

# **Environmental Education in Secondary School as Character Building Media for Sustainable Development in Agriculture**

Gatot Widodo<sup>1,2\*</sup>

<sup>1</sup> Graduate School of Biology, Bogor Agricultural University, Darmaga. Bogor, West Java, Indonesia

<sup>2</sup> Graduate School of English, Faculty of Pedagogy and Educational Science, Ibnu Khaldun University, Bogor, West Java, Indonesia

Population increases have been accompanied by advances in agriculture and agricultural technology, but starvation in developing countries and environmental problems caused by agriculture remain serious concern. Agricultural development is often not sustainable, resulting in damage to both the environment and to agricultural product.

The agriculture sector presents a series of paradoxes. Food from agriculture is a basic necessity of life yet, over the last century, agriculture has declined in relative importance. The number of farmers and farm workers has decreased and left agriculture for more profitable work. If this continues, a food crisis is likely to develop that could lead to increase starvation. The importance of agriculture and sustainable development needs to be addressed through environmental education, and fundamental to the success of environmental education is children. Elementary and secondary schools are strategic places for introducing the basics of agriculture to students, particularly if the sessions are designed to be innovative, interesting and involve active participation. By involving students in agricultural activities, students will obtain and retain a positive perception that agriculture is essential and interesting.

Environmental education can also build environmental ethics, while trying to improve agricultural output. With environmental education, students will have good environmental awareness to benefit environment and agricultural development.

**Key words:** character building, ethics, innovative, active, interesting participation

---

## **Introduction**

There will be enough food globally by the year 2030 for a growing world population because population increases have been accompanied by advances in agriculture. Despite this, many of the environmental problems caused by agriculture will remain serious concerns. Rapid technological advances in agriculture have occurred but they coincide with damage to the environment (Food and Agriculture Organization, 2009).

An increase in agricultural productivity must be supported by building personal character. Character is clearly related to both values and behavior.

As Wynne (1991) noted, "The roots of the word character are taken from the Greek 'to mark'". There are typically two major, closely related, ways in which the term *character* is used. First, character is the way one tends to act; to act dishonestly, cruelly, or selfishly denotes bad character, whereas acting altruistically, honestly, and lovingly, is manifested as good character. This comes closest to the original Aristotelian notion of virtue, a notion that is currently re-interpreted in moral education by F. Clark Power (1989).

In ancient Greece, Socrates argued that education was about drawing out what was already within the student. The word *education* comes from the

---

Received: October 7, 2010, Accepted: January 27, 2011

\* Corresponding author: "Kornita" Senior High School, Bogor Agricultural University, Tanjung Street No. 02, Darmaga, Bogor, West Java, Indonesia.

Tel: +0817-9808-313, E-mail: widogatoto@yahoo.co.id

Latin *educere* meaning “to lead out”. “The word educate is further defined as “to develop the knowledge, skill, or character of...” (Collins, 2003). Thus, from these definitions, we might assume that the purpose of education is to develop a person’s knowledge, skills and character. Unfortunately, this definition offers little unless we further define words such as *develop*, *knowledge*, and *character*. “The central task of education is to implant a will and facility for learning; it should produce not learned but learning people. The truly human society is a learning society, where grandparents, parents, and children are students together.” “The only purpose of education is to teach a student how to live his life by developing his mind and equipping him to deal with reality. The training he needs is theoretical, i.e., conceptual. He has to be taught to think, to understand, to integrate, to prove. He has to be taught the essentials of the knowledge discovered in the past and he has to be equipped to acquire further knowledge by his own effort” (Goldman, 1967). So, the aim of education should be to teach us rather how to think, than what to think—rather to improve our minds, so as to enable us to think for ourselves, than to load the memory with the thoughts of other men.

Environmental education is a learning process that increases people’s knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, 1978). One of primary focuses of environmental education is agricultural education. Agricultural education includes instruction about crop production, livestock management, soil and water conservation, and various other aspects of agriculture. Food education, such as nutrition, can also be considered part of agricultural education.

### 1. Environmental problems in Indonesia

The extreme climate phenomena that have occurred in Indonesia since the early 2000s are indicative of a change in climate pattern and related green-house gas concentration as a consequence of global warming. The most dominant green-house gas is CO<sub>2</sub>, which is usually produced from living organism activities that are environmentally un-

sustainable, for example, forest burning, air pollution, harmful rubbish, and inappropriate building. The problem above needs to be addressed because damage to the environment today will influence the future of the earth.

More than 1.1 billion people worldwide currently live in extreme poverty, and economic growth based primarily on agriculture and non-farming rural activities is essential for improving their livelihoods because the majority of the poor live in rural areas. Promoting agricultural growth in rural areas and providing rural people with better access to land, water, credit, healthcare, and education, is essential to alleviate poverty and hunger.

So that is why, it is necessary to understand the science and technology that will contribute to this conservation. The science can be learned through environmental education. It will result in students being able to watch over and preserve the environment.

The aim of environmental education is to provide students with the ability to understand the concept and importance of the environment in daily life, to develop an appreciative attitude toward environmental management, to develop activities through real experiences to increase environment and balance environmental preservation efforts and natural resources utilization, to increase comprehension of the importance of agriculture in daily life, to increase the awareness of the need to study agriculture, to carry out farming activities as a part of their activities in daily life, and to increase awareness of the environment.

### 2. Education system in Indonesia

Education in Indonesia is the responsibility of the Ministry of National Education of Indonesia (Kementerian Pendidikan Nasional Republik Indonesia/Kemdiknas). In Indonesia, all citizens are required to complete 9 years of compulsory education, 6 years at the elementary level and 3 years in secondary schools.

Education is defined as a planned effort to establish a study environment and education process so that the student may actively develop his or her own potential in many areas, including religion and spirituality, consciousness, personality, intelligence, behavior, and creativity (Sisdiknas, 1989). The constitution notes that education in Indonesia is divid-

ed into two major parts, formal and non-formal. Formal education is divided again into three levels: primary, secondary, and tertiary.

### **3. The current state of environmental education in Indonesia**

Environmental education refers to organized efforts to teach how the natural environment functions and, in particular, how humans can manage their actions as well as manage ecosystems to live sustainably. The term is often used to imply education within the school system.

Environmental education focuses on awareness, sensitivity, knowledge, and understanding about the environment and environmental challenges; attitudes toward the environment to maintain environmental quality, skills to mitigate environmental problems, and using existing knowledge in environmentally related programs.

Environmental education has been considered an additional or elective subject in the traditional curriculum. Environmental Education in the secondary school curriculum provides students with information to understand the environment and its problems. Students study the basic concept of "environment," the definition and variety of environmental norms, types of environment (e.g. natural environment, constructed environment, socio-cultural environment), and observing environmental problems and solving them. Students also are given the basis for appreciating the environment and understanding, holistically, environmental management, including improving environmental quality and natural resource conservation.

Another benefit is that students begin to learn about theories, principals, and guides related to environmental ethics, and are given information about government policy and regulation regarding environmental ethics. Students are taught to understand the relation between humans and nature, which is condition of harmony, to differentiate the types of human characteristics, and to implement environmental ethics in daily life. Finally, students are given the opportunity to design media that apply to environmental ethics, they establish and follow regulations for environmental ethics at their school and home, and they design, implement, and report on activities related to environmental ethics in their surrounding area.

Environmental education policies also stress that adequately trained individuals are necessary in a sustainable society. In addition to building a strong relationship with nature, people must have the skills and knowledge to succeed in a 21<sup>st</sup> century workforce. Thus, environmental education policies fund both teacher training and worker training initiatives. Teachers must be trained to effectively teach and incorporate environmental studies in their curricula. On the other hand, the current workforce must be trained or re-trained so that they can adapt to the new green economy. Environmental education policies that fund training programs are critical in educating citizens to prosper in a sustainable society.

Building character can be accomplished by teaching young people values through raw model stimulation, learning, positive action, encouragement, and rule or discipline. Essentially, character building is implemented through education.

### **4. Environmental education supports agricultural education for sustainable development**

Environmental education teaches students to have concern for the environment. Agricultural education instructs students on crop production, livestock management, soil and water conservation, and various other aspects of agriculture, as well as food education, such as nutrition. Agricultural and food education improves the quality of life for all people by helping farmers increase production, conserve resources, and provide nutritious foods.

Agricultural education in Indonesia is provided at various levels. Elementary agriculture is taught in public schools and private schools and deals with such subjects as how plants and animals grow and how soil is farmed and conserved. Vocational agriculture trains people for jobs in such areas as production, marketing, and conservation while college agriculture involves training people to teach, conduct research, or provide information to advance the field of agriculture and food science in other ways. General agricultural education is used to inform the public about food and agriculture. Agricultural education helps young people develop positive character trait and is one of the strongholds in school where character education flourishes.

In Indonesia, environmental education is used to

help prevent and mitigate natural disasters through the P4LH program; pembibitan (cultivation of seedlings), penanaman (planting), pemeliharaan (maintenance), and pengawasan lingkungan hidup (environmental supervision). Cultivation of seedlings, planting, and plant maintenance are taught through this program.

The cultivation of seedlings, focuses on both theory and practical work on generative cultivation- using seed and vegetative cultivation- using buds, leaves, sticks, roots, or other parts of the plant. Techniques, such as transplantation, grafting, and bowing, are included. For planting, students are taught about seeds, planting media, and planting techniques, such as planting in soil or in pots. For plant maintenance, students learn about irrigation, fertilizing, pruning, and plant diseases and pest control, both preventative and curative.

### Conclusion

Environmental problems stem from three main factors: high population density, low economic level, and the careless attitudes and behavior of humans towards the environment. High population density increases the need for food, fuel, and settlement areas, while at the same time increasing the amount of domestic waste produced. This consequent exploitation of natural resources results in environmental damage. Deforestation for fuel, for example, causes, damage to the forests, loss of habitat for flora and fauna, and increases the likelihood of floods and landslides.

Environmental education focuses on awareness, sensitivity, knowledge, and understanding about the environment and environmental challenges; concern for the environment and how to maintain environmental quality, skills to mitigate environmental problems, and participation for using existing knowledge in practical situation. Environmental curricula need to be provided to students at an early so that concern for the environment is part of their daily lives. Including agricultural education

as part of these curricula will help instruct students on the importance of crop production, livestock management, soil and water conservation, and various other aspects of agriculture. For future sustainable agriculture, environmental education with an agricultural component needs to be promoted through the school system.

### Acknowledgements

I thank Mr. Subagio, the headmaster of "Kornita" Senior High School, Bogor Agricultural University, for technical support and materials supplied for Agricultural - Education Sustainable Development seminar. I am also indebted to Yoshikasu Tatemoto, a teacher at Sakado Senior High School in Tsukuba, and the staff of the Agricultural and Forestry Research Center, University of Tsukuba, for their valuable and helpful suggestions and most of all for their kind encouragement.

### References

- Collins, Harper. 2003. Collins English Dictionary-Complete and Unabridged. HarperCollins Publisher.
- Food and Agriculture Organization, 2009. Declaration of the World Summit on Food Security. 16 Nov. 2009. [http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final\\_Declaration/WSFS09\\_Declaration.pdf](http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf) (August, 10<sup>th</sup>, 2010).
- Goldman, A.I., 1967, A causal theory of knowing. *J. Philos.* 64, 12: 357-372.
- Power, F.C., 1989. Understanding the Character in character building. University of Notre Dame, <http://tiger.uic.edu/~Inucci/MoralEd/articles/powerunder.html> (September, 1st, 2010).
- Sisdiknas, U.U., 1989. Pembentukan Karakter melalui Pendidikan Seni dan Budaya. Jakarta. Kementrian Pendidikan dan Kebudayaan Indonesia.
- UNESCO, 1978. Tbilisi Declaration, Intergovernmental Conference on Environmental Education. Paris, France. <http://unesdoc.unesco.org/images/0003/000327/032763eo.pdf> (August, 15<sup>th</sup>, 2010).
- Wynne, E., 1989. Transmitting traditional values in contemporary schools. In L. Nucci (Ed.), *Moral Development and Character Education: A Dialogue*. McCutchan, Berkeley, CA, USA, pp. 6-25.