International Journal of Learning and Teaching

Volume 09, Issue 2, (2017) 298-304

www.ij-lt.eu

Engaging head, heart and hands: Holistic learning approach for education for sustainable development

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Suggested Citation

Mahmud, S. N. D. (2017). Engaging head, heart and hands: Holistic learning approach for education for sustainable development. *International Journal of Learning and Teaching*. *9*(2), 298-304.

Received November 28, 2016; revised February 21, 2017; accepted April 14, 2017.
Selection and peer review under responsibility of Prof. Dr. Hafize Keser, Ankara University, Ankara, Turkey.

Abstract

Sustainable development requires simultaneous and balanced progress in four dimensions i.e; social, economic, ecological and political, those are totally interdependent. Sustainability issues often regarded as complex and difficult to be understood through single discipline. Therefore education for sustainability learning requires integration of various teaching and learning approaches. With this concern in mind, the purpose of this paper is to discuss the holistic learning approach which engaging the head, heart and hands, for Education for Sustainable Development in one higher education institutions in Malaysia. By using the multiple case study design, three sustainability related courses which are from various disciplines was selected as cases. The findings from the semi-structured interview with the lecturers, focus group with students, class observations and course outline analysis showed the unifying framework of head, heart and hands learning and teaching approach. This unifying learning approaches that engage and develops the 'whole person': affective, cognitive and practical dimensions and abilities, and in relation to 'real-world' issues and concerns, seems provide better opportunity for learning for education for sustainability.

Keywords: Education for sustainable development, higher education, transformative learning, systemic learning.

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1. Introduction

In 2002, the United Nations (UN) declared the period from 2005 to 2014 as the Decade of Education for Sustainable Development (DESD). The aims of education for sustainable development (ESD) are to help people to "develop the attitudes, skills, and knowledge to make informed decisions for the benefit of themselves and others, now and in the future, and to act upon these decisions" (UNESCO, 2012). Other studies (Rowe, 2002; Sterling & Thomas, 2006; Sipos, Battisti & Grimm, 2008; Segalàs, Ferrer-Balas, Svanström, Lundqvist & Mulder, 2009; Wiek, Withycombe & Redman, 2011) have suggested that education for sustainable development goals are to generate students' competence in critical thinking, systemic thinking, ability to work within trans-disciplinary frameworks and to develop values consistent with the sustainability paradigms.

According to UNESCO (2012) sustainable development requires simultaneous and balanced progress in four dimensions (social, economic, ecological and political) that are totally interdependent. Sustainability issues often regarded as complex and difficult to be understood through single discipline. Therefore education for sustainability learning, requires integration of various teaching and learning approaches.

2. Head, hands and heart approach

In line with UNESCO argued of sustainability requires simultaneous and balances progress in four dimensional, Sterling (2012) claimed sustainability issues are often characterized by complexity and uncertainty and cannot be understood adequately through single disciplines, although each has a contribution to make. Therefore, from the system thinking perspective, sustainability requires learning that engages and develops the 'whole person': affective, cognitive and practical dimensions and abilities, and in relation to 'real-world' issues and concerns (Sipos Battisti & Grimm, 2008; Sterling, 2012). Sipos et al. (2008) developed a framework of transformative sustainability learning. The framework is a series of learning objectives corresponding to cognitive (head), psychomotor (hands) and affective (heart) domains of learning that facilitate personal experience for participants resulting in profound changes in knowledge, skills and attitudes related to enhancing ecological, social and economic justice. The transformative sustainability learning framework contributes to the broad fields of sustainability education by articulating the relationship of these pedagogies to each other and to the organizing principle of head, hands and heart. The 'whole person' approach also supported by Zohar and Marshall (2000) and Sterling (2012), they argued thinking not only involve with heads, but also with emotions and bodies (emotional intelligence), and with spirits, visions, hopes, and sense of meaning and value (spiritual intelligence).

3. Method

With the concern of sustainability learning requires the engagement of head, heart and hands, this paper explore the various pedagogical approaches which the lecturers and students perceived as providing better opportunities to learn ESD in higher education institution. Using the multiple case study design, this paper explores the pedagogical approaches for Education for Sustainable Development (ESD) at Universiti Kebangsaan Malaysia (UKM).

Case-study methodology is a common and appropriate research tool used in studies of sustainability in higher education (Corcoran, Walker & Wals, 2004). Case studies allow a researcher to reveal the multiplicity of factors which have interacted to produce the unique character of the entity that is the subject of study (Yin, 2009). With regard to the specific intent and purpose of this, inclusion criteria were developed for purposive selection of case study programs and courses. The inclusion criteria used for the purposeful sampling within this study is as follows:

- The courses selected have sustainability related learning outcomes. The justification is: the selected courses provide rich data relating EfS and the participants selected have significant amount of knowledge about sustainability.
- The selected courses come from diverse disciplines (i.e: Conservation biology, environmental philosophy, Sustainability science). The justification is to explore diverse pedagogical approach from different discipline participants.

Due to the flexible perspectives on case-study design within the research literature, there are a plethora of procedures and protocols available for conducting case-studies (Yin, 2009). The use of such a variety of strategies in this study (i.e; semi structured interview, focus group interview and observation) contributes to the trustworthiness of the data and this practice of utilizing multiple methods is termed triangulation. In this study, the semi-structured interviews consist of open-ended questions that were developed by the researcher to gather the data from the participants (lecturers). The interview guide was being used to provide a questioning scaffold for each lecturer selected within this study and the guide was given to each participant prior to the face-to-face interviews. The interview questions have been designed to gather information what pedagogical approach they perceive as providing better opportunities for learning sustainability in the higher education context. While for the focus group interview, five to eight students from corresponding courses was being volunteered as participant. The focus group guide in this study is a series of questions and prompts for the researcher who will act as the facilitator. Another method of data collection applied in this study is classroom observation. This method provides the researcher with a deeper understanding of interactions between lecturers and students in a real classroom setting. Observations are a valuable source of data because the process occurs in natural settings and they provide first-hand accounts of events rather than second-hand testimonies collected via interviews (Merriam, 1998; Miles & Huberman, 1994; Yin, 2009).

In this study the data analysis occurred concurrently with data collection. The recordings of the interviews were listened to several times and the transcribing process was done using the Microsoft word software. The interview transcripts were re-read while listening to the interview recording. After finished transcribing the interviews and focus group interviews, the coding process begins. Deductive coding was utilized in the coding process. Data analysis begins with the development of initial coding. The initial coding was derived from the previous research on ESD. The researcher read through the interview transcripts, observations forms and field notes and highlighted the meaningful text and assigned the codes to the text using the predetermined initial coding. Any meaningful text, which is not in the initial coding list were given new codes. The Atlas.ti software was being used for the coding process. Occurring alongside the coding process, the data was revisited to examine the ways the codes can be linked. Significant segments of transcripts interviews and observations notes were identified as units of data, which were then repeatedly compared with other units until tentative categories began to emerge, and the comparative process continued with the categories until they reached a satisfactory development that fit the purpose of the study.

4. Results and Discussion

The data from the interviews with lecturers, focus groups with students, the class observation and document analysis, showed unifying framework of various sustainability learning and teaching approaches in higher education institution across the disciplines. The learning and teaching approaches emerges from the data are experiential learning, place-based learning, outdoor learning, reflection learning approach and cognitive engagement (shown in figure 1).

The main finding in this study showed that the learning and teaching for ESD in higher education institution required the integration of cognitive (head), affective (heart) and psychomotor (hands) approaches. One of the study participants, Marina, she emphasises the engagement of head, heart and hands in ESD learning and teaching. As she mentioned in the interview:

> From my experience, students need to use all their sense. If you give one way lecture, you fail. If you teach and use all the senses of student, then its different outcome you get. First, need to make sure what student can see. 80% is from what they see. You have to bring students out from class. Even for something simple. Student need to see, hear, touch and feel. Whatever pedagogies that you adopt, you need to make sure students use all these senses. You can adopt many thing such as problem based learning, small projects, seminar, experiential learning, service learning, as long as it utilise all the senses. (Marina, interview, September 2014).

The engagement of head, heart and hands learning approach provide holistic learning experience for the students. As mentioned in previous study on ESD learning, thinking not only involve with heads, but also with emotions and bodies and with spirits, visions, hopes, and sense of meaning and value (Tillbury, 1997; Shephard, 2008; Warburton, 2003; Zohar & Marshall, 2000; Sterling, 2012). Therefore it is important to stress on the integration of head, heart and hands engagement in learning and teaching sustainability.

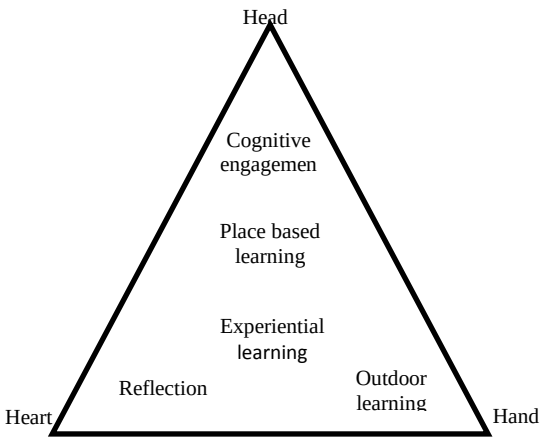

Figure 1. Learning and teaching approaches emerge from data

The unifying framework of engaging head, heart and hands learning approach in this study provide the overarching basis for pedagogical approach for ESD. One of the pedagogical approach that able engage the learner head, heart and hands is the experiential learning. Experiential learning including elements such as field-based coursework, internships, service learning, guest speakers, site visits, and etc. are growing in popularity among this study's participants. Experiential learning provide profoundly more enriching experiences than the purely lecture-based approach, as this study participants mentioned in the interview:

> From my experience, I think the easiest way is to show by experience so that we can take it back and do it on our own. Because, sometimes when we don't apply giving them lesson of practical, the theory only is not enough for the people to do sustainability thing. (Wawa, interview, September 2014).

> These are the things that to see is believing. I strongly believe that theory must go hand in hand with hands on and do it yourself. This is how you understand. (Mariah, interview, September 2014).

Another pedagogical approach relevant with head, heart and hands engagement is place-based approach. Most of the participants talked about place-based learning and how it can be implemented in learning and teaching sustainability. Place based learning is learning and teaching approach which engages learners through the positioning of a curriculum within the context of students own lives, communities and regions, thereby taking advantage of students and communities natural interest in the local (Smith, 2002). One of the participants, Lina mentioned how she applied place-based learning in her teaching sustainability courses:

> We can also embed the concept of environment in the learning process. For example by giving task based on places or place based or evaluation on the surrounding area. For example, recently we constructed the student to do the case study in Kuala Lumpur area based on Kuala Lumpur structure by looking at the sustainable aspect, whether this concept of sustainable has been embedded in provision of housing, the economic growth, and facilities and so on. So that is one of the idea to do case study based, or place based. (Lina, interview, October 2014).

Focus group interviews with students in the selected courses also find out, place based learning as one of learning approach student favour for ESD. Arman one of the student in focus group interview mentioned:

> University need to provide the education park. Like we have now, the fern park in front of the faculty building. Instead of listening to the lectures, with doing project at the fern park is more practical and I can understand more. (Arman, focus-group interview, September 2014).

This study's participants also perceived outdoor learning as one of the learning and teaching approach appropriate for ESD. Multiple claims have been made about the impact of outdoor learning over the years, including: personal and social development, leadership, group bonding, acquiring adventure skills, and aspects of environmental care (Hill, 2012). Mariah raised out the importance of outdoor learning for students. Science student must go to the field. Not just the lab. The lab is the one, but the field is another one. Because when you go into the lab, you are doing environmental sample. So you must understand how does those sample are collected. (Mariah, interview, September 2014). Students participants in this study also argued about how the outdoor learning provide the authentic learning experience for them. When we going out from the class, we can understand and appreciate more.

Because in the lecture room we can't imagine it. We can see it and feel it if we going out from the classroom (Aina, focus group interview, September 2014). The outdoor learning and place-based learning was coupled with the reflection approach by the study participant as teaching method in her course.

One of the ideas is to do case study based, or place based, and then try to do some reflection with the students, reflection on the nature and environment effect. (Lina, interview, September 2014).

For a conclusion the learning that engage and develops the 'whole person': affective, cognitive and practical dimensions and abilities, and in relation to 'real-world' issues and concerns seems provide better opportunity for learning for education for sustainability. This framework of engaging head, heart and hands is able to provide the overarching concept and pedagogical approach consideration for ESD in higher education institution.

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