Promoting the Greening Curriculum: A note on the Implementation of Environmental Education in Indonesian School

Ikhfan Haris* and Afdaliah

Faculty of Education, State University of Gorontalo, The State Polytechnic of Ujung Pandang, Makassar, Indonesia.
*E-mail ifanharis@ung.ac.id

Abstract

Human wisdom in using and managing the environment as a resource for development does not happen immediately, but requires a process of education. The involvement of an educational institution is an effective strategy in solving environmental problems. Educational institutions play an important role in increasing awareness of environmental issues. Promoting the importance of the environment to human existence is easier at the school level. Realizing that more needs to be done about environmental problems, recently there have been various government commitments to providing environmental education in Indonesia, including in Law No. 32 of 2009 on Environmental Protection and Management.

This paper presents Indonesia’s experiences in implementing Environmental Education as a part of the national effort to establish environmental sustainability. The paper will discuss the emergence, the present status, and attempts to mainstream Environmental Education in the school curriculum in Indonesia. Finally, the challenges encountered in promoting and implementing Environmental Education in Indonesia will be highlighted.

Keywords: Environmental, Green, Curriculum, Education, School, Indonesia.

Introduction

Human wisdom in utilizing and managing environment as a development resource does not just happen but requires a process. This encourages the government to implement environmental education in formal and non-formal schools as well as in informal education (at home and in daily life in the community).
Realizing that more needs to be done about environmental problems, recently there have been various government commitments to providing environmental education in Indonesia, including in Law No. 32 of 2009 on Environmental Protection and Management. In Indonesia, the first initiative to integrate Environmental Education (EE) into the School Curriculum began in 1976 through some pilot projects. EE was introduced in primary and secondary school in Indonesia in 1982. The main objective of EE in schools was to develop positive environmental attitudes among students. EE was promoted at two levels, namely as a common subject that included topics on basic ecology, natural resources, and preservation of environment, and as a trade-specific subject matter where EE information was integrated into the curriculum of specific trades. In addition, there are two major EE streams: the first is nature conservation education by the government and the second is nature-loving activities arisen from universities around the country. For formal education, boy/girl scout activities and nature conservation education are introduced to lower grades of elementary schools.

It is expected that the existence of Environmental Education as a subject helps students understand environment sustainability. This can be one of the solutions in the midst of the global warming that widely impacts on the life of human beings (Sudjana, 2000).

Environmental Education at elementary schools is aimed at raising students’ awareness of environment education. It is carried out by taking the theory into practice in the field. The purpose is to change the students’ attitude and way of thinking toward environment, leading to the improvement of knowledge and understanding about environment and skills to manage the environment.

**Environmental Education in Indonesia**

Environmental Education in Indonesia formally started in 1975 at IKIP Jakarta as the pioneer of environmental education development. The institution formulated the Education and Teaching Program Outlines of Environmental Education (*Garis-garis Besar Pendidikan dan Pengajaran/GBPP*) and administered the trial at 15 elementary schools in Jakarta in the period of 1977/1978. In 1979, Environmental Study Center was established in different public and private universities. At the same time, AMDAL (Analysis on the Impact of Environment) education was developed at all Environmental Study Centers under the coordination of the Minister of Development and Environment Supervision (Soerjani, 2008).

The delivery of integrated demography and live environmental education at primary and secondary education levels (public and vocational) is outlined in the 1984 curriculum system by including demography and live environment issues into almost all subjects.

Environmental education development is also initiated by different non-government organizations. In 1996/1997, an Environmental Education Network of non-government organizations that were interested in environment education was
The developing countries shared common experiences and challenges in implementing environmental education. There have been 76 members of the Network in 2001, working on developing and implementing environmental education. The development of environmental education in Indonesia is basically categorized into three periods as follows:

1. The period between 1969 and 1983 (preparing and setting the foundation): The effort of developing live environmental education in this period cannot be separated from the results of Stockholm Conference in 1972 that provided recommendation and declaration on the importance of education activities to raise awareness of the community in sustaining environmental education. In Indonesia, one of the activities was initiated by IKIP Jakarta by developing the Education and Teaching Program Outlines of Environmental Education for primary education. In 1977/1978, the Outlines were put into trial at 15 elementary schools in Jakarta.

2. The period between 1983 and 1993 (socialization period): In this period, education activities on environmental education in formal (schooling) and non-formal (non-schooling) pathways were developing significantly. In the formal education pathway, particularly at primary and secondary levels, education materials on environmental education and natural resources conservation were integrated into the 1984 curriculum. In this period, different study centers such as Demography Study Center and Environmental Study Center at public and private universities were increasing in numbers and activities. Study programs on environmental and natural resources management at Bachelor, Master and Doctoral levels were also increasing. Moreover, environmental issues were covered in General Basic Subjects (Mata Kuliah Dasar Umum/MKDÜ) that should be taken by all students of all study programs and fields of study. Increasing efforts of developing environmental education were also provided by the Ministry of Education and Culture, particularly for primary and secondary levels, by improving its programs and activities through the establishment of the Demography and Environment Ministry Project as an activity unit at the Primary and Secondary General Directorate. In this period, the socialization of environmental issues was also carried out within the level of the government administrators by including demography and environmental materials into the curriculum for the leveling of Sepada, Sepadya, and Sespa at the Education and Training of the National Institute of Public Administration (Lembaga Administrasi Negara/LAN) in 1989/1990. There were also many non-government organizations and other non-profit organizations that participated in raising the awareness of the importance of being friendly to the environment during the period. Generally, these education, socialization and society awareness activities took place not only in Jakarta but also in other areas (Danusaputro, 1981).

3. The period between 1993 and present (developing and improving period): One of the outstanding events during the period was the establishment of the Shared Memorandum between the Ministry of Education and Culture and the Ministry
of Environment No. 0142/U/1996 and the Decree No. 89/MENLH/5/1996 on Managing and Developing Environmental Education. In the mean time, the General Directorate of Primary and Secondary Education of the Department of Education and Culture keep on encouraging the development and improvement of environmental education implementation at schools by providing related teacher training, one-month community service, handbook on implementing demography and environmental education for elementary, junior high and senior high school as well as vocational high school teachers, clean and healthy school program, etc. Besides, various other programs have been initiated by government and non-government organizations as well as universities to develop environmental education through seminars, symposiums, workshops, teacher trainings, and educational resources development, e.g. integrated module and reading book development. Even though there has been increasing attention to developing live environment education in the last one or two years, for either schooling or non-schooling, there needs to be acknowledgement that environmental education should always be improved to make it consistently and continuously well-known. Therefore, environmental education activities starting from pre-schooling, primary education, secondary education, and higher education should take place for optimal results.

The figure below illustrated the development of Environmental Education (EE) in Indonesia

![Development of Environmental Education in Indonesia](image)

**Figure 1:** The Development phase of EE in Indonesia
In addition, an historical sketch of Environmental Education in Indonesia is summarized in the table below:

**Table 1: The Historical Sketch of EE in Indonesia**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>The first initiative to integrate EE</td>
</tr>
<tr>
<td>1979</td>
<td>Establishment of Center for Environmental Studies</td>
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<td>1982</td>
<td>Introduction EE in primary and secondary schools</td>
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<tr>
<td>1986</td>
<td>Introduction EE in technical and vocational secondary schools (TVSS)</td>
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<tr>
<td>1996</td>
<td>Integrating EE in TVSS curriculum</td>
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<tr>
<td>2003</td>
<td>Promoting EE co-curricular activities</td>
</tr>
<tr>
<td>2006</td>
<td>Adiwiyata Program</td>
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<tr>
<td>2007</td>
<td>Law in Education</td>
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</tbody>
</table>

**The Objectives of Teaching and Learning of Environmental Education in Indonesia**

Environment issues are caused by the inability to develop life style and social value system that are unable to be aligned with the environment. Developing attitude and life style that are aligned with the environment is not an easy task and cannot be done quickly (Singh and Gupta, 2013; Kollmuss and Agyeman, 2002; Dunlap and Jones, 2002).

Education is an appropriate means to build on the community that implements the principles of environment sustainability and ethics, starting from kindergarten until higher education. Therefore, the long-term objectives of live environment education are to create citizens who have the knowledge about biophysics environment and its related issues, to raise awareness to be effectively involved in the efforts to create better future development within the environment that is proper to live in, and to encourage motivation to make these happen (Stapp, et al., 1979).)

The objectives of environmental education are outlined at the Cross-Country Conference on Environmental Education in 1975 in Tbilisi, which are: increase awareness that relates with the mutual dependency in economy, social, politics, and ecology across cities and villages; provide everyone with opportunities to acquire knowledge, values, responsibility, and skills that are required to protect and improve the quality of environment; and create new attitudes of individuals, groups and society as a whole, leading towards a healthy, compatible, balanced environment. These objectives are classified into six groups as follows:

a. Awareness – encouraging every individual to have awareness and sensitivity towards environment and its issues.

b. Knowledge – helping every individual get a variety of basic experience and understanding of environment and its issues.

c. Attitude – helping every individual get a set of attitudes and abilities to acquire proper choices, to develop sensitive feelings towards environment, and to motivate and actively participate in protecting and improving environment.
d. Skill – helping every individual to get skills in identifying and solving environment issues.

e. Participation - motivating every individual to actively participate in solving environment issues.

f. Evaluation – encouraging every individual to acquire the ability to evaluate the knowledge of environment viewed from ecology, social, politics and education factors (Adisendjaja, 1988).

The elaborated objectives indicate that live environment issues mainly relate with human beings, not only the environment. Therefore developing environmental education program should focus on the attitudes of human beings, particularly their interaction with their live environment and ability to solve the environment issues (James & Stapp, 1974). Every theory in live environment education should cover both groups of knowledge.

In the context of Indonesia, environmental education became an essential component of the Indonesian environmental management strategy, therefore the Indonesian government has settled the objective of Indonesian environmental education, as follows: (1) to develop positive environmental attitudes among students; (2) to provide elementary knowledge, skills, and motivation to participate in the resolution, and anticipation of environmental problems and (3) make indispensable for sustainable development and improved quality of life.

**Teaching and Learning Strategy of Environmental Education at School**

The Letter of Decree of the Minister of Education and Culture No. 008C/U/1975 stipulates that Demography and Environmental Education should start from Elementary Schools. It is stated in the Decree that Demography and Environmental Education is not taught as a standing alone subject but is integrated in certain subjects. Environmental education is to develop new attitudes towards earth components of water, air, animals and plants that require a new, whole way of thinking that contradicts with a single, direct way of thinking (Wahyono, 2009). The objectives of environmental education at schools are as follows:

Helping young people understand the nature passionately and respecting other beings are determined by many factors, e.g. integral way of thinking by including environmental education into every subject. It is carried out by two methods:

1. Integrative approach - this approach is against the fact that the curriculum materials are already too much. In this approach, live environment education materials are integrated into relevant materials as outlined in the curriculum.

2. Monolithic approach – this approach is carried out separately or as a standing alone; therefore it is a whole unit approach, e.g. General Basic Subjects (*Mata Kuliah Dasar Umum/MKDU*) at universities.

It is expected that environmental education is actively taught by as many teachers as possible. This will enable the establishment of collaboration, internally at respective schools or externally between schools and related institutions and communities.
Promoting the Greening Curriculum: A note on the Implementation of

External collaboration can be made with parents (to ensure that materials taught at schools are aligned with what is done at homes), partnered non-government organizations, the Department of Education and Culture, Local Government, and community. Environmental education is not limited to teaching and learning activities but is for the whole school activities. Various school activities can integrate environmental education, e.g. celebrate Earth Day (22nd April) and Live Environment Day (5th June) by planting trees; discuss current environment issues such as flood, jungle fire and pollution; conduct a field study of direct observation of the environment as the object; conduct classroom and school arrangement; conduct cleaning activities; be efficient in consuming natural resources.

One of the effective strategies in implementing environmental education in teaching and learning is contextual approach. The contextual approach is carried out by the following steps:

1. Develop a way of thinking that students will learn more meaningfully by working alone, finding by themselves, and constructing their own knowledge and skills.
2. Carry out inquiry-based activities (by cycles of observing, questioning, hypothesizing, collecting data, and making conclusion).
3. Develop students’ curiosity by questioning.
4. Create learning community (learning in groups, small groups, peer groups, or hosted experts).
5. Model the examples of teaching and learning (teachers being the models in doing something such as seeding plants and recycling).
6. Reflect at the end of the class (such as direct statement on what is learned during the teaching and learning, notes or journals on the student notebook, comments and suggestions of students on the teaching and learning, discussion or evidence of student work).
7. Conduct authentic assessment such as assessing activities and reports, homework, quizzes, student works, journals, test results, and writings (Depdiknas, 2003).

The Ministry of Education (MoE), the apex body and the responsibility institution in the area of developing curriculum for the formal and non formal education system in Indonesia. However, until now there is a national debate going on about how to make EE not only widespread but also effective implement at all levels of education. The strategy under discussion envisages a three pronged approach. The three elements of the strategy are infusion, integration and as a separate subject.

Infusion, inserts specific environmental education units into existing subject/curricula. Elements or topics of environmental are created and infused into each of subjects (see figure 2). The infusion involves enriching and expanding existing syllabi and course materials. Through this approach, the content of subjects remains the same while the substance of the examples changes. Contextually, infusion strategy is similar to multidisciplinary approach, where the EE components are drawn from two or more academic disciplines and focused sequentially on a single topic.
Integration is a strategy by which integrating the content of various subjects in a cross-curricula arrangement on interdisciplinary manner. This approach breaks down the barriers of the subjects or disciplines; it entails a systematic incorporation of relevant materials into the syllabi. This strategy also knows as interdisciplinary approach. In this approach the EE components are drawn from two or more subject/academic disciplines and focused simultaneously on a single topic (see figure 3).
Single-subject/separate subject approach, where components are drawn from a single academic discipline or treating it as a separate subject. Basically, this approach is more appropriate and suitable for higher/university education (Hendarti, 2012; Chelliah, 1985).

While, in the formal education curricula, environmental education can be implemented through those three strategies/approaches, infusion approach on EE education has been widely conducted by most of schools in Indonesia, although most teachers has difficulties to do this approach, due to lack of knowledge on environmental issues and lack of skill on methodology to apply this approach. According to Laksono (2008), there are some reasons for schools to prefer to conduct infusion approach for implementing EE, such as: (1) No need for additional teacher; (2) No competition from other standard competences; (3) No need for additional time for the lesson; (4) It can be applied although the curriculum has not been formalized yet and (5) It encourages learning transfer for teacher as well as it gives an opportunity for students to learn together for any grade.

There has been special emphasis on the need to give importance to environmental education, and this has been kept in view while designing curricula, framing the syllabi and developing text books.

Environmental education can be taught by different ways such as observation, discussion, field practice, laboratory practice, practice report, seminar, debate, project work, internship, and adventurous work. The reminder is to provide not the lecturing of concepts that creates passive students as listeners but the learning environment that involves students actively in constructing knowledge, experience, and skills that can later be implemented in daily life and transferred to others. There are various places that can be used as the objects of learning: school environment, surrounding neighborhood, city area, market, stations, drainage system, river, paddy field, city park, airport, atom power generation, lake, drinking water processing installation, waste management, household waste pipe, waste dump, and other environment sites around school areas. Issues that can be raised as the teaching and learning topics are various, ranging from household waste; industrial waste; detergent use; pesticide; artificial fertilizer; aerosol and spray; land, water, air pollution; lack of water; flood, etc.

Implementing environmental education starts from environmental education curriculum and school internal policy that are based on environment-friendly life style. Practical concept (action learning) and edutainment integrate education and playing elements as effective and efficient learning methods, which can help students learn from interesting things and start thinking to do positive things.

Environment education curriculum covers affective aspects of attitudes, values, and commitment that are required to help elementary students develop critical thinking to be part of environment-friendly community. These affective aspects are relatively difficult to be covered; therefore teachers should include applicative learning methods, e.g. practicing ways of changing waste into fertilizer.

Teachers need to point out that, in real life, individuals have different values when perceiving their environment. The differences can cause conflict of ideas. Therefore, live environment education needs to provide students with opportunities to develop
skills that are required to solve live environment issues (Departemen Pendidikan dan Kebudayaan, 1999).

Theoretically, there are many factors which might be helpful to any design of EE curriculum and which may it easier to introduce, implement and establish the EE in the school. In order to meet the essential needs in delivering EE in the school, the government of Indonesia has enunciated the outlines of the content of environmental education consisting of Human and Environment; Natural Resources; Maintaining Hygiene & Environment; Water, Marine & Coastal; Air; Soil and Land; Energy; Forest; Ozon Depletion, Atmosphere & Global Warming. More detailed about this EE curriculum outline illustrated in figure 4:

**Figure 4**: The Outlines of the Content of EE Subject

**Adiwiyata Program – Promoting Greening School**

Adiwiyata Program is a program initiated by the Indonesian State Ministry of Environment (MOE) to help school members develop knowledge and awareness as an attempt to sustain live environment and increasing school’s attention on environmental protection and management. The Program is aimed at involving every school member in school activities that focus on creating healthy environment, environmentally friendly behavior and avoiding negative impact of the environment. More ever, this program aimed also encouraging schools to develop environmental activities and improve environment-based curriculum as well as encourage the stake holder participation in EE activities, that means the school’s community is actively involved in school management from planning, implementation and evaluation based on their role and responsibility.
When implementing the Program, the MOE collaborates with related stakeholders to engage school members in delivering teaching and learning process that includes environmental materials and participating to sustain and maintain live environment at schools and their surroundings.

The Program is to develop school members who are reliable in the attempt to protect and manage environmental through good school management to support sustainable development. The followings are the basic principles of the Program:

1. Participative principle – school community is involved in school management that covers the whole process of planning, implementing and evaluating roles and responsibilities.
2. Sustainable principle – it covers all activities that should be comprehensively well planned and ongoing.

It is expected that the Program can create pleasant teaching and learning condition and encourage responsibility towards environment that leads to sustainable development. Clean, pleasant environment will increase learning spirit and will avoid boring learning condition. Here are the characteristics of an Adiwiyata school:

(1) Developed school policies that are environmental-friendly, covering school philosophy, vision and mission that are caring and environment-friendly; a policy on material development; a policy on live environment teaching and learning; a policy on improving human resources capacity; a policy on saving natural resources; policy on allocating funds for live environment activities; and a policy on creating a caring, environment-friendly school.

(2) Developed environmental-based curriculum that covers integrated and monolithic live environment teaching and learning; exploration and development of environmental materials and issues of the related community; curricular activity development focusing on the theme of environmental; and teaching and learning method development.

(3) Developed participative-based activities that cover extra-curricular or curricular activities that support development of environmental education and active participation in environmental actions that involve other parties, partnership with government and private institutions and non-government organizations in developing environmental education.

(4) Developed and managed school facilities, covering the development of qualified supporting facilities and environment management for environmental education inside and outside school areas; the improvement of saving energy, water and writing tools and of waste management, live drugstore, and school park.
Implementing Adiwiyata at schools has some advantages. According to the National Adiwiyata Team (2011: 4), the advantages are as follows:

1. Support the achievement of the primary and secondary education’s standard of competency/basic competency and graduates’ standard of competency.
2. Improve the efficiency of using school operational funds by saving and reducing consumption of different energy and resources.
3. Create togetherness among school members and more pleasant, conducive teaching and learning condition.
4. Become teaching and learning venue on maintaining and managing the values of good and appropriate environmental for school members and the surrounding communities.
5. Improve efforts of protecting and managing live environment by managing pollution and damage, and maintaining environment function at schools.

Since the Adiwiyata program launched in 2006 until 2014, among the 436,823 primary and secondary schools (including Islamic schools) in Indonesia, there are 8,643 schools which have been participating in Adiwiyata program and 972 schools received the Adiwiyata Award. The trend showed that schools who intend to participate in Adiwiyata program are increasing year by year, and this program has been well supported by the President of Indonesia. Every year, during World Environmental Day celebrations, held on 5th June annually, the President inaugurates the winners. The schools who receive the Adiwiyata Awards have environmental education in their curriculum, and the Awards are valued as schools that have already implemented character building on the environmental aspect. It also becomes school-based models of active community participation and strong partnership with the community around the schools (Hendarti, 2012).

Currently, under support of UNESCO, the Government of Indonesia through Ministry of Education and Ministry of Environment has developed the new Certification and Award System of Adiwiyata Program

This Certification and Award System consist of three level of certification, as follows:

- **“Green Campus and Practices Certification”**: School satisfies the criteria for a “green campus” (Physical infrastructure and extracurricular practices). Level I Certification bestowed at the Ministerial level.
- **“Green Curriculum Certification”**: granted only upon satisfaction of the Educational Sustainable Development (ESD) curriculum and learning process criteria including engagement with stakeholders. Level II Certification-Ministerial level.
- **“Green School Certification”**: compliance and integration of ESD in all aspect. The school must meet all criteria related to school policy as well as the Level I and II criteria. Highest level of certification. Level III Certification bestowed by the President of Republic of Indonesia.
The main objective by establishing this certification and award system is a way to motivate school stakeholders to undertake the Adiwiyata - Green School Programme. In addition, this Award is designed to encourage schools to move progressively up the sustainability ladder. It may be useful to have a special award for each important element of the criteria hierarchy (UNESCO, 2011).

Apart from the Certification and Award System, the Adiwiyata team has also developed another assessment indicator which uses to evaluate the school in implementing EE. The assessment indicator consist of four element, as follows: (1) Development of school policy matter and cultured environment, (2) Curriculum based environment, (3) Participatory-based development activities and (4) Development of facilities management and school support.

**Concluding Remarks**

Current environmental issues around the world cannot be merely solved by establishing a set of rules to manage human behaviors. The most important thing is how to set the behaviours. One of the efforts is by providing education from the very early age on the knowledge of environmental through schools (formal) or non-schools (non-formal). The way in which environmental education should be introduced to schools is one of the most difficult problems of its implementation in educational systems,

The impact of introducing environmental education to students of early age cannot be seen in a short-term but a long-term period. Investing in environmental education takes time and requires patience of different parties. Ongoing efforts to raise awareness and empower students and teachers on environment are strategic steps to ensure environment safety and development sustainability.

Even though environmental education has been implemented in Indonesia, the facts show that the country’s damaged environment is getting worse, the natural resources are shortening, and the environment-friendly community is not fully established. Uncontrolled exploitation of natural resources is ongoing and is mostly done by educated individuals. These are caused by the followings:

1) Assessment on developing “affective domain” that is not yet part of assessment system for education results at schools.
2) Not all teachers around Indonesia are engaged.
3) Lack of education books on environmental education for teachers and students.
4) Lack of role models in the community on attitudes of sustaining relationship balance among human beings, between human beings and the chemical, physical, biological environments, and between human beings and their cultures.
5) Lack of communication between environment experts at universities and teachers at pre-university level.
6) Interest in EE need to be awakened, therefore effort to make the EE as interesting subject for the student is needed.
The complexity of environmental issues has made environmental education difficult to be implemented. Environmental issues and problems require knowledge and skill from a number of fields if they are to be understood properly and acted upon effectively, so no one discipline or specialty is sufficient to achieve this. Finally, it should be acknowledged that environmental issues are systematic and complex and cover a wider scope. Therefore future challenges in implementing live environment education in Indonesia are on increasing commitment of all related stakeholders, acknowledging the importance of environmental education as an effort to maintain environment balance and life sustainability of human beings.

References


