EDUCATION FOR SUSTAINABLE DEVELOPMENT PRACTICES AMONG POLYTECHNICS IN MALAYSIA

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ABSTRACT

This research was carried out to: a) investigate the extent to which polytechnics in Malaysia are committed to ESD; b) assess the extent to which polytechnics in Malaysia are including ESD in curriculum, research and scholarship, operations, faculty and staff development and rewards, outreach and service, student opportunities, and institutional mission and planning; and, c) assess the degree of implementation of sustainable development principles in polytechnics' programs and operations.

This study focused on Education for Sustainable Development (ESD) practices among polytechnics in Malaysia. Assessment on ESD was made on seven dimensions of sustainability in Higher Education Institutions (HEIs). Research finding shows that polytechnics in Malaysia are still not fully committed to ESD. The inclusion of sustainability in polytechnics curriculum is still in its initial stage. Sustainability is only incorporated on programs/courses that are directly related to sustainability such as: Civil Engineering; Mechanical Engineering, and Hospitality and Tourism. The participation of faculty, staff and students in research and scholarship in sustainability areas are not notable. In the area of operations, polytechnics do not have high commitment to sustainability. Faculty and staff in polytechnics are not being given the opportunities to enhance their understanding, research and teaching in sustainability. Polytechnics' involvements in sustainability related issues are low, and there is no student group directly involved in sustainability initiatives. However, the polytechnics' commitment to promote SD at the institutional mission level can be seen with the existence of positions and committees related to sustainability in the institutions.

Field of Research: *technical and vocational education, higher education, Education for Sustainable Development, sustainability.*

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1. INTRODUCTION

TVET in Malaysia could be traced back to the late 1890's when trade schools were considered to prepare local youth to work as mechanics and filters on the national railways (Pang, 2011). Since then, TVET system in Malaysia has progressively developed into three different streams, namely (i) higher education – which includes both public and private universities and other institutions of higher learning; producing professional and managerial personnel such as engineers, architects and surveyors, (ii) technical and vocational education – including polytechnics, technical colleges and community colleges, responsibility of which is to prepare supervisory personnel such as technical

assistants and supervisors; and (iii) skills training – including all skills training institutions public and private, and they are responsible in producing skilled and semi-skilled workers (Ahmad, 2003; Pang, 2011).

Until few years ago, the role of TVET used to be only to provide skills training and producing competitive human capital. However, according to Knaak (2010) TVET is now holding a new responsibility, which is to educate its learners about the environmental consequences of their production and consumption practices in TVET, the workplace and beyond. He further explained that being a dynamic concept and phenomena, TVET could help people to adapt and cope with their environments as individuals and as part of social and economic organizations in the most practical ways. Thus, this new role of TVET can be done through Education for Sustainable Development (ESD) because as a major supplier of workforce, TVET will be in the forefront in dealing directly with sustainability issues.

Studies about Education for Sustainable Development in Higher Education have been done in developed countries like Russia, USA, United Kingdom, Sweden and Germany for years. However, studies of this type are limited in developing countries. Anis and Noraini (2009) claimed that there has been an increasing recognition of the role of universities about Sustainable Education in HEIs in Malaysia. Unfortunately, there has been no recorded study to determine the implementation or integration of ESD in Malaysian polytechnics. It is therefore of prime importance to determine how far ESD is being implemented in Malaysian TVET system, especially in polytechnics.

2. RESEARCH METHODOLOGY

The study followed the rigors of quantitative-qualitative cross-sectional research design. The quantitative data was collected using a Likert- type ordinal scale, some nominal and binary questions, and then analyzed using the descriptive statistics using the SPSS software. As for the qualitative data, after it was compiled by SAQ item, the data was then manually analyzed by using thematic content analysis. In this study, the open-ended questions represent the qualitative aspect of the research.

During the data collection process, a three-stage process was adopted to administer the survey and to follow up in order to ensure a high response rate in data collection (Salan & Dillman, 1994; Garcia, 2010). An appropriate number of questionnaires were sent to the campus representative with return envelope. Using *docs.google.com*, two sets of online questionnaires – both Malay and English version of SAQ, were created to make it easier for the respondents to participate in the survey. Then, links of the online questionnaires were sent to the campus representatives and asked them to forward it to the respondents in their polytechnic. Self-administered survey was also one of the methods that were used in collecting data. It was done in the southern region of Peninsular Malaysia. An appropriate number of questionnaires were manually distributed to the lecturers of polytechnic and at the same day, the questionnaires were collected back from the lecturers.

Respondents of this study were lecturers of polytechnics in Malaysia. The job scopes of polytechnic lecturers are not only teaching, but also include clerical duties, managing, doing research and other common duties of lecturers (Nasir A.R 2002).

Until 2012, there are 30 polytechnics in Malaysia listed under the Ministry of Higher Education. However only 20 polytechnics were chosen based on the maturity level of the organization. Simon J.

(2001) stated that for an organization to enter the maturity level, it would take about 7 to 30 years. Thus, this study focused on polytechnics that have been established for more than 7 years.

Simple random sampling with proportional allocation was used to select the respondents for this study. Using the sample size formula published by the National Education Association (Krejcie & Morgan, 1970) 361 lecturers were drawn from the 20 polytechnics. Then, using the simple random sampling method, samples from each polytechnic were selected.

3.0 LITERATURE REVIEW

3.1 TVET and Sustainable Development

TVET is an effective education and training system that provide skills training and produce competitive human capital worldwide. As TVET is the major suppliers of workforce for the industries, it plays a significant role in implementing and promoting sustainable development.

In achieving the goals of sustainable development, TVET can be a leading education and training by creating awareness and promoting sustainable development in its daily practices. Sustainable development consists of three pillars: economic, socio-cultural, and environmental (Garcia, 2010).

3.2 Higher Educations and Sustainable Development

HEIs bear a profound moral responsibility to increase the awareness, knowledge, skills and values needed to create a just and sustainable future. These institutions have mandate and potential to develop the intellectual and conceptual framework for achieving this goal. They must play a strong role in education, research, policy development, information exchange and community outreach and support (Cortese, 1992; Corcoran & Wals, 2004).

In Tbilisi Declaration, universities were asked to consider the development of environmental programs, engage faculty and staff in the development of environmental awareness, provide specialist training, engage in international and regional co-operative projects, and inform and educate the public regarding environmental issues (Wright, 2004). The same point was also pointed out by UNESCO-UNEP (1977, p.33), where they emphasized that universities, as centre for research, teaching and training of qualified personnel for the nation must be increasingly available to undertake research concerning environmental education and to train experts in formal and non-formal education…environmental education in colleges and universities will become increasingly different from traditional education and will teach students essential basic knowledge for work in their future profession, which will benefit their environment"

3.3 The Concept of Sustainable Development

In the Brundtland Report 1987, Sustainable Development was defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It was also stated that SD contains two concepts: (i) the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and (ii) the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

Wright (2004) wrote that since the introduction of Sustainability in Higher Education (SHE) by the United Nations UNESCO-UNEP International Environmental Education Program in 1978, a number of

national and international declarations directly relating to environmental sustainability in higher education have been developed. Those declarations are including Talloires Declaration (1990), Halifax Declaration (1991), Kyoto Declaration (1993), Swansea Declaration (1993), CRE COPRNICUS Charter (1994), Declaration of Thessaloniki (1997), and Luneburg Declaration (2000).

It was reported that in developing countries the essential needs of people for food, clothing, shelter and jobs are not yet being met, and beyond their basic needs these people have the legitimate aspiration for an improved quality of life. Sustainable development requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspiration for a better life. To meet the essential needs in developing countries, it requires economic growth, because economic growth and development obviously involve changes in the physical ecosystem (Chapter 2, Brundtland Report, 1987).

4.0 THEORETICAL FRAMEWORK

4.1 The Earth Charter

The Earth Charter is a declaration on global interdependence and universal responsibility that sets forth fundamental principles for building a just, sustainable and peaceful world. There are 16 principles listed under the Earth Charter and the following seven principles were used to guide this research:

- *Principle 3* – build democratic societies that are just, participatory, sustainable and peaceful; which include promote social and economic justice enabling all to achieve a secure and meaningful livelihood that is ecologically responsible.

- *Principle 4* – Secure Earth's bounty and beauty for present and future generations

- *Principle 9* – protect and restore the integrity of Earth's ecological systems, with special concern for biological diversity and the natural processes that sustain life.

- *Principle 10* – Prevent harm as the best method of environmental protection and when knowledge is limited, apply a precautionary approach; this include ensure that decision making addresses the cumulative, long-term, indirect, long distance, and global consequences of human activities.

- *Principles 11*- Adopt patterns of production, consumption, and reproduction that safeguard Earth's regenerative capacities, human rights, and community well-being; this include reduce, reuse and recycle the materials used in reproduction and consumption systems, and ensure that residual waste can be assimilated by ecological systems.

- *Principle 12*- Advance the study of ecological sustainability and promote the open exchange and wide application of the knowledge acquired; this include support international scientific and technical cooperation on sustainability, with special attention to the needs of developing nations.

- *Principle 14*- Integrate into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life; this include provide all, especially children and

youth, with educational opportunities that empower them to contribute actively to sustainable development.

5.0 CONCEPTUAL FRAMEWORK

Figure 2 presents the conceptual framework of the study. The conception of the framework departs from the traditional process of framework development whereby variables and the proposed relationship(s) between variables are presented. As this research is descriptive-exploratory in nature, the conceptual framework does not propose cause and effect relationship but it rather presents the seven dimensions of sustainability in HEI and the probable contribution of these dimensions to the attainment of the Education for Sustainable Development goals and objectives.

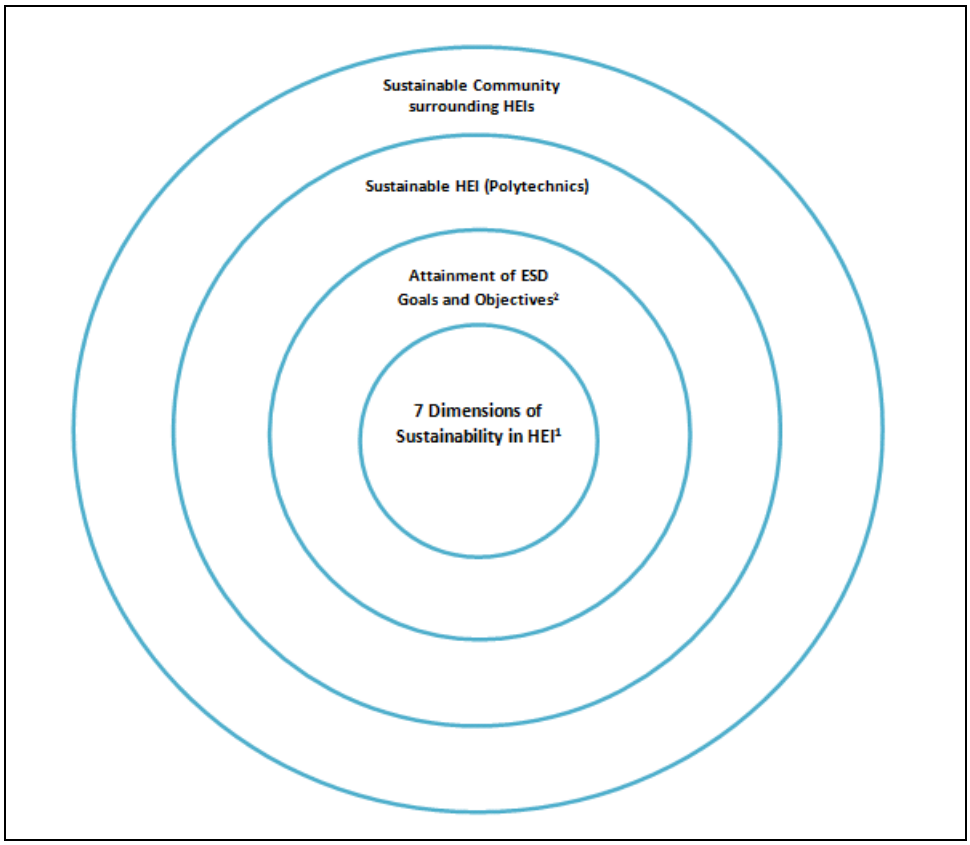

Figure 2: Conceptual framework of the study

[1]**The seven dimensions of Sustainability in HEI:** a) Curriculum; b) Research & Scholarship; c) Operation; d) Faculty and Staff Hiring, Development & Rewards; e) Outreach & Service Student Opportunities; and f) Institutional Mission, Structure & Planning.

[2]**ESD Goals and Objectives:** a) Create awareness of ESD; b) Promote actions or plans consistent with UNESCO-DESD sustainability framework; and c) Integrating principles, values and practices of sustainability in all aspects (e.g., curriculum, research, etc.)

6.0 FINDINGS AND DISCUSSION

6.1 Curriculum

The results of the study indicate that polytechnics in Malaysia barely addressed the topic of ESD in their curriculum. This further affirms McKeown's (2002) observation regarding structuring and placing ESD in the curriculum. She pointed out that in some communities, ESD will be ignored and in others, it will be barely addressed. Although they are trying to teach their students about the basic values and core assumptions that shape the content and methods of the academic disciplines, it is still not enough.

Result of the study also revealed that sustainability is not a cross-cutting theme in the polytechnics' academic program and initiatives. The incorporation of sustainability occurs only on select courses like civil engineering; manufacturing system; tourism management; catering; event management; food service (Halal practice), and; sustainable tourism and recreation tourism. There is no indication that those departments that are not offering courses related to sustainability will embed the sustainability concepts in their existing courses.

These findings show that curriculum in polytechnics are not supporting the objective of *Agenda 21* in reorienting education towards sustainable development, which is: *To promote integration of environment and development concepts, including demography, in all educational programs* (Earth Summit, Rio Declaration, 1992).

6.2 Research and Scholarship

Research and scholarship in sustainability areas are not so popular in polytechnics in Malaysia. The results show that there are no research being done by staff and students in the area of sustainability. Results also revealed that only few faculty members teach sustainability. Based on the comments given by the respondents, this may be due to lack of knowledge in sustainability area, lack of resources and lack of institutional support.

In *Agenda 21*, Chapter 36, it was stated that countries, assisted by international organization, non-governmental organization and other sectors should strengthen or establish national or regional centers of excellence in interdisciplinary research and education in environmental and developmental sciences, law and the management of specific environmental problems. Unfortunately, result shows that there are no institute or centre for research, education and policy development on sustainability issues in most polytechnics in Malaysia.

6.3 Operations

In the Brundtland report-Our Common Future; it was stated that sustainable development requires that the adverse impacts on the quality of air, water and other natural elements are minimized so as to sustain the ecosystem's overall integrity. Based on the findings, polytechnics in Malaysia are not implementing water conservation; green purchasing; green building construction; renovation practices and other major 'green' practices in their institutions.

Fortunately, sustainability practices such as recycling of solid wastes and energy conservation are still being implemented in polytechnics although falling short of the Earth Charter's principle of

reduce, reuse and recycle the materials used in production and consumptions systems. As for energy conservation practices (e.g., electric fan, lights and air conditioner will be switched off when not in use) polytechnics may consider to exert more effort. For air conditioner, some may set it on timer, and others may limit the usage; for example they can only switch it on during hot weather, or setting a time limit like switch it on at 8.00 a.m. and it must be switched off at 3.30 p.m. All lights also may be switched off during lunchtime from 1.00 p.m. until 2.00 p.m.

6.4 Faculty and Staff Development and Rewards

In Agenda 21, chapter 36, one of the objectives in reorienting education towards sustainable development is to achieve environmental and development awareness in all sectors of society on a worldwide scale as soon as possible. Unfortunately, results revealed that polytechnics in Malaysia have no efforts in promoting sustainable development among its staff. This finding shows that the objectives of polytechnics in SD are not in sync with the objectives of Agenda 21 in SD.

The research findings also show that faculty members are not being given the opportunities to enhance their understanding, research and teaching in sustainability. This is completely the opposite of the declaration made by UNESCO (1989) which stated that: Persons teaching in technical and vocational educational should be provided with information on and training in educational innovations that may have applications in their particular discipline and be given the opportunity to participate in relevant research and development.

6.5 Outreach and Service

Getting involved in programs and projects that contribute to sustainable development is one of many ways that can be used by universities and colleges to connect with their surrounding communities and beyond (Calder & Clugston, 2003). However, based on the study, polytechnics in Malaysia are not contributing much on issues related to ESD in its local area and the surrounding region.

The polytechnics level of involvements in sustainable community work at local, regional, national or international levels are still not enough to support the objective of Agenda 21 which is: To establish or strengthen vocational training programs that meet the needs of environment and development with ensured access to training opportunities. This objective can only be achieved if polytechnics create strong partnership with schools, and start a good relationship with local governments and businesses, or with international organizations.

6.6 Student Opportunities

The findings of this study show that there are several organizations for student opportunities in SD initiatives that exist in polytechnics in Malaysia. Student groups with an environmental or sustainability focus and student environment centre, with orientation programs on sustainability are the student organizations that exist in most polytechnics.

Agenda 21 has proposed activities that will help students to get involve in SD initiatives at their institutions. According to Agenda 21 relevant authorities should ensure that every school is assisted

in designing environmental activity work plans with the participation of students and staff. Based on the findings, results show that although organizations for students exist in polytechnics, there are no records of student group directly involved in sustainability initiatives.

6.7 Institutional Mission, Structure and Planning

An institution's mission statement expresses its fundamental vision and commitment (Calder & Clugston, 2003). It was noted that despite the lack of formal written statements describing the purposes and objectives of institution reflecting a commitment to sustainability, sustainable development positions like Head of Environmental Programs or Head of Sustainability Programs, Environmental Coordinator and Environmental council do exist in a number of polytechnics. If the mission statement however doesn't reflect its commitment to sustainability, the sustainability committees will have to work hard to promote ESD to the other members of polytechnics.

7.0 CONCLUSION AND RECOMMENDATIONS

Based on the results of the study, the following conclusions can be drawn:

a. There is very little indication that the seven ESD dimensions are being operationalised in the polytechnics under study.

b. Research on ESD is given very little attention; the respondents reported that there are no ESD research being pursued by the lecturer and the students.

c. Sustainability practices (i.e., go green campaign, implementation of the 3R practices) are still in its infancy stage.

d. There is no indication that polytechnics are trying to promote sustainable development among faculty and staff, through staff activities, recognition, research and development.

e. Polytechnics' involvements on issues related to ESD in its local area and the surrounding region through partnership with schools, relationships with local governments and business or with international organizations are wanting.

f. The polytechnics are providing very little opportunities to students to participate in sustainable development (SD) initiatives.

g. There are no formal written statements describing the purposes and objectives of institution reflecting a commitment to sustainability.

The following recommendations derived from the conclusions and implications of this study are addressed to the Polytechnic Education Department, the polytechnics and the lecturers.

a. Polytechnic Education Department

Polytechnic Education Department (PDE) should organize fora (e.g. seminar workshop, or conference) on Education for Sustainable Development. The activities could focus on integrating ESD in the curriculum, implementing SD programs within and outside the polytechnics, etc. The PDE may also consider collaborating with Universities with extensive experience in this field.

b. Polytechnics

Polytechnics should provide courses or training programs related to sustainability as one way to increase sustainability awareness among its staff and students. Polytechnics also should support and encourage staff and students to do more research in sustainability areas. Courses related to sustainability should be offered more in polytechnics. They should embark more actively in pursuing research on ESD and related fields and results of these researches be used to further enhance the integration of ESD in their curriculum and other programs. It may also be worthwhile for the polytechnics to set-up mechanism to reward or recognise those staff who contributes to the institution's ESD efforts. Another area that the polytechnics need to attend to is the promoting sustainable development practices in the industries and communities around their institution.

c. **Lecturers**

Lecturers should participate in sustainability activities related to programs and operations of their institution, faculty or department. Lecturers also should try to embed sustainability concepts in their teaching, research activities and other academic and nonacademic activities where appropriate.

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