



Comparative Study Between Malaysia and Indonesia: Differences of Teaching and Learning Methods (Theory-Based) used by Engineering TVET Teachers

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Abstract: This study was conducted to generate empirical evidence of the differences of teaching and learning methods used by engineering TVET teachers of Malaysia and Indonesia. This study applied quantitative method that involved data collection through the newly developed instrument of teaching and learning strategies. A survey technique was used as the research design in which a total of 183 teachers from Malaysia-Indonesia vocational institutions were involved in this research. The results have shown that there were similarities and differences of the method used by the teachers. There are several teaching and learning methods used by Malaysian and Indonesian respectively. Meanwhile, there is one similar method used by both countries which is practicing. In conclusion, Vocational Pedagogy plays a crucial role in this context, and this is why the teaching and learning is very important in educating young Malaysian and Indonesian to become successful technical and vocational trainers, instructors and teachers.

Keywords: Vocational pedagogy, teaching and learning method, TVET teachers

1. Introduction

Education plays an increasingly important role in economic success. In the context of a quickly growing population, it is of utmost importance. Referring to 2014 EFA Global Monitoring Report, there was a call for more effort to be made to ensure that children learn when they go to school, which can be achieved when governments invest in well-qualified and motivated teachers (UNESCO, 2014). In academic or general education as well as in Technical and Vocational Education and Training (TVET), teachers are the backbone of education and training systems. In the Southeast Asian region, TVET teachers have been a crucial issue in most member countries of ASEAN, both due to the lack of numbers and the quality of teachers (SEAMEO VOCTECH, 2012). The increasing number of student enrolments requires more vocational schools and more teachers. Indonesia and Thailand are very progressive in promoting TVET at the secondary level by targeting a TVET enrolment that equals or exceeds those enrolled in general education. In terms of quality, most new TVET teachers in the region are fresh graduates from vocational and technical colleges and universities, thus they lack industrial and teaching experiences (SEAMEO VOCTECH, 2012). The lack of industrial working culture among TVET hindered the efforts of transferring the working culture to the students. These are some issues identified during the TVET Experts Meeting 2012 that require further studies.

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Education plays an increasingly important role in economic success. In the context of a quickly growing population, it is of utmost importance for Malaysia and Indonesia to provide a comprehensive and up-to-date technical education for its citizens. Vocational Pedagogy plays a crucial role in this context, and this is why the Technical and Vocational Trainers Provider is very important in educating young Malaysian and Indonesian to become successful technical and vocational trainers, instructors and teachers. However, do the TVET teachers master the vocational pedagogy to create the best learning environment for our students specializing in Technical and Vocational Education to ensure that the students are being well trained to compete in the modern workplace? A lot of TVET teachers may practicing teaching methods but is not yet pedagogy. Too often teachers stick to the small number of methods with which they feel comfortable (Lucas & Claxton, 2013). Also, the effects of vocational pedagogies are under-researched and under-theorised (Cedefop, 2015).

In the context of vocational pedagogy, Lucas and Claxton (2013) state that it's the science, art, and craft of teaching that prepares people for working lives. It is critically shaped by the decisions that are taken by teachers – both high-level strategies and day-to-day 'in-the-moment' ones – and the values that inform all interactions with students. But how much it has been implemented? There's a need to establish a new instrument by using new terminology but still using old practices in vocational pedagogy to improve the status and quality of TVET which requires a paragon of virtue, knowledge and skill. Therefore, the study should generate empirical evidence of the differences of teaching and learning methods for engineering TVET teachers between Malaysia and Indonesia. The purpose of this study was to compare the teaching and learning methods used by engineering TVET teachers of Malaysia and Indonesia. Therefore, the objective of this study are:

- i. To identify the teaching and learning methods used by engineering TVET teachers in Malaysia and Indonesia.
- ii. To identify the gap and similarities of teaching and learning methods used between TVET teachers in Malaysia and Indonesia

2. Research Methodology

This study applied a quantitative method that involved data collection through the newly developed instrument of teaching and learning strategies. This paper intended to focus and explain the validation of the research instrument process the polythomus data (Likert) were collected and analyzed based on the Rasch Model with the aid of computer application software, WINSTEPS version 3.72.3. This research involves two-stage processes to identify and validate the construct. The first stage involves the identification of constructs using Literature-based and supported by Exploratory Factor Analysis (EFA) to indicate the presence of the construct (learning method and teaching method). An Instrument was established using the Rasch Model for polythomous data aided by Winstep software version 3.68. The construct validity was examined by analyzing the point-measure correlation index (PTMEA), infit and outfit MNSQ values; meanwhile, the reliability was examined by analyzing the item reliability index. A survey technique was used as the major method with the instrument on 184 teachers from vocational colleges.

2.1 Items and Person Reliability

Person and item reliability show the extent to which the items are compatible (confirm to fit) with the Rasch Model and item and person separation index. Table 1 and Table 2 shows the summary of the item separation index and person separation index, the item reliability and person reliability. The findings show that the items for the 11 constructs in Learning Content have a range of reliability between 0.62-0. The reliability values of more than 0.8 are acceptable, while values between 0.6 - 0.8 are less acceptable and values less than 0.6 are not acceptable (Bond & Fox, 2007). Table 1 shows 3 constructs that have a low item reliability index which is Valuing (0.62), Set (0.77) and Respond to Phenomena (0.78). Although this value does not conform to the high-reliability index, it is adequate and is of an acceptable level (Pallant, 2011). The items' reliability index can be further enhanced if the misfit items are given special attention. Meanwhile tables 2 showed the entire construct has acceptable reliability values.

Separation Index is the separation of items and person. The items and person separation value which is more than 2 is good (Fox & Jones, 1998; Linacre, 2005; Bond & Fox, 2007). Item separation index is the separation of item difficulty level, while person separation index is the estimated separation or person group differences by level of ability in the measured variables. The result showed the item separation index to be between the values of 1.28 to 3.44. Statistically speaking, these items can be divided into 1 to 3 strata or levels of agreement. Table 1 shows there are 3 items separation index for the 11 constructs in Learning Content have below 2.0 Separation item value which is less than 2 is less accepted and this suggests that real difference related to the ability of respondents is hard to distinguish for the items. The higher the value of the separation index of the items, the better the measurement instrument because the items are separated by levels of varying difficulty. The separation index will increase if the reliability of items is increased and misfit items are detected and removed from the analysis. This index shows that the person difference or separation can measure the ability of persons with measuring variables (Wright & Master 1982; Bond & Fox, 2007).

Table 1 - The Reliability of Learning Content Constructs

No	Construct	Total Item	Item Reliability	
			Item	Separation
1	Valuing	2	0.62	1.28
2	Set	1	0.77	1.85
3	Respond to Phenomena	5	0.78	1.91
4	Perception	2	0.80	1.99
5	Organization	3	0.81	2.06
6	Complex Over Response	2	0.83	2.20
7	Understanding	2	0.84	2.26
8	Application	2	0.81	2.06
9	Knowledge	3	0.89	2.84
10	Internalizes Values	2	0.90	3.00
11	Guided Response	5	0.92	3.44

3. Findings

The findings discussed are based on the data of the teaching and learning method items that were constructed after the face and content validity verifications by relevant experts. Data that had been collected were analysed in the context of teaching and learning methods and descriptive statistical analysis including frequency and percentage to analyse and interpret the findings in this research. An explanation of the frequencies and percentage was based on the interpretation of the Likert Scale in the research instrument. Level of agreement was used to measure the perception of engineering teachers which ranged from “Never” (1) to “Always” (5) and “Not applicable”

3.1 To Identify The Teaching and Learning Methods Used by Engineering TVET Teachers in Malaysia and Indonesia

Fig. 1 shows the differences in teaching and learning strategies used by Malaysian and Indonesian TVET teachers. Based on the analysis outcomes, it is clearly shown that Malaysia Engineering Teachers yielded relatively higher scores on the Theory of Teaching and Learning Strategies most of the item measure compared to their counterpart in Indonesia as illustrated in Fig. 1 below. Results show that the Malaysian engineering teachers obtained the highest percentage of discussion (76.5%), whereas Indonesian engineering teachers only scored (50.5%). Meanwhile, apart from that Indonesian engineering teachers have a higher percentage component on feedback (61.5%) rather than Malaysian engineering teachers (53.9%).

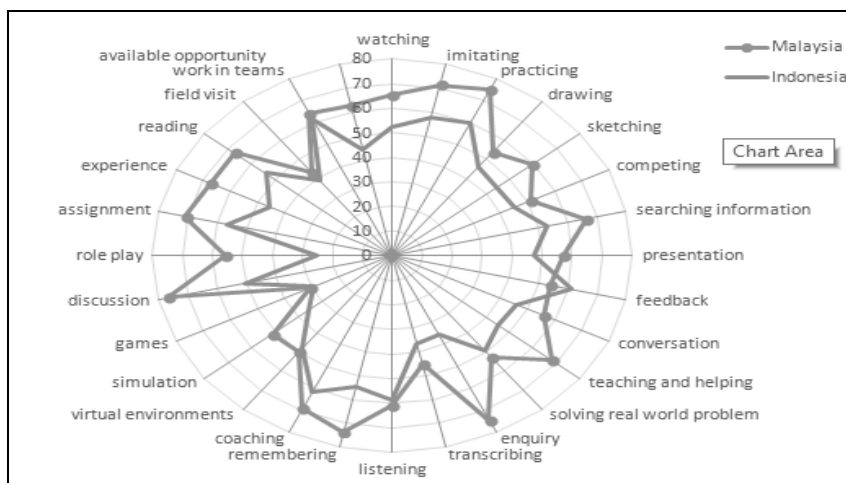


Fig. 1 - Comparison of Teaching and Learning (theory) between Malaysian and Indonesian Engineering Teachers

There were differences in all measured components in teaching and learning methods on the theory between Malaysian and Indonesian engineering teachers. However, some of the components were not profound. For example, the difference in percentage value of Malaysian and Indonesian engineering teacher in listening was only (1.9%). There are no similarities in the percentage value between Malaysian and Indonesian engineering teacher. Nonetheless, these results can conclude that the methods used by Malaysian and Indonesian engineering teachers on theory differ significantly from each other. The details of the comparison percentage can be seen in the table below.

Table 2 - Comparison of Teaching and Learning (theory) between Malaysian and Indonesian Engineering Teachers

Method (Theory - Engineering)	Malaysia	Indonesia
Watching	65.2	52.5
Imitating	71.3	57.5
Practicing	75.2	60
Drawing	53.9	46
Sketching	59.6	44.5
Competing	51.3	45
Searching Information	66.5	53
Presentation	57	47.5
Feedback	53.9	61.5
Conversation	56.1	46
Teaching And Helping	68.3	45
Solving Real World Problem	53	49.5
Enquiry	74.3	35.5
Transcribing	45.2	37
Listening	60.9	59
Remembering	73.5	54.5
Coaching	69.1	61.5
Virtual Environments	50.4	48
Simulation	51.3	35.5
Games	30.4	29
Discussion	76.5	50.5
Role Play	55.7	25
Assignment	70.9	56.5
Experience	67.4	45.5
Reading	67	54
Field Visit	43	39
Work In Teams	64.3	61.5
Available Opportunity	62.6	44

There were differences in all measured in teaching and learning on theory-based between Malaysia and Indonesian engineering teachers. However, some of the components were not profound. For example, the difference in percentage value of Malaysian and Indonesian engineering teacher in listening was only (1.9%). There are no similarities in the percentage value between Malaysian and Indonesian engineering teacher. Nonetheless, these results can conclude that the methods that are used by Malaysian and Indonesian engineering teachers on theory are different significantly from each other.

3.2 The Gap and Similarities of Teaching and Learning Methods Used Between TVET Teachers in Malaysia And Indonesia

Based on the analysis done, there are four distinctive teaching and learning methods used by Malaysian and Indonesian TVET teachers respectively. Meanwhile, there is one similar method used by both countries. Figure (2) shows the summary of teaching and learning methods (theory) for Malaysia and Indonesia engineering TVET teachers., pedagogy remains central to education. Every educator and parent expects that the students will have good learning experiences at school and build their competencies to become better individuals in many ways. The biggest challenge that any educator faces is to ensure that every student can learn effectively.

From Malaysia's perspective, the teaching and learning method used commonly by the engineering TVET teachers are discussion, inquiry, remembering and imitating. These four methods are commonly used because unlike Indonesia, Malaysia has a lower ratio of students to teachers in the classroom. This allows for the interaction of teachers with students in a smaller group. A method such as inquiry and imitating requires longer interaction times in the classroom. Therefore, by having a smaller group, engineering TVET teachers are allowed to use this method effectively. As for discussion and remember, these methods call for a student-centered approach that needs monitoring by the teachers.

With a small number of students, engineering TVET teachers can ensure these teaching and learning methods are executed in the right way.

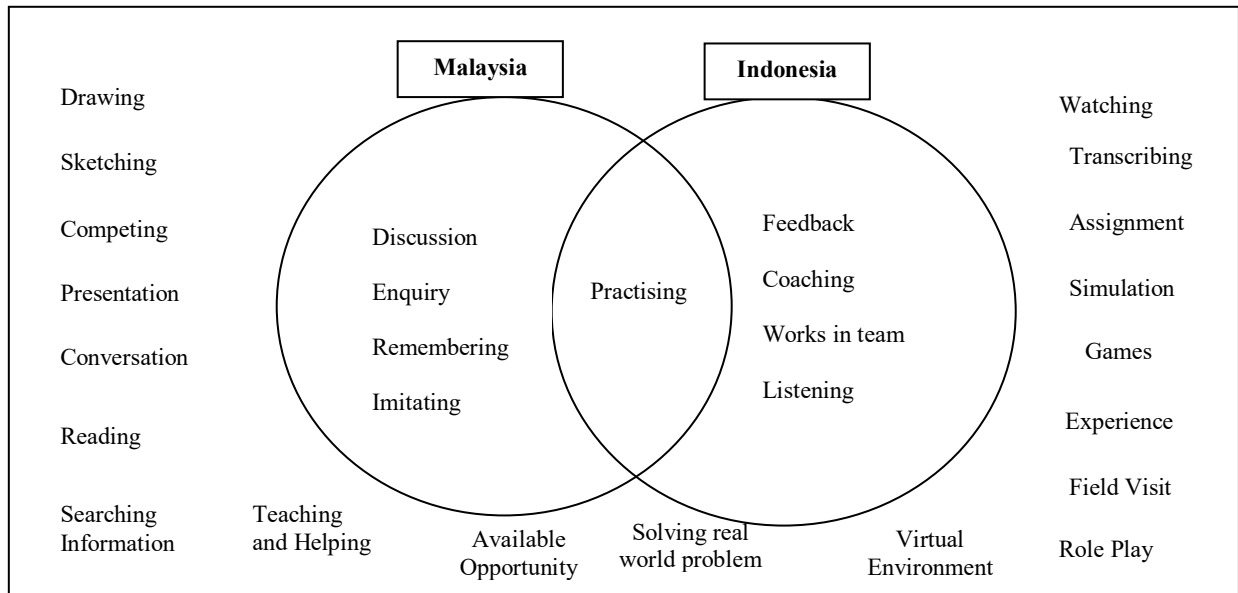


Fig. 2 - Summary of Teaching and Learning Methods (Theory) for Malaysia and Indonesia Engineering TVET Teachers

On the other hand, the engineering TVET teachers in Indonesia commonly use feedback, coaching, works in and listening as the teaching and learning methods. These four methods are commonly used because it is the best way to deliver knowledge and allow them to focus on their learning sessions. A method such as feedback and coaching requires learning that requires the active acquisition of knowledge by the learner, instead of just listening and taking notes. Considering the large numbers of students in the classrooms with around 40 students, it seems that works in listening are applicable form their teaching and learning. This approach involves teachers treating students as active hey need to interact, to see, to listen and react what the teachers instruct them to do. Therefore, by having this dominant teaching and learning methods, engineering TVET teachers are allowed to use this approach effectively. Methods such as working in team required teachers to' learning various ways because it can students' creativity and strength such as building their conflict resolution skills.

One similar teaching method used by both countries is practicing which is it promotes the acquisition of knowledge or skill through repetitive practice of the students. By using these approach students are motivated and know what they are trying to achieve and why. They are more proactive in extending their understanding of new topics and subjects and use their existing knowledge to help develop their understanding of new ideas. This method also can help them to understand new concepts by relating any knowledge to their previous experiences. Therefore, it can develop their learning and think by building on the critical evaluation of their previous learning experiences and build self-aware-able to identify, explain, and address their strengths and weaknesses in every situation.

4. Findings and Discussions

Malaysia and Indonesia are two developing countries that are taking serious efforts and initiatives to improve the quality of their human resources to achieve the status of developed nation goals. In Malaysia, Vocational Colleges (VC) play an important role in producing the skilled and technical workforce while in Indonesia; graduates who are ready to face the world of work are produced by their Vocational Senior Secondary Schools (VSSS). To improve the quality of human resources in these two nations, the teaching and learning processes of both VC and VSSS must be enhanced where the balance needs to be achieved between the teaching and learning of practical courses and theoretical courses. Teaching and learning is a complex process.

In order to achieve learning goals, teachers play a very important role in guiding students to enhance their knowledge and skills. Therefore, the teacher must be able to understand and mastering knowledge in their area of expertise to effectively carry out teaching and learning tasks so that students get optimum benefits at the end of the teaching session. The willingness of vocational teachers is very important in the teaching and learning process. The quality of a teacher can be measured through the understanding of the students with the teaching and learning processes taught. Teachers should have enough knowledge about the content of the lesson to be taught and always ready to face any questions from their students to create an effective learning environment.

This study found that there are no similarities in the percentage value between Malaysian and Indonesian engineering teacher. Nonetheless, these results can conclude that the methods that are used by Malaysian and

Indonesian engineering teachers on theory are different significantly from each other. This is in line with Muttaqin (2007) and Yunos et al. (2019), which explains that a teacher needs to understand the various theories and the knowledge related to the material to be delivered in teaching and learning activities. Teachers should understand the idea of change and develop teaching and learning methods perfectly to ensure that changes are implemented successfully. Using a variety of teaching and learning strategies, students are encouraged to understand, discover, analyze and synthesize the issues or challenges (Krathwohl, 2002). To achieve learning goals, teachers play a very important role in guiding students to enhance their knowledge and skills. Therefore, the teacher must be able to understand and mastering knowledge in their area of expertise to effectively carry out teaching and learning tasks so that students get optimum benefits at the end of the teaching session.

5. Conclusions

The findings are expected to contribute to the preparation and performance of TVET teachers of Malaysia and Indonesia in particular. Additionally, it also can identify the teaching and learning strategies used by Malaysian and Indonesian TVET Teachers and can help to improve the status and quality of TVET. The findings can also be used to recommend the best vocational teaching and learning for both countries Malaysia and Indonesia because being a great TVET teacher requires a paragon of virtue, knowledge and skill. It requires expertise in both a vocational field and in vocational pedagogy. And this combination, in turn, requires TVET teachers to have a confident and expansive view of the full range of outcomes which their teaching can release from their students.

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