Review article  

Environmental Education in Schools of Korea: Context, Development and Challenges

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Accepted on April 15, 2017

Abstract

Environmental education in formal settings may be more effective and systematic than in non-formal or informal ones, where it is carried out consistently and coherently over grade levels and school levels. It is equitable to be beneficial for all students. This study aims to review the context, development and the present status of environmental education in the primary and secondary schools of Korea to discuss issues and challenges to respond this question. The importance of environmental education was first mentioned in the 4th National Curriculum of Korea announced in 1981. It is notable that ‘Environment’ as an elective subject for secondary students was introduced in the 6th National Curriculum in 1992. It has contributed to introduce meaningful and innovative pedagogies for students including project approaches of environmental issues. Teaching ‘Environment’ as an elective subject in schools, however, raised issues and challenges in relation with locating environmental education in the school system in addition to securing quality teachers. Diverse attempts including environmental education model schools, Schoolforest initiatives, and UNESCO ASPnet schools were examined to explore the possibility of whole school approaches including schools’ external relations through partnerships, and school policy and organizations. The issues and challenges were identified and discussed based on the present status of EE in Korea related to ‘what’ and ‘how’ for formal environmental education in Korea and beyond.

Keywords: curriculum, environmental education (EE), schools, whole school approach

I. Introduction

Environmental education (EE) is diverse and comprehensive enough to include field trips, outdoor research, conservation education, urban study, pollution education, global education, and education for sustainable development (Palmer 1997). EE in Korea began in the early 1980s when rapid economic growth raised awareness of and demand for a higher quality of life. Pollution education is deemed to have started in the process of resolving environmental issues resulting from the industrialization of the 1960s. EE in schools has traditionally focused on outdoor research and field trips. As the UN Decade of Education for Sustainable Development was launched (UNESCO 2004) and education for sustainable development (ESD) has been carried out in Korea (Lee et al. 2005; Lee et al., 2013), such diverse types of EE have coexisted in Korea. Likewise, the categories and roles of EE are very comprehensive and the lines therebetween blur, so that a single type of education can’t deal with everything. EE in formal, non-formal, and informal settings is usually offered in a complementary, rather than competitive, manner (Fortner 2001).

Formal environmental education refers to EE in schools that is structuralized hierarchically from primary schools to universities and classified by grade chronologically. However, it can also be offered outside schools in case field experiences in non-formal settings are included (Fortner 2001). EE in formal settings is regarded to be more effective and systematic than in non-formal and informal ones, because it can be conducted consistently and coherently at school and over grade levels. Moreover, it is equitable to be beneficial for all students (Lee 2014).

Adjective education such as peace education, multicultural education, and EE can be generally handled in school settings via integrated or single subject approaches (UNESCO Regional Office in Asia and Oceania 1979). Since the Fourth National Curriculum of Korea highlighted environmental education, Korea’s primary schools have adopted a dispersed approach (Nam 1995)(1), a kind of integrated approach where EE is included in subjects such as science, social study, and ethics in a dispersed way. In accordance with the Sixth National Curriculum of Korea, environment-
related independent elective subjects such as ‘Environment’ and ‘Environmental Science’ have been introduced in middle and high school curricula since 1995 (Ministry of Education 1992). At present, middle and high schools in Korea are using ‘Environment’ as a separate subject (Ministry of Education 2015), in which EE as a whole is comprehensively included. In reality, middle and high schools not only adopt such an elective subject but also include environment-related contents in other subjects, which can be regarded as an eclectic system.

EE in schools is not carried out only through the curricula. Breiting et al. (2005) conducted a comparative research in the early 2000s to collected cases of eco-schools, enviro schools, and green schools in 13 other countries and thereby identify quality criteria for schools pursuing ESD or EE in schools. According to this research and publication, EE or ESD can be conducted via various activities including teaching and learning processes, school policies and organization, and schools’ external relations. In particular, the Global Action Programme for ESD (GAP) carried out since 2015, has emphasized a whole school approach as one of five priority areas in ESD (UNESCO 2014).

Against this backdrop, this paper aims to review the current status and developmental processes of EE in Korea’s primary and secondary schools and explore the meaning thereof. To this end, the institutional contexts and curricula of EE in schools will be introduced before briefly dealing with whole school approaches for EE. Lastly, issues and challenges in the implementation of meaningful EE will be discussed.

II. Environmental Education in Korea’s Schools: Institutional Contexts and Development

1. Legal and Institutional Framework for Environmental Education in Schools

What should be kept in mind when discussing environmental education (EE) in Korea’s schools is two Ministries related thereto. ‘Environmental education’ is a combination of the words ‘environment’ and ‘education,’ in which two Ministries are involved. Generally, the Ministry of Education is in charge of all educational activities in Korea’s schools while the Ministry of Environment takes responsibility for environmental policies and issues. The latter operates a specific department for EE titled ‘the Environmental Cooperation Division’ (Ministry of Environment 2015) while the former does not have such department in the Ministry. The business scope of the two Ministries, related officials’ awareness thereof, and lack of collaboration between two agencies often act as an obstacle to carrying out or facilitating environmental education in schools. In fact, Korea’s educational system more closely relates to the Ministry of Education than the Ministry of Environment but the latter is deemed to have more interest in EE than the former, as can be seen via the existence of a dedicated team.

In Korea, the Environmental Education Promotion Act (2) was enacted in 2008, which has been managed by the Ministry of Environment. The Environmental Education Promotion Act defines EE as ‘education to cultivate and practice knowledge, functions, attitudes, values, and so forth that the public require to preserve and improve the environment with the aim of promoting the sustainable development of the country and communities’, categorizing it into EE in schools and social EE. The Environmental Education Promotion Act contains provisions on support for EE in schools and in accordance therewith, the National Environmental Education Master Plan should be implemented every five years. The 2nd National Environmental Education Master Plan crafted in 2015 contains provisions on environmental education reinforcement in curricula, wider environmental experiences for youth, the expansion of EE for children, the promotion of EE in universities, and so forth (Ministry of Environment 2015). Moreover, the National Center for Environmental Education established in 2013 and regional EE centers including Gyeonggi-do Environmental Education Center established in 2015 pursuant to the Environment Education Promotion Act have conducted various projects designed to support EE in schools (after-school support programs, etc.) and promote cooperation between schools and social organizations for EE (Lee and Kim 2016).

The Environmental Education Promotion Act and the National Environmental Education Master Plan are considered to be a very important framework for Korea’s EE to be institutionalized. However, such schemes controlled by the Ministry of Environment may have relatively more limitations in being institutionalized in schools than those operated by the Ministry of Education.

2. Environmental Education in National Curriculum: Curricular and Cross-Curricular Themes

In Korea, the National Curriculum has been devised and implemented and at the same time individual school has
crafted and carried out its own operation plan based on the National Curriculum and its own context every year. Therefore, even though each school has operated a slightly different curriculum, such school-based education plans have acted as a very significant pillar for the National Curriculum revised every four to five years.

EE can be deemed to have been fundamentally reflected in the National Curriculum since the establishment of the 4th National Curriculum. EE in schools is deemed to have begun with the introduction of the 4th National Curriculum for Primary Schools announced in 1981 containing the following declaratory provision: ‘...Environmental education in schools and so forth should be included in educational activities as a whole...’ (Ministry of Education 1981) The Fifth National Curriculum specifically adopted EE as one of the eight major educational priorities, highlighting the importance of EE by inserting the following words in the principle of curriculum organization: ‘...All the people should ... lay the foundation for enjoying happy lives in a comfortable environment,’ and ‘...respect mankind and care for nature....’ (Seo and Tschapka 2013).

The 6th National Curriculum revised and announced in 1992 selectively formulated contents that should be dealt with in an integrated manner, as well as those that had been cope with in each subject in a distributed way, newly adopting ‘environment’ as a separate elective subject for middle and high schools (Nam 1995). The establishment and implementation of ‘environment’ as a subject was reported to have been unprecedented in the world as of 1992 when the curriculum was devised (Lee & Lee 1998). Even in the history of education in Korea, it is deemed to have been very meaningful as a case where a separate subject was newly created or in which a new subject was formulated as a tool to resolve national and social problems (Nam 1995). It is also considered as a case with significant implications in terms of the importance of EE researchers’ systematic endeavors to promote the independence of subjects (Nam 1995, Lee and Choi 2013, Lee 2014).

‘Environment’ as a subject was introduced as ‘Environment’ for middle schools and ‘Environmental Science’ for high schools when the 6th National Curriculum was launched (Ministry of Education 1992a,b). Then, for the 7th National Curriculum, ‘Environmental Science’ was changed to ‘Ecology and Environment’ (Ministry of Education 1997). It was renamed ‘Environment and Green Growth’ as part of the efforts to strengthen the low-carbon green growth strategy promoted by the Korean government when the National Curriculum was revised in 2009 (Ministry of Education, Science and Technology 2009). Then, it was changed to ‘Environment’ for both middle and high schools again when the Curriculum was amended in 2015.

On the other hand, Korea’s National Curriculum proposes cross-curricular themes, as well as separate subjects, recommending them to be addressed in every subject and class. As mentioned earlier, EE started being included in cross-curricular themes for the 4th National Curriculum. In the National Curriculum revised in 2007, ESD, as well as EE, was also highlighted as one of the 35 cross-curricular themes. The National Curriculum revised in 2015 proposed 10 different cross-curricular themes, including ‘EE•ESD’ (Ministry of Education 2015). Therefore, EE in terms of policy documents referred to as the National Curriculum can be summarized at school levels as follows: In primary schools, EE is offered as a cross-curricular theme while in secondary schools, EE is addressed as a cross-curricular theme and at the same time is carried out as a separate subject in case the subject ‘Environment’ is elected. In other words, the latter can be thought of as an integrated-type scheme.

In primary schools where ‘Environment’ is not set as a separate elective subject, EE or ESD included as a type of a cross-curricular theme is implemented via a system where EE-related contents and capabilities are integrated into various curricular spheres. EE is implemented, whose contents are distributed into diverse curricular areas such as ‘Wise Life’, ‘Morality’, ‘Society’, ‘Science’, and ‘Practical Course’. ‘Creative Experience’ and ‘After-School Activities’ are also used for EE. On the other hand, in the case of the Curriculum for Kindergartens which is called ‘the Nuri Curriculum for Young Children’ (Ministry of Education 2015), EE is carried out through the Curriculum for Young Children aged five (western age) including five areas such as ‘Physical Exercise • Health’, ‘Communication’, ‘Social Relations’, ‘Art Experience’ and ‘Nature Inquiry’. In particular, it is implemented in the themes of ‘Environment and Life’ and ‘Plant, Animals and Nature’ under the categories of ‘Physical Exercise and Health’ and ‘Nature Inquiry’ (Ministry of Environment 2016). Even in secondary schools that do not select ‘Environment’ as a subject, such EE-related contents are integrated into diverse subjects.

As mentioned above, EE at schools in Korea has been well-positions as a separate elective subject or cross-
curricular themes. In reality, whether each school chooses ‘Environment’ as a subject depends on various factors such as situations facing each school, social ethos, and students’ preferences. Moreover, the degree to which cross-curricular themes should be dealt with varies significantly, relying on circumstances facing schools and teachers’ orientation.

3. ‘Environment’ as a Subject: Pros and Cons

Since the subject, ‘Environment,’ was introduced for the 6th National Curriculum in 1992, the name of the subject has not changed for middle school courses but has been slightly revised for high school programs whenever the Curriculum was reorganized. The subject, ‘Environment,’ for middle school courses in the 6th National Curriculum aimed to promote the understanding of the environment, facilitate a right set of values and attitudes towards environmental issues, and actively participate in creating a comfortable environment, fully reflecting the objectives of EE as emphasized by international organizations (UNESCO, etc.), such as knowledge, understanding, values, attitudes, and participation (UNESCO 1980). The 7th National Curriculum highlighted ecological sensitivity to the environment and research on solutions to environmental issues, as well as the aforementioned objectives while the Curricula revised in 2007 and 2009 added or highlighted ESD-related contents and decision-making and green growth-related information, respectively. For high school programs, the name of the subject changed to ‘Environmental Science’, ‘Ecology and Environment’, ‘Environment and Green Growth’, and ‘Environment’, whenever the National Curriculum was reformed. As in the case of middle school courses, details were slightly revised because ‘environmental sensitivity’, ‘ESD’, ‘education for green growth’, and so forth were added or emphasized but the general contents of the subject did not change significantly (Seo and Tschapka 2013). However, the 2009 National Curriculum for ‘Environment and Green Growth’ presented a project-based approach as an important teaching-learning system, focusing on education for green growth and ESD.

In relation to the subject ‘Environment’ for middle and high schools, the National Curriculum revised in 2015 highlighted an approach based on competences and key incidents or cases to be differentiated from existing curricula for EE (Kwon 2015). Such a program focused on environmental sensitivity, the awareness of environmental communities, insight, creative problem-solving, communication, conflict resolution, and the use of environmental information. The subject ‘Environment’ for middle schools in the 2015 National Curriculum included four areas such as ‘Environment and Mankind,’ ‘Environmental System,’ ‘Local and Global Environment,’ and ‘Sustainable Society’ while the program for high schools consisted of ‘Environment and Mankind,’ ‘Environmental System,’ ‘Environmental Research,’ and ‘Sustainable Society.’ Such contents are organized in a comprehensive and integrated way as in the case of research on the complexity of issues based on incidents and cases, linking to key environmental capabilities, teaching/learning, and assessment methods. They also highlighted students’ participation-based teaching and learning systems such as project-based learning (Kwon et al. 2016). Such characteristics are deemed to result from the integration between ESD and EE, as well as the fact that the introduction to the National Curriculum emphasized key competences. If studying specific incidents, cases, and issues in Korea and Asia, such as climate change and the humidifier sterilizer case, which caused maternal and infant deaths or lung disease due to toxic materials, it is not difficult to find out that those issues are based on complexity and closely relate to environmental, social, economic, and cultural aspects. Therefore, such changes in the curriculum for the subject ‘Environment’ are deemed to come from the extension of the existing EE.

‘Environment’ as a separate subject is evaluated both positively and negatively. Through assessments based on insiders in EE such as teachers, EE researchers, and social environment educators, Lee (2014) reported that learning via the subject ‘Environment’ provides a basis for environment-related values, helps understand the complexity of issues, and equitably offers opportunities to improve environmental knowledge. It also emphasized that the subject ‘Environment’ enables quality education through various teaching/learning approaches such as field trips, case studies, and project-based learning, linking schools to communities and leading to career counseling. Hwang et al. (2014) exploring changes in students who participated in project-based learning in connection with ‘Environment’ reported that students’ problem-solving capabilities and creativity were enhanced via courses for studying issues in the real world and taking part in environmental practices, highlighting that the subject ‘Environment’ for high schools is very meaningful. The department of environment has been set up in five universities in Korea to cultivate teachers in charge of the subject ‘Environment.’ As a result, the students choosing the department have become teachers and
contributed to social EE, expanding human resources for EE. Also, such programs have produced professionals with PhD or MA degrees in EE, activating research thereon and contributing to the development of Korea’s EE.

However, high-quality teacher training and related systems should be further highlighted to ensure the positive operation of and contributions from the subject ‘Environment.’ In fact, even though the subject has been positively evaluated and has made significant contributions to the development of various areas, the percentage of secondary schools using EE as a subject has not been high enough. In 2015, only 221 (6.8%) out of 3227 middle schools and 300 (12.8%) out of 2342 high schools across the nation chose ‘Environment’ as a subject (Ministry of Environment 2016). Therefore, schools that do not select ‘Environment’ as a subject may have difficulties in systematically implementing EE, with EE being neglected in related subjects such as ‘Science’ and ‘Social study’ due to the operation of ‘Environment’ as a separate subject. This implies that institutional support and complementation in this context will be required in the future.

4. Whole School Approaches

According to Breiting et al. (2005), school activities for EE consist of teaching/learning courses, policies and organizations, and schools’ external relations. Teaching/learning courses based on the National Curriculum may occupy the biggest portion of such activities, but they closely relate to school policies/organizations, ethos, culture, and collaboration between schools and communities. In other words, the whole school approach for EE is needed to mainstream of EE in schools.

A whole school approach for EE can be reviewed through two major projects in Korea, which are ‘EE model schools’ by Ministry of Environment and ‘schoolforest model schools’ by Forest of Life. Since 1985, the Korean Ministry of Environment has designated and operated some primary, middle, and high schools as environmental preservation model schools with an effective period of two years. In 2007, the Ministry changed the name to EE model schools, highlighting EE for sustainable society. This project was initiated to help students establish the right set of values towards the environment and promote environmental conservation in their daily lives and to discover and disseminate model cases in EE among schools, with a total of 269 schools being designated as model schools by 2015. The Ministry has provided such model schools with a governmental subsidy worth KRW 16 million (about USD 15,000) a year and a variety of EE-related materials, holding operation seminars to give awards to distinguished model schools and to prepare casebooks (Ministry of Environment 2016). All these are designed to widely distribute model cases.

The schoolforest model school program was introduced for a total of 10 schools via collaboration between businesses and an NGO dubbed ‘Forest of Life,’ in 1999. As of 2016, a total of 730 school forests were created, with the number of forests jumping to 3,000 via active collaboration among Korea Forest Service, the Ministry of Education, local governments, and private groups (Hue et al., 2014). The project initiated by Forest of Life aims to form forests in schools and to expand green spaces but at the same time emphasizes the creation of places for EE in schools through participation by members in and out of schools, forestation, and partnerships between schools and communities (Kim et al. 2000).

Along with the two projects, the UNESCO Associated Schools Program also relates to EE. With the advent of the UN Decade of Education for Sustainable Development (DESD), UNESCO promoting the development of education, science, and culture has been designated as the leader agency for the DESD. Against this backdrop, various activities for ESD have been actively carried out domestically and internationally. Among them, the UNESCO Associated Schools Project has encouraged students, teachers, and parents to voluntarily take part in the initiative and to put into practice the ideas and spirit of UNESCO such as peace, human rights, and intercultural understanding, thereby playing a leading role in promoting global citizenship and humanity. In Korea, the UNESCO Associated Schools project began in 1961 when four middle and high schools joined the ASPnet. As of 2016, 125 primary schools, 86 middle schools, 188 high schools, five universities, and four special education schools (a total of 408 schools) in Korea are members of the ASPnet. As GAP was initiated in 2015, focusing on a whole school approach, UNESCO Associated Schools in Korea have made active efforts to link ESD to curricula, school policies/organizations, and partnerships between schools and communities. Such schools have promoted the basic ideas of UNESCO such as peace, human rights, global understanding, and SD, rather than EE, but given that ESD may be an extended version of EE (Wals 2012), it is necessary to pay attention to changes in school culture and ethos via a whole school approach.
III. Conclusion and Challenges

As reviewed herein, EE in Korea’s primary and secondary schools has produced remarkable achievements in various forms since the importance of environmental preservation was briefly mentioned in the National Curricula of the 1980s. In the 1995 6th National Curriculum, ‘environment’ was positioned as a separate elective subject, with teacher training programs being set up in colleges. Based on environment teachers, who were cultivated via the initiative, diverse endeavors and progress have been made in the context of EE, which should be specially noted. Moreover, in accordance with the Environmental Education Promotion Act crafted in 2008 and the 1st and 2nd Environmental Education Promotion Plans based thereon, the Ministry of Education has actively supported EE, with EE model schools and school-forest model schools being established based on a whole school approach. These achievements must not be overlooked, either. The curriculum for EE was also revised in 2015, based on case studies and key competences, which may be able to extend the existing EE in schools. It’s because emphasis placed on key competences and endeavors to ensure the effective implementation thereof requires considerations on what and how EE delivers and is delivered, respectively, namely pedagogy.

However, the percentage of middle and high schools that choose ‘environment’ as a subject is as low as around 10% and the share of environment teachers who did not major in environment is relatively high. Environment teachers regard such a situation as a crisis facing EE in schools. Secondary schools should be further encouraged to select ‘environment’ as a subject, making more urgent efforts to secure higher quality environment teachers. Against this backdrop, when discussing EE in schools, EE in other subjects or areas has been studied and evaluated relatively insufficiently, attracting less attention from related parties. Considering diverse channels through which EE in schools can be carried out, how EE can be implemented via other subjects, extracurricular activities, and school events should be identified, offering other necessary support, as well as support for the subject ‘environment.’ In reality, a significant number of teachers have promoted changes in schools as a whole, which is highly feasible. In this vein, it is too early to be disappointed. It is necessary to use an EE-based approach that facilitates integration among various subjects via an interdisciplinary or transdisciplinary system. This may link to STEAM (science, technology, engineering, art and mathematics) education, convergence education, and a free learning semester system that have emerged in Korea, as environment related themes can be one of most appropriate content areas for these educational initiatives. Along with these initiatives, it is necessary to employ a whole school approach that promotes school-wide participation in EE and sustainability.

Even though it was not reviewed in detail due to lack of space, diverse learning communities consisting of teachers who make efforts to cultivate expertise in EE should also be noted. The Korean Teachers’ Organization for Ecological Education and Activities (KTOFEA) has long studied EE based on voluntarism, linking it to social issues to facilitate green education since 1995. Such endeavors and resulting changes should be examined again. Korea Environmental Teachers’ Association (KETA) has shared know-how in teaching specific subjects, applying, sharing, and disseminating teaching and learning skills for EE such as project-based learning to improve the quality of EE. It is also necessary to consider thoroughly the contributions that such endeavors have made to enhancing teachers’ expertise and EE in schools. PLCs (professional learning communities) of teachers for EE, which are implemented at a school level or in a small scale (Hammersley 1993, Kim 2013, Park et al. 2014), should be further researched and supported. It’s because such PLCs aim to nurture teachers’ expertise via joint implementations of or action research on EE and ultimately to change school ethos.

In Korea, environment-related issues have been continuously raised, such as the construction of nuclear power plants, the establishment of Miryang transmission towers, the four-river project, and humidifier sterilizer-related incidents. In relation to the causes of and solutions to such problems, conflicts among the members of society have often occurred, bringing about social issues. These incidents can also be considered as opportunities for environmental learning. Therefore, these should link to learning activities that are implemented via school curricula and need to be dealt with in a more integrated and systematic way. Above all, given that most of the educational activities in Korea’s primary and secondary schools are designed for college admissions, more attention should be paid to the ecological conversion of the educational system, rather than what is taught and learned in class. Ultimately, society and schools
cannot be separated, with collaboration and joint efforts between schools and communities being required to promote sustainable society. The reason is that social changes are enabled in the process of shifting the focal point of society through the social learning of members in and out of schools.

Notes

(1) Nam, S. J. (1995) described environmental education in schools via dispersed, separate subject, and eclectic approaches.
(2) http://www.law.go.kr
(3) http://www.unesco.or.kr

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