

Explore the Elements of Green Skills for Teaching and Learning T&L for Technical and Vocational Education Training (TVET)

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Abstract. *Green Skills could help individuals master the overall skills that could lead them to improve the quality of work to a well-established level. The previous and current education lacked the exposure of green skills either in theoretical or practical knowledge. Hence, this study aimed to explore the elements of green skills for teaching and learning (T&L) in technical and vocational education (TVET). This study used a qualitative study design. The researchers interviewed Three (3) lecturers who had expertise in the field of T&L and Construction Technology. The information interview protocol was implemented and thematic analysis was conducted. The data was analyzed using a matrix analysis method. A systematic literature review was used to obtain information equations. Besides, a total of Three (3) experts have verified the format and content of the items that have been identified. The study suggested that green skills elements in T&L to be extended in creating T&L guidelines for educators in the future.*

Key words: Elements of Green Skill, Teaching and Learning (T&L), and Technical and Vocational Education Training (TVET)

1. Introduction

The transformation of the Technical Vocational Education and Training (TVET) system around the world as well as in Asia is an important demand and a drastic change for various countries towards sustainable development. By maintaining quality in vocational, the teacher education plays an important role in producing sufficient human capital or supply of skilled workers in the future who could control the planning and implementation of the national development agenda (Awang, 2008) [1]. The professional profile of vocational teaching needs to be reviewed and consolidated to ensure that vocational teachers have competencies according to the required criteria. This is to meet the needs of the new era of the world and facilitate the educational process of vocational teachers towards more quality teaching.

Climate change, natural disasters and pollution are increasingly real and significant natural phenomena in addition to the increasing human need to use depleted natural resources more wisely, and the sustainability has created challenges and competition in various fields such as business, manufacturing, and construction (Hanifah et al. 2015; Noraziah & Latipah 2010) [2]. This has led to a high demand among the wider community and scientifically, these natural changes have disturbed the well-being of the people in Malaysia. According to studies conducted by the Ministry of Natural Resources and Environment, the impact of climate change in the future will be a challenge in efforts to maintain the sustainability of the country (Ministry of Natural Resources and Environment, 2010) [3].

Malaysia is currently going through a transformation in the era of education for better outcome. Education in Malaysia is currently in the process of being enhanced in line with other Asian countries. One of the aspirations in the Malaysian Education Development Plan introduced in 2013 is to develop a system that not only focuses on the normal academic path but also emphasizes the TVET path. TVET is an education system that provides specialized training for technical and other skills (Christopher et al., 2011) [4].

There are various TVET institutions that have been created by the government including Malaysia Technical University Network, Majlis Amanah Raya, Industrial Training Institute (ILP), Pusat LatihanNTeknologi Tinggi (ADTEC), Poly-Tech College, Nursing College, Vocational College (KV), and many more.

2. Background and Problem Statement

Dedicated TVET instructors will contribute in producing manpower resources in the related fields. Industrial waste, emissions from obsolete technology, and the use of fossil fuels caused many serious environmental problems. Thus, when the technical workers do not master new technologies and are unable to perform their duties in an environmentally friendly manner, they can contribute to environmental pollution and climate change (Nurul Hidayah et al., 2013) [5]. Therefore, training of highly skilled manpower with sufficient capacity and perception to protect the environment is essential. This goal cannot be achieved without qualified vocational teachers as the quality of vocational teachers directly affects the achievement of vocational students.

Nordin (2015) stated that most of the teaching staff in TVET institutions, especially lecturers in vocational colleges do not have the knowledge or do not understand more deeply about the elements of green skills and therefore, they do not include the elements of green skills and their T&L [6]. Summarizing the results of the initial study through interviews, researchers found that if green skill elements are not included and applied, there will be problems in the T&L process. It was found that most TVET Institutions especially Vocational Colleges lecturers do not practice the elements of green skills through their lectures in their T&L activities.

Therefore, it is important to develop elements of green skills for the use of lecturers, especially in the field of construction technology to overcome the problems discussed above. TVET institutions especially Vocational Colleges are seen as the best way to form a generation that is knowledgeable and has awareness of the elements of high green skills towards the environment. Therefore, it should be started by lecturers in all Vocational Colleges throughout Malaysia to fully understand the elements of TVET green skills and need to be practiced in their teaching and learning (T&L). The educational element of TVET green skills is the basis for creating TVET citizens in general. Meanwhile, the college vocational citizens are those who have the awareness of the environment to produce a more ethical Malaysian society. Providing knowledge will also increase awareness and concern (attitude) in turn will produce individuals who have more positive behavior towards the environment (Kollmuss and Agyeman, 2002) through T&L elements of green TVET skills by college vocational lecturers throughout Malaysia [7].

3. Methodology

Research methodology refers to the most appropriate method to conduct research and determines effective procedures for answering research questions. According to Mohamed (2001), a methodology is an approach used in research to collect data. Methodology is an important aspect of a study to obtain good research results and has high validity and reliability [8]. To obtain good data, the research method of the study must be perfect and follows its procedure to ensure that the findings of the study produced are truly guaranteed in terms of quality.

The first phase was the development phase of the green skills elements in T&L for vocational college lecturers. The instrument used was a set of interview protocols with 3 experts along with a literature review. According to NorsiahFauzan (2009), the interview method of the best collection methods for narrative data to achieve one of the objectives of the study and research questions [9]. This method was used to answer the first and second research questions which were to explore the green skills elements required by vocational college lecturers in the teaching and learning process (T&L) and analyze the suitability of green skills elements in the teaching and learning process (T&L) for vocational college lecturers. Query responses could be grouped by theme, topic or category. The qualitative approach was slightly different from the quantitative approach because the findings for the qualitative approach did not involve numerical data and was not analyzed statistically. Trochim, Donnelly and Arora (2015) stated that qualitative research was the study of questions or statements that often began with question sentences such as how what, and why [10]. Boyce & Neale (2006) said that interview was one of the qualitative research techniques that involved intensive interviews with a small number of respondents to explore their perspectives on a particular idea, program or situation [11].

4. Data Analysis

There were several techniques that could be used to obtain a sample that accurately represented the population. According to Yahaya et al. (2007), there are three methods of sampling namely whole population, random sampling and non-random sampling [12]. The sample involved consisted of two phases. The first phase involved a qualitative approach that used a sample of 3 experts who were University Tun Hussien Onn Malaysia in Faculty of Technical and vocational education senior lecturers. The sample was sufficient based on the opinion of Creswell (2014) who stated that the number between three to ten subjects was suitable as a sample for qualitative studies [13]. He also said that there was no specific number for the selection of study respondents for qualitative research and researchers were free to choose the number of subjects of their study. Table 1 shows the explanation on the method of the sample in this study.

Table 1: Method and Study Sample

First Phase	
Method	Qualitative
Sample	Experts (lecturer)
Size Sample	3 Person
Sampling Method	Sampling

For the first phase, the sampling method used was purposive sampling or purposeful sampling. This purposeful sampling method allowed the researcher to determine the appropriate respondents for the purpose of the study and select respondents who had certain criteria to be the study respondents based on the knowledge and specific purpose of the study.

5. Findings

The interview protocol was used by the researchers to explore the elements of green skills needed by the vocational college lecturers in the T&L process to strengthen the results of the study that had been conducted. This interview method consisted of three (3) parts, namely part A, part B and part C. The data from the interview was analyzed using thematic method to obtain the required green elements. However, some elements resulting from the comparison of those elements that were not needed were also included as attachments. Subsequently, the researcher obtained a preliminary picture of the green skills elements to be highlighted by using the code method as shown in table 2 below.

Table 2 : Preliminary Study Interview Code

No.	Code	No.	Code	No.	Code
1.	Master the knowledge of green skills	6.	Exercise to reduce gas emissions carbon dioxide	11.	Reuse, reduce, recycle and recover
2.	Make a green practice plan	7.	Good air circulation	12.	Relate the current situation to green practice
3.	Practice pure green values	8.	Hygiene practices	13.	Sharpen your mind to experiment
4.	The importance of caring for the environment	9.	Practice green practices as motivation	14.	Prioritize safety to prevent accidents
5.	Suggest recycling bins are provided	10.	Creative problem solving	15.	Responsibility for global issues

Table 2 :continued

No.	Code	No.	Code	No.	Code
16.	Reduce carbon consumption	23.	Save water consumption	30.	Run quizzes / assignments online or modern technology
17.	Positive pure value to the natural surroundings	24.	Encourage agreement environmental care	31.	Use used paper for any assignment
18.	Use ABBM that saves energy	25.	Use green educational technology to replace old methods	32.	Assignment or pop quiz in green context
19.	Reduce ABBM which is not environmentally friendly	26.	Avoid using substances that may be harmful to health	33.	Technical visit to the industry gain real experience
20.	Monitor every practice so that the environment is not polluted	27.	All electrical switches are turned off when not in use	34.	Green programs and campaigns form positive personalities and skills
21.	Reuse used waste to avoid wastage	28.	Conclude reflections towards development	35.	Train students to relate green practices in T&L
22.	Dispose of practical waste in the right place	29.	Each assignment is accompanied by a green instruction	36.	The assessment includes three elements of the bloom taxonomy in a green context

Conclusion

The original purpose of the study was to develop the green skills element for lecturers in the teaching and learning (T&L) process in Vocational Colleges. The interview technique was used by several researchers in technical and vocational fields or TVET in developing a study. Thus, it was proven that this calculation technique was appropriate and relevant to be applied in a qualitative study. In conclusion, this calculation was agreed by the experts who were experienced in the field studied by the researchers.

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