

A Study on the Development of Teacher Training Materials for Environmental Education

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I. INTRODUCTION

The marked development of science and technology enriched human life in quantity and quality. But this progress ran parallel with rapid growth of population which spawned tough problems resulting from the shortage of natural resources and environmental pollution.

After the Stockholm's conference on Human Environment held in 1972, environmental problems drew special attention, inspiring many nations to greater efforts to make their living environment better. Going beyond the bounds of national efforts, the problems brought various countries into a collaborative attempts to find solutions. The International Conference on Environmental Education held in Belgard in 1975 and Governmental Conference on Environmental Education held two years later under the joint sponsorship of UNESCO and UNEP* were the exemplar cases of the multi-national efforts.

These two conferences presented the goals of environmental education. These goals may be approached from various realms, but school education,

among others, assumes an enormously important dimension. Since teachers play decisive role in school education, it is crucially important that teachers should have greater awareness of environmental education, be conversant with effective teaching methods characteristic of environmental education and have necessary materials readily available. Apart from textbooks and teacher's guides, there are virtually no materials for teachers, not to mention those for the training of teachers.

A survey indicated great interest discernible among teachers on environmental education and the acute need for materials for teachers was appreciated (No Yung-hi et al. 1983). Before teachers are given materials for environmental education it is important to give them an opportunity to use the materials through teacher training program. Confronted with materials needs, this study team attempted to develop materials which can be used for the training of teachers and for classroom instruction in environmental education.

II. PROCEDURES

1. Basic Studies on Environmental Education

— An extensive study was made on the literatures

*UNEP: United Nations Environmental Program.
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to conceptualize environmental education.

- Existing materials on environmental education were collected and reviewed with regard to their applicability.
- Textbooks and current curricula were analyzed to determine the depth and scope of materials treated in relation to environmental education.

2. Meetings for consultation

A consultative body was formed, consisting of science education specialists, environmental education specialists, social education specialists and moral education specialists. They met to set forth guidelines for the development of materials.

3. Determination of Format and Organization of Contents.

On the basis of basic study findings and guidelines formulated by the consultative body, a format was determined and contents were selected and organized.

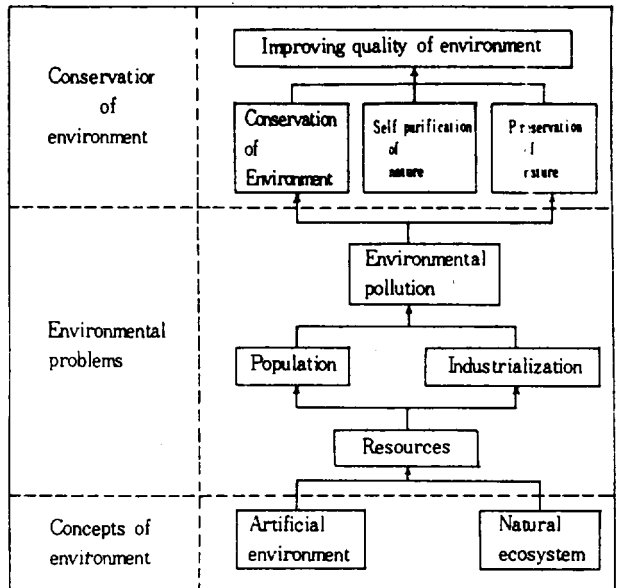
III. RESULTS AND DISCUSSION

1. analysis of Existing Materials on Environmental Education

As industrialization has been accelerated since 1970, Korea was confronted with environmental problems of various kinds and thereafter many attempts have been made from various dimensions to solve the problems.

In 1977, Korean Educational Development Institute hosted a seminar on environmental education, which discussed goals, contents and teaching methods for environmental education (Shin Se-ho et al., 1977). This was followed by a basic study on the development of curriculum in environment in December at the same year (Kim Soo-il et al., 1977). This study defined environmental education as an effort to bring about change in awareness and attitude about environment and to develop and inclination to contribute toward

solution of environmental problems.



Areas of Environmental Education and Inter-relationship

In this study, environmental education was divided into several areas and an attempt was made to examine how each of these areas are related to subject matters.

A ramification of the basic study was manifested in the publication of workbook, teacher's guide and slides of environmental education in 1979 to be integrated into the science textbook of middle school (Lee Ok-im, 1979). Since their contents resemble those of existing textbooks, they are hardly useful for teachers in classroom instruction.

Under the sponsorship of the Office of Environment, a study was conducted in 1982 to develop a teacher's guide for environmental education from kindergarten to high school. Together with this, a survey was conducted regarding opinions of students, teachers and parents about environmental problems (Jin Kap-deuk et al., 1982). According to their findings, 70 percent of students and teachers and 60 percent of parents understand the necessity of providing environmental education. With regard to environmental education treated in the present curricula, 40 percent of students and

Inter-relationship between Subject Matters and Components of Environmental Education

Subjects		Components	Natural ecosystem	Artificial environment	Resources	Population	Industrialization	Environmental pollution	Conservation of environment	Self purification of nature	Preservation of nature	Improving quality of life
Moral education	Prim.	3, 4							<input type="radio"/>		<input type="radio"/>	
		1										
	Mid.	2										
3				<input type="radio"/>		<input type="radio"/>			<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
Korean language	Prim.	1								<input type="radio"/>		
		2									<input type="radio"/>	
		3									<input type="radio"/>	
		4							<input type="radio"/>			
		5						<input type="radio"/>			<input type="radio"/>	
		6			<input type="radio"/>					<input type="radio"/>		
	Mid.	1									<input type="radio"/>	
		2			<input type="radio"/>							
3										<input type="radio"/>		
Social studies	Prim.	3		<input type="radio"/>	<input type="radio"/>				<input type="radio"/>		<input type="radio"/>	
		4			<input type="radio"/>				<input type="radio"/>		<input type="radio"/>	
		5			<input type="radio"/>				<input type="radio"/>		<input type="radio"/>	
		6							<input type="radio"/>		<input type="radio"/>	
	Mid.	1					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
		2										
		3			<input type="radio"/>			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
	High	Geog. I		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<input type="radio"/>
Geog. II			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<input type="radio"/>	
Science	Prim.	2									<input type="radio"/>	
		3	<input type="radio"/>								<input type="radio"/>	
		4	<input type="radio"/>								<input type="radio"/>	
		5	<input type="radio"/>								<input type="radio"/>	<input type="radio"/>
		6						<input type="radio"/>				<input type="radio"/>
	Mid.	1										
		2										
		3		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
High	Biol. I	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	
Music	Mid.	1									<input type="radio"/>	
		2									<input type="radio"/>	
		3									<input type="radio"/>	
Fine art	Prim.	1									<input type="radio"/>	
		2									<input type="radio"/>	
		3									<input type="radio"/>	
		4									<input type="radio"/>	
		5									<input type="radio"/>	
		6									<input type="radio"/>	
Vocational subjects	Prim.	4									<input type="radio"/>	
		5									<input type="radio"/>	
		6			<input type="radio"/>						<input type="radio"/>	
	Mid.	1			<input type="radio"/>			<input type="radio"/>	<input type="radio"/>			
		2										
		Agri.			<input type="radio"/>						<input type="radio"/>	
	High	Fishery			<input type="radio"/>						<input type="radio"/>	
		Indust. tech.			<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
Agri.				<input type="radio"/>						<input type="radio"/>		
Indust. arts							<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		
	Fishery			<input type="radio"/>			<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	

teachers found it relevant. With regard to the administering environmental education as a independent subject, most teachers didn't agree, 50 percent of students and 60 percent of teachers preferred infusion into concerned subjects to separate as one subject.

Although the seriousness of environmental problems and the importance of environmental education were recognized by the majority of respondents, the effect of environmental education treated in current curriculum was found far from the satisfactory level. In 1983, a paradigm of environmental education was developed for primary and secondary schools with special emphasis on teaching methods (Seoul Board of Education, 1983). In 1984, demonstration school was operated to tryout environmental education (Kwang-hi Middle School, 1984). To help teachers of demonstration schools with environmental education, instructional guide was developed, the uniqueness of which is in its dealing with environmental elements treated in moral education, social studies, Korean language and science in a single volume. Summing up all materials of environmental education indicate the necessity of developing materials to be used for the training of teachers.

2. Meetings for Consultation

Meetings were held to bring together specialists in environment and its related subjects, namely, science education, social education, and moral education to set out guidelines. The meeting addressed the following questions.

- What are the kinds of materials of environmental education which is required to our situation?
- What are the contents to be included?
- How are the contents to be organized in relation to other subject matters?

Followings are some important points of discussion on the raised questions.

- Integrated approach is desirable.
- The materials to be dealt with in environmental education should be distinguished between urban

area, industrialized area, rural area and fishery village. In urban area, air pollution deserved of special emphasis, whereas water pollution can be the primary concern of fishery village.

- Instructional guide should not be so comprehensive as to cover all related subjects. If a training material is developed it is equally applicable to all subject matters, as to be bound to one or two subject matters. Instructional guide in science, to begin with, serves as a paradigm to be patterned after by other subject matters. Therefore, the development of instructional guide may well proceed in stages, beginning on a small scale.
- Instructional guide should be distinguished from existing ones to give diversity and wide variety of choices.
- Attempting to deal with moral education, social studies and science coincidentally is not desirable in view of time and budgetary constraint.

It is necessary to narrow down the area of contents, to begin with.

- Instructional guide should be such that can be useful in the training of teachers.
- Teachers cannot teach pupils effectively unless they have been exposed to environmental education. Therefore, the material designed to help them teach environmental education should be equally useful for the students.
- The development of student's workbook deserves of consideration, coincidental with that of instructional guide, if possible.

Our team determined the direction of teacher training material consulting the opinions of committee as follows.

- 'Bases for Environmental Education' part includes basic knowledge of environmental education and teaching method.
- 'Practice of Teaching' part includes their respective contents.
- 'Environmental Ethics' and 'Conservation of Environment' should be integrated into all parts in a single vein so that they enhance the awareness of

problems and the sense of responsibility for environment-related behaviors.

- Contents related to 'Social Studies' and 'Ecosystem' may well be included in reading materials in the introduction part.

3. Status of Environmental Education in School

Since contents of environmental education is spreaded into various subjects of primary and secondary education, it is useful to size up the depth and breadth of environment-related contents, thus disclosing its status in school education.

(1) Environment-related Contents

The operational guides to curriculum of primary school stipulate that environmental education should be treated with primary concern to enhance the awareness of environmental problems and to inculcate an attitude toward the conservation of nature. The affective goals should be stressed, while minimizing the transmission of knowledge.

In the curricula, environmental problems are taught in moral education, language, social studies, science, vocational education and home economics in primary, middle and high schools. Of these, social studies and science are core areas where environmental elements are concentrated; the former deals with population, resources, social environment, artificial environment, industrialization, environmental pollution and the latter deals with ecosystem, environmental pollution, the necessity of preserving natural environment, etc. (Chung Wan-ho, 1983). The curricula which were revised in 1981 and textbooks based on these place greater emphasis on environmental problems.

The science in primary and middle schools does emphasize environmental education by allowing a place for a unit. The other subjects, namely, moral education, Korean language, vocational subjects and home economics, also include contents designed to increase the awareness of environmental problems.

(2) Teaching of Environmental Education in School

Since environmental education is dealt with in the context of each related subject, there is no time set aside only for it. But contents are distributed in profusion over various subjects can be said that environmental problems are treated with intensity. Extracurricular activities provide room for campaigns for the conservation of natural environment. In some schools environmental education is dealt with by club activities.

(3) Environmental Education in an Integrated Form

As environmental education cuts across different spheres of life, every subjects deal with contents for environment. It is possible to approach the environment problems by each independent subject but it is more desirable to approach by integrated one.

There are materials which glean environment related contents from the related subjects. But they may well be regarded as an aggregation of contents, far from a integrated subject which provides for graduated sequence between grade levels and integration among subject matters. The material of environmental education should be distinguished from textbooks by including a wide variety of contents which enrich learning experiences.

4. Organization of Teacher Training Material in Environmental Education

The teacher training material in environmental education consists of two parts- "Bases for Environmental Education" and "Practice of Teaching." The first part features knowledge base, composed of basic concepts and principles. The second part consists of activities which can show specific processes and methods that are relevant to environmental education. The two parts are composed of the following.

(1) Bases for Environmental Education

- Introduction part of this material

- Basic concepts and principles
- Components of environment, environmental problems, and direction of environmental education
- Reading materials

(2) Practice of Teaching

- Specific instructional activities
- A wide variety of contents beyond the coverage of the existing textbooks, which enrich learning experiences
- The contents are such that can be equally useful in extra-curricular activities and teacher training
- The materials are aimed at teachers in moral education, social studies, and science in middle school
- Processes and sequences of instructional activities are stressed
- Experiential learning is emphasized by encouraging students' participation and inquiry. The transfer of knowledge is kept to the minimum level
- Approached by integrated point of view

5. Utilization of Teacher Training Materials on Environmental Education

The materials developed for environmental education will be distributed to provincial and city boards of education, county offices of education and teacher training institutes. They will be used for teacher preparation, in-service training at colleges of education and teacher's colleges. These material will be equally use-

ful in actual instruction of environmental education in school.

Based on this study, teacher training materials for environmental education were developed in Korean and English version

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〈요약〉

교사 연수용 환경 교육 자료 개발을 위한 연구

이범홍 · 채광표 · 김주훈 · 이양락

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본 연구는 교사연수용 통합적 환경교육자료 개발을 위해 수행되었다.

기존의 환경교육 관계 자료의 검토 분석, 전문가 협의회를 통한 개발 방향의 검토, 현행 초·중등 교과서 환경교육 관련 내용의 분석을 통해서 통합적인 환경교육자료 개발의 필요성과 방향을 정립하였다. 개발되는 자료는 환경 교육의 기초 부분과 교수 학습 활동 부분으로 크게 나누어서 앞 부분에는 기본 개념과 원리 등의 내용으로 구성하였으며 뒷 부분은 환경교육 각 영역에 관련되는 실제 활동 위주로 구성하는 것이 바람직하다는 결론을 얻었다.

그 주요 내용은 환경의 구성, 환경문제, 환경 교육의 방향, 인구문제와 환경오염, 산업화와 환경오염, 공기오염, 물의 오염, 토양 오염, 그 밖의 오염으로 구성하기로 하였다.