



# Environmental Education and Sustainability in Mataneedol School: A Case Study of “Turning the School Kitchen Waste into the Healthy Soil and Safety Food” Project

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**Abstract** Environmental education and sustainability practices in schools have been emerging as an important trend in 21st century education as the Decade of Education for Sustainable Development (DESD) launched by the United Nations. Mataneedol School is a unique school in a beautifully landscaped setting and environmental friendly located in Khon Kaen city, Northeast of Thailand. Mataneedol School is a pioneering school where the students and teachers from all over the world can learn and thrive together. The aim of this study was to conduct the environmental education through practices of ESD in order to enable the children to grow in an environment that helps imbibe awareness, sensitivity and the necessary skills to be environmentally responsible citizens of mother earth. The objective of this project was to study the benefits of the project on “Turning the school kitchen waste into the healthy soil and produce the safety food” toward the attitude of students. The student project on school waste management has been conducted. The 3 R (reuse, recycle and reduce) has been taught. Plant biodiversity has been monitored by students. Workshop on vermicompost was conducted by student council president. In the process, students learn that food waste is not totally useless, but can be used as organic fertilizers for plants. Students help to separate and record how much the school waste produced per day. We become more aware about re-using waste and saving the earth. The children are able to participate in activities that help to protect the environment, such as sorting of waste, making vermicompost and use the vermicompost as a biofertilizer for the school's garden. As they take part in these daily activities, the children understand better how to actively protect the environment and get the safe food for them. They learn a scientific thinking through the experiment on their environmental project. The Schools programme encourages young children to take actions to protect their environment and to be the change for sustainability.

**Keywords** green school, education for sustainable development (ESD), active learning, agriculture

## INTRODUCTION

Environmental education and sustainability practices in schools have been emerging as an important trend in 21st century education as the Decade of Education for Sustainable Development (DESD) launched by the United Nations. Environmental Education for Sustainable Development (EESD) is as an essential tool to change student's commitment, motivation, stewardship, behaviour and attitudes (UNESCO, 2009). To achieve the goals EESD, the active learning approach is widely recommended by several researchers. Further research demonstrated that when students are involved in active learning process, retention of knowledge is significantly increased (Henderson and Tilbury, 2004), there is enhanced motivation and higher-order learning and development of

practical skills (Lipscomb, 2014). Learning through experiences has both process and outcome dimensions, with basic content mastery integrated with opportunities to manage complex projects, apply critical thinking, and develop skills in inquiry that have applications beyond the classroom (Kemp, 2016).

Active learning has become an important issue for student learning. Mataneedol School, which is located in Khon Kaen, Thailand combines the use of British and American Curriculums and takes the approach that active learning should also be a fun experience for its students. Mataneedol School is a unique school in a beautifully landscaped setting and environmental friendly located in Khon Kaen city, Northeast of Thailand. Mataneedol School is a pioneering school where the students and teachers from all over the world can learn and thrive together. Active teaching learning methods involve students in the learning process such as discussions, writing, asking and answering questions and engaging in their own learning. These activities in turn require students to use critical thinking skills such as analysis and evaluation.

## **OBJECTIVES**

The aim of this study was to conduct the environmental education through practices of ESD in order to enable the children to grow in an environment that helps imbibe awareness, sensitivity and the necessary skills to be environmentally responsible citizens via the project on “Turning the school kitchen waste into the healthy soil and produce the safety food”.

## **METHODOLOGY**

Active Learning of Environmental Education through “Turning the school kitchen waste into the healthy soil and safety food Project of Grade 1-6 students was conducted. This project came from the student’s committee lead by student council president. This approach includes students in meaningful leadership roles in making the school more environmentally sustainable.

The methodology was a case study; the target audience were Grade 1-6: 80 students from Mataneedol School who are in their second semester of 2017 (Purposive Sampling). Research instruments used were workshop, lesson plans, participatory observation, interviews, and student’s tasks assessments. Data were analyzed using Qualitative interpretation.

### **Research Design**

This research uses a case study design on “Turning the school kitchen waste into the healthy soil and safety food” Project.

## **RESULTS AND DISCUSSION**

The student project on school waste management has been conducted. The 3 R (reuse, recycle and reduce) has been taught. Plant biodiversity has been monitored by students. The project on “Turning the school kitchen waste into the healthy soil and produce the safety food” was success case. Workshop on vermicompost was conducted by student council president. In the process, students learn that food waste is not totally useless, but can be used as organic fertilizers for plants. Student helps to separate and record how much the school waste produced per day. We become more aware about re-using waste and saving the earth. The children are able to participate in activities that help to protect the environment, such as sorting of waste, making vermicompost and use the vermicompost as a biofertilizer for the school's garden. As they take part in these daily activities, the children understand better how to actively protect the environment and get the safe food for them. They learn a scientific thinking through the experiment on their environmental project.

Results found that workshop on vermicomposting that conducted by student council president is a good way to educate students about data collection, scientific observation, decomposition, nutrient cycles, natural biological systems and waste management. It also offers an opportunity for them to learn a practical way that they, as individuals, can make a positive impact on the environment. It is opportunities to integrate math and science in school. Added food could be weighed and recorded. The time that it takes for individual food items to decompose can be observed, as earthworm food preferences. Student could will also see earthworms at different stages of their life cycle. Students leant about the important role that this type of worm plays in natural systems. When vermicompost was finished, student used vermicompost in plant growth experiments. Students enjoy their science experiment to compare the growth of vegetable compared the treatment with and without vermicompost. Student learn how important on nutrients and they could produce the healthy vegetable and use for their school lunch. These activities promote knowledge retention and make active learning a thoroughly enjoyable experience.

Active learning in the school gardens could an inculcate scientific outlook food behaviour, positive social and environmental attitudes/behaviours (Blair, 2009). Place-based approaches in environmental education are valuable for several reasons. These approaches provide students with opportunities for learning in real situations. School garden's practice is one component of active environmental education advantageous for learning in the biosciences. Active learning methods involve students in the learning process such as discussions, writing, asking and answering questions and engaging in their own learning. These activities in turn require students to use critical thinking skills such as analysis and evaluation (UNECE, 2012). The goal of knowledge processing is that the learner can elaborate on applications of knowledge and student may also produce new knowledge using cognitive processes, rather than being a passive listener

## **CONCLUSION**

It may be concluded that the active teaching learning approach is more effective in facilitating environmental education for sustainable development among school children. Students become more aware about re-using waste and saving the earth. The students are able to participate in activities that help to protect the environment, such as sorting of waste, making vermicompost and use the vermicompost as a biofertilizer for the school's garden. As they take part in these daily activities, the children understand better how to actively protect the environment and get the safe food for them. They learn a scientific thinking through the experiment on their environmental project. The active learning encourages young children to take actions to protect their environment and to be the change for sustainability. It starts in the classroom, expands to the school and fosters change in the community.

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