrument (MaVCTCI) will be developed to measure the current in service vocational college teacher for their effective job performance.

Practical Implications

The proposed personnel measurement framework aims to develop a measurement instrument to represents the quality of individual job performance among vocational teacher and the vocational teacher education. This model could be a reference in shaping not only for in-service teacher but also the pre-service teacher towards setting the mission and vision of TVET in Malaysia. In addition, members in a profession can use this model to become tools for self-measure their current level of competencies in the current needs of profession. The valid measurement model provides a basis for the development of new standards in the era of vocational teaching profession. Finally, through a Rasch measurement model analysis, this study provides the profile of Malaysian vocational teaching profession which is another issue to be address related to the competency gaps

Limitations and Future Research Directions

The proposed measurement framework only based on the previous literatures. For the robustness, empirical tested should be carried out. Another empirical study can be carried out with different perspective in diverse vocational institutions to retest the similar framework. This could be not only in public institutions but to include private institutions. Consider as a preliminary work, the proposed measurement framework contains four competencies domains which still have the lack of certain area in practical application. Confirmatory factor analysis could be carried out to have clear experience the domains. A comprehensive competency measurement derive from this model could prove to be utilized for members in vocational teaching to validate their current level of competencies and the result can be further supported the professional development of teacher and career development.

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