

The Third UNESCO/Japan Seminar on Environmental Education in Asian-Pacific Region

November 30 - December 2, Tokyo

FINAL REPORT



Japanese National Commission for UNESCO
Ministry of Education, Science, Sports and Culture
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Introduction

Introduction

The UNESCO/Japan Seminar on Environmental Education in Asian-Pacific Region was initiated by the Japanese National Commission for UNESCO and the Ministry of Education, Science, Sports and Culture for the purpose of promoting environmental education and cooperation for it in the region in 1998.

This third Seminar was held from November 30 to December 2, 1999 in the National Olympic Memorial Center for the Youth in Tokyo, Japan. The Seminar was hosted by the Ministry of Education, Science, Sports and Culture, and the Japanese Commission for UNESCO, cohosted by Tokyo Gakugei University in cooperation with the United Nations University, Institute for Advanced Studies (UNU/IAS). Its theme was “Teacher education which promotes environmental education - What should it be like?” Participants in the Seminar were from twelve countries in the Asian-Pacific region. In addition, the Seminar invited two resource persons with environmental education expertise from Canada and one from UNESCO/PROAP.

The purposes of the Seminar were as follows:

- 1) to understand the current situation and share common issues of teacher education for environmental education in the Asian and Pacific region;
- 2) to discuss possible solutions to these issues and make recommendations; and
- 3) to discuss the organization and themes for the next seminar.

The Seminar deliberated on the importance of environmental education in teacher education in the workshop format over three days.

Group Work Outcomes

Group Work Outcomes

I. Common Environmental Education Issues

To identify common issues for environmental education across the Asia Pacific region participants were divided into four groups. Each group consisted of participants from at least three different countries. In these groups participants compiled a list of common issues or problems in environmental education and teacher education. The shared list of issues appears below.

- 1 . Schools, teacher education institutions and universities and their management need to support EE.
- 2 . There is a lack of political power of teacher educators at the central government level.
- 3 . There is debate about whether EE should be cross-curricula, interdisciplinary or an individual subject.
- 4 . There is a lack of support from government in terms of policy and funding especially education departments.
- 5 . There is a need for more teachers to be teaching EE.
- 6 . More funds are required for EE especially in rural remote areas and for teacher educators.
- 7 . Common and agreed definition or approach to EE across sectors, school, community, government and industry.
- 8 . Status of EE in schools and teacher education is needed to raise the value in teacher education as well as in the school curriculum.
- 9 . There needs to be further discussion about what the content of EE should be.
10. Parent support is vital for environmental education.
11. Improved educational opportunities for teachers in environmental education.
12. EE materials need to be more available for teachers and teacher educators. There also needs to be the provision of opportunities for sharing ideas.
13. There needs to be further exploration of the most effective teaching and learning strategies for environmental education. There needs to be an acknowledgement that the teaching and learning approaches in environmental education are special methodologies.
14. The awareness of governments about NGO courses available for teachers needs to be increased.
15. Teacher education institutions need to make use of NGO courses within their teacher education programs.
16. Teachers lack the specialised knowledge, ability and skills to teach environmental education.
17. There is a lack of networking at various levels local, nationally and internationally

especially networks that include the community.

18. There is a need for further research in environmental education.
19. Environmental education programs need to be evaluated.
20. There needs to be an identification of how environmental education achieves broader education goals within specific contexts.
21. Professional development for teachers needs to be ongoing rather than on and off.
22. The level of awareness of ecological sustainable development needs to be raised in the community generally.
23. Teachers and teacher educators need to be provided with adequate resources for teaching environmental education.

Figure 1 Common Environmental Education Issues

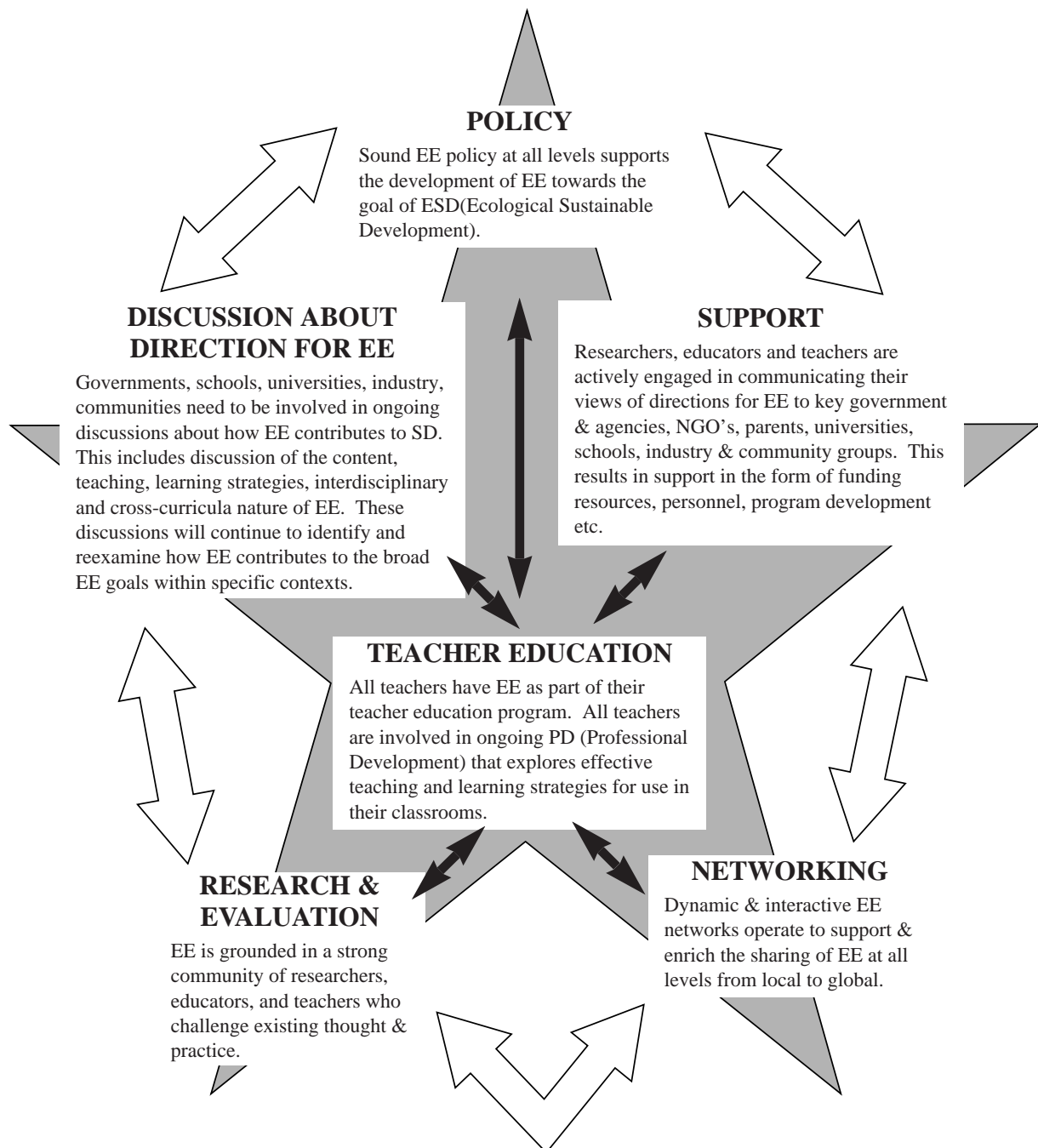
The common issues identified by participants at the workshop were grouped into a number of categories. Table 1 outlines the categories each of the four groups suggested independently from the list of common issues.

Table 1 Categories of Common Environmental Education Issues.

Group A Teacher Education Networking Policy Discussion about Environmental Education Support Research and Evaluation	Group B Status and Content Training Resources/ materials Support Structure
Group C Policy Curriculum and its implementation Professional development of teachers/ teacher trainers/ other personnel Resources/ funding Networking/ partnership	Group D Teacher training curriculum Content of environmental education Support and political influence

It is interesting to note the number of similarities between these lists. The participants decided that they agree with the general list of categories identified by Group A as a framework of key issues for teacher education.

II. Framework of Key Issues for Teacher Education



III. Recommendations on the Importance of Environmental Education in Teacher Education

1. Directions for Environmental Education

UNESCO

- UNESCO provide an Asian-Pacific environmental education workshop with representatives from each country including an educator and a government official.
- UNESCO produce monographs on key environmental education discussion issues:
 - interdisciplinary, individual subject, integrated
 - curriculum fit
 - senior subject
 - content, process and approaches
 - teaching and learning strategies

National Governments

- National governments support networking in forums such as conferences, workshops, newsletters, professional journals and internet based discussion groups, for the purpose of discussing the direction for environmental education.
- National governments engage in the discussion about the future importance of environmental education for ecologically sustainable development.
- Education and Environmental Agencies raise the awareness of all about the importance of environmental education for ecologically sustainable development.

Professional Associations

- Professional associations publish in print and electrically environmental education discussions about the directions for environmental education.
- Professional associations organize conferences and workshops about the directions for environmental education.
 - interdisciplinary, individual subject, integrated
 - curriculum fit
 - senior subject
 - content, process and approaches
 - teaching and learning strategies

Teacher Education Institutions

- Students need to understand current environmental education directions and possible future directions.
- Teacher educators engage with relevant groups to discuss and review teacher education

curriculum to establish environmental education as a course/component for the curriculum.

- Teacher educators need to engage in environmental education debates and maintain an up-to-date knowledge and understanding of directions for environmental education.

NGO's, Community, Parents and Industry/Business

- NGO's, community, parents and industry/business be aware of the importance of environmental education for achieving ecologically sustainable development and broader educational goals.

2. Policy

UNESCO

- The UNESCO office in each Asia/Pacific country organize a meeting of relevant organizations/bodies to explore the introduction of environmental education in teacher education.
- Two representatives from each country attend any future environmental education seminars. One should be a teacher educator; the other a Ministry of Education official/manager.
- (As a result of UNCED+10, 2002) UNESCO survey Asia/Pacific nations to ascertain the policy that has been developed to assist the nations in implementing their commitment to chapter 36 of Agenda 21 (Education, Awareness and Training).

National Governments

- Each country or state/territory establish a national or state environmental education coordinating group to oversee the development, implementation and networking of environmental education policies and practices to provide direction for formal education (schools, teacher training) local government, community education and business education.
- Ministries of Education and professional organizations in each country develop a policy for the teaching of environmental issues which include social, economic, biophysical and political aspects.
- A percentage of each countries budget is allocated to achieving the aims of education for a sustainable future.

National Governments and Teacher Education Institutions

- Environmental education become a mandated course/component within teacher education to achieve the aims and objectives of education for a sustainable future.

Teacher Education Institutions

- Teacher education institutions develop green policies that reflect their organizational, operational and curriculum commitment toward a sustainable future.

3. Teacher Education

General

- UNESCO, national governments, state/territory/local government, professional associations, other NGOs, and industry/business organize seminars/workshops/symposia for teacher education on environmental education.

National Governments

- National governments develop a center to support environmental education in teacher education.

Professional Associations and Other NGOs

- Professional associations and other NGOs provide resource persons, funding, and/or materials for teacher education on environmental education.

Industry/Business

- Industry/business provide funding for publishing books, and teaching and learning materials on environmental education.

Teacher Education Institutions and Teacher Educators

- Teacher education institutions and teacher educators provide the flexibility needed by teacher educators to undertake environmental education.

- Teacher education institutions and teacher educators use resources already available in Asia-Pacific region, e.g. "Learning for the Sustainable Environment."

- Teacher education institutions and teacher educators focus on students experiencing and understanding the range of environmental education teaching and learning strategies including participatory approaches.

- Teacher education programs include a course/component of environmental education.

- Ongoing professional development programs be available to all teachers.

- Teachers with formal education qualification be those best suited to teach environmental education.

- Teacher educators make use of experiences in the natural and social environment to help students explore their attitudes and values towards the environment.

- Teacher educators maintain their own high level of knowledge, ability and understanding of environmental education. They should engage in professional discussions and report these in books or teaching materials.

- Teacher educators be responsible for integrating community resources including NGOs into their courses.

4. Support

General

- Identify key person(s) in organizations and/or institutions who can support environmental education.
- Organize national/local environmental education committees represented by all key groups who can support environmental education.
- Set-up lobby organizations or groups to provide support for:
 - resource persons in workshops/seminars/conferences
 - development of innovative teaching-learning approaches/methodologies/languages/strategies
 - adaptations and translation of materials into local languages
 - provision of equipment, teaching-learning materials and other resources
- Involve the media in environmental education activities for advocacy and to promote information sharing, exchange and dissemination.
- Promote the involvement of government agencies, NGOs, industry, business, general public, Parent Teachers Associations, professional organizations, civic organizations, communities, and so on in environmental education activities.
- Emphasize the use of the local environment as a teaching-learning resource for environmental education.

UNESCO

- Promote sharing and exchange of information on environmental education among agencies in member countries, through print and electronic media.
- Mobilize funding support for environmental education activities in the region and in member countries, especially for the provision of technical expertise, the organization of study visits, the exchange of materials and so on.
- Organize regional activities on innovative approaches for development of teacher education and teaching-learning materials on environmental education.
- Encourage national follow-up activities on environmental education involving representatives from various agencies.
- Initiate environmental education activities involving partners from other UN organizations, international agencies, NGOs, for training of different target groups, e.g. UNEP (NETTLAD), ILO(labor groups), FAO (farmers groups) and so on.

Teacher Education Institutions and Professional Associations

- Seek support for environmental education activities from the corresponding Ministries, and work in partnership with other governments, teacher training institutions and professional associations on environmental education, and with NGOs in organizing training activist

programs.

- Initiate innovative teacher education activities which would “make a difference” in the training of teacher and teacher educators.
- Provide examples of ‘best practice’ in the use of the local environment as a learning resource.
- Mobilize the media to publicize the ‘best practice’ initiated by teacher education institutions and professional associations.
- Prepare a database of existing environmental education materials for use in teacher education programs and make available as reference for teacher educators and teachers.

5. Networking

The Rationale

- The participants in the seminar emphasized the importance of networking in promoting good teacher training for environmental education. In outlining their rationale, they stressed that networking:
 - supports and enriches the sharing of efforts and experiences at all levels - from local to global.
 - helps practitioners avoid duplication and saves resources, time and money.
 - ensure access to information about the current state of environmental education and new development - important for all, but especially for those starting in the field.
 - allows similar activities to take place simultaneously through the sharing of good practice.
 - help to stimulate new ideas and creativity, and motivates others.

Levels of Networking

- The participants identified the following levels of networking which they felt were necessary for improving teacher education in environmental education:
 - networking between personnel (individual networking)
 - networking between school faculties and departments
 - networking between teacher education institutions
 - networking between national bodies (government Ministries and institutes)
 - networking between governments and NGOs
 - networking between regional efforts and institutions
 - networking with the mass media
 - networking between environmental education centers/resource centers

- networking on an international level

Recommendations

The participants felt that networking to improve environmental education in teacher education should involve the following groups:

- | | |
|----------------------------------|---------------|
| - UNESCO | - NGOs |
| - national governments | - business |
| - teacher education institutions | - community |
| - professional associations | - researchers |

The participants specifically recommended that networking to improve environmental education in teacher education be carried out through:

- meetings of environmental educators held at local, national and international levels
- regional level training programs, which allow environmental education teacher educators to more easily share common concerns and possible solutions
- the use of electronic media, especially the Internet. Seminar participants specifically called for the creation of an Asia-Pacific environmental education regional websites, linked to the UNESCO-PROAP Bangkok office website, to share the discussions and results of the UNESCO/Japan Seminars on Environmental Education in Asian-Pacific Region
- publication of newsletters and print media
- efforts to make environmental education teacher education ideas, materials and resources more available through translation into national and local languages

6. Research and Evaluation

General

- Lobby national research granting bodies and/or councils about the importance of including environmental education in their criteria for grants and awards.

Teacher Education Institutions

- Teach about evaluation as an ongoing part of everyday activity for teachers rather than an end of activity.

- Teach about the wide variety of approaches to evaluation that can be used to identify good environmental education practice.
- Develop materials that make existing research meaningful to teachers and that provide direction for thinking and practice.

Teacher Education Institutions and Researchers

- Use environmental education as a basis for ongoing professional development for teachers.
- Recognize the variety of ways research and evaluation in environmental education can be undertaken, for example, case studies, narratives, cultural studies and significant life experiences.
- Researchers should ensure that research findings are made available to teachers so that it can be incorporated into practice.
- Undertake research and evaluation that can contribute to the following areas of inquiry identified as important by participants:
 - Identify areas for research and evaluation that are important to begin within the next few years
 - Evaluate teacher education and professional development environmental education curriculum and practices
 - Examine teaching and learning strategies that include research and evaluation as a way of grounding research and evaluation in practice
 - Use evaluation strategies to identify good environmental education practices in schools, teacher education and professional development programs
 - Engage teachers in action research as an ongoing part of their professional development
 - Examine the impact of various document produced by UNESCO and governments on environmental education policy and program development
 - Initiate long term research programs that document environmental education programs as they evolve over several years
 - Identify networking opportunities among related areas such as global education, population education, peace education and so on
 - Examine the impact of professional associations, NGOs and others on formal teacher education in environmental education programs
 - Teacher thinking and motivations for including environmental education in their curriculum
 - Children's images, perceptions, perspectives and ideas about nature and the environment
 - Extend research on knowledge, attitudes and actions of students

Opening Remarks



Opening Remarks

Mr. Masamitsu Oki
Deputy Secretary General
Japanese National Commission for
UNESCO
Ministry of Education, Science,
Sports and Culture

Professor Okamoto, President of Tokyo Gakugei University,
Professor Yamashita, Director of the Field Studies Institute for Environmental Education of
Tokyo Gakugei University,
Distinguished participants,
Ladies and Gentlemen,

It is my great pleasure to extend to all the participants a hearty message on behalf of the Japanese National Commission for UNESCO, and MONBUSHO (Ministry of Education, Science, Sports and Culture) at the opening of the “Third UNESCO/Japan Seminar on Environmental Education in the Asian-Pacific Region”.

First of all, I would like to express my warmest welcome to all participants from Asia and the Pacific Region.

I would also like to extend my sincere thanks to Ms. Lucille Gregorio from UNESCO/PROAP for coming all the way from Bangkok, whose kind attendance will certainly enrich discussions in the seminar.

The theme of this seminar, “teacher education which promotes environmental education - What should it be like”, is a very important aspect for the promotion of environmental education in Asia and the Pacific region.

The 30th session of UNESCO’s General Conference held in Paris this month, in which I attended as one of the representatives of the Japanese government, decided the programmes and budget for the 2 years from 2000 to 2001. In the programmes and budget, “Educating for a sustainable future” is one key issues in the field of education, and “environment and sustainable development” is also named as one of the priorities to be observed in the Organization’s science initiatives. At the Conference, it is the good news to us that Mr. Koichiro Matsuura was appointed as new Director-General, the first DG from Asian and the Pacific Region. He addressed the Conference with an outline of his vision for the future of UNESCO, in which he stressed environmental protection, as one of the main challenges.

In Japan, environmental education has been promoted year. Monbusho particularly puts emphasis on the learning of importance of nature through various environmental problems in the

community and experiences in natural environments. It is expected to bring up students with initiatives and excellent problem-solving skill through the new approach.

In this respect, this Seminar's Theme is, in deed, appropriate and timely. I believe the Seminar will provide you, all the participants, with important information and great stimulation in the field of environmental education and at the same time, international collaboration and friendship.

In closing, due to the change of the climate and the style of living, I hope that all participants, especially from abroad, will take good care and have a pleasant and fruitful stay in Tokyo.

Thank you for your attention.

Opening Remarks

Mr. Yasumasa Okamoto
President
Tokyo Gakugei University

Mr. Masamitsu Oki, Deputy Secretary-General, Japanese National Commission for UNESCO,
Ministry of Education, Science, Sports and Culture,
Ms. Lucille C. Gregorio, Specialist in Science and Technology in Asian-Pacific Region, ACEID,
UNESCO PROAP, Bangkok,
Professor Shuji Yamashita, Director, Field Studies Institute for Environmental Education, Tokyo
Gakugei University,
Distinguished Participants,
Ladies and Gentlemen,

It is my great honour and pleasure to have an opportunity of making a welcome speech at the opening ceremony of the Third UNESCO/Japan Seminar on Environmental Education in Asian-Pacific Region. I express our hearty welcome to you all the participants from overseas and domestic on behalf of Tokyo Gakugei University, which cosponsors and coorganizes this seminar with the Ministry of Education, Science, Sports and Culture. I am grateful to all the people of the Japanese National Commission for UNESCO and the Field Studies Institute for Environmental Education, Tokyo Gakugei University who have been preparing for this seminar.

Environmental issues are among the most urgent problems of our days, and environmental education is becoming more and more important. It is to be regretted, but we cannot escape from the present critical global condition. We are responsible to the next generation and posterity for the preservation and improvement of the global environment. We ourselves have to become, and we have to bring up, environmentally responsible citizens.

The theme of this third UNESCO/Japan Seminar is, I understand, how to train teachers for promoting environmental education. Tokyo Gakugei University is a leading teacher-training university in Japan, and we have been putting a great deal of effort into environmental education, especially since the foundation in 1987 of our former institute of the present Field Studies Institute for Environmental Education. We opened a new graduate course (a night course) of environmental education for in-service teachers in April in 1997 and several in-service teachers got master's degree in March this year. And also we are to open a new undergraduate course of environmental education next April. In February last year our Field Studies Institute organized an international symposium on environmental education in the global age, with good success, I believe, and it took part and played an important role in the first UNESCO/Japan Seminar on Environmental Education which was held in March last year. And since the second

UNESCO/Japan seminar which was also held last year, in December 1998, our university has become a co-organizer with Japanese National Commission for UNESCO.

I hope this third seminar will be a fruitful opportunity for exchanging and creating a good many ideas and insights for environmental education and for training teachers for it.

I also hope this seminar will bring all the participants into a deeper understanding and friendship with each other. Thank you.

Opening Remarks

Ms. Lucille C. Gregorio
Specialist in Science and Technology
Education
UNESCO/PROAP
Bangkok

Mr. Chairman

President Okamoto of Tokyo Gakugei University,

Mr. Oki, Deputy Secretary-General, Japanese National Commission for UNESCO

Professor Yamashita, Director, Field Studies Institute for Environmental Education

Fellow Environmental Educators

Friends, Ladies and Gentlemen

It is with great pleasure that I am able to participate and learn from you during the “Third UNESCO/Japan Seminar on Environmental Education in Asia- Pacific Region.” UNESCO-PROAP is pleased to be associated with this important activity. At the onset, allow me to extend special greetings from UNESCO now headed by the former Japanese Ambassador to France, Mr. Matsuura, from my Director at PROAP Mr. Victor Ordonez, the chief of ACEID Mr. Rupert Maclean and from all my colleagues at the Bangkok Office. On my own behalf as officer-in-charge of PROAP’s “Environment and Sustainable Development” programme, I wish to thank MONBUSHO and Tokyo Gakugei University for their dynamic leadership in organizing the EE seminars, and to all of you for your participation, having come over despite your busy schedule in your home countries. Your contributions to the discussions will ensure the success of this seminar.

UNESCO, as Task Manager of Agenda21 Chapter 36, has re-oriented its programmes and priorities further, to address and promote sustainable development. These priorities have trickled down from the global to the local levels, involving the different sectors: natural and social science, education, information and communication and culture.

At PROAP, we have implemented some activities in collaboration with partners from UN agencies, international organizations, NGO’s, private sector and industries. We are mobilizing local communities in promoting EE activities through the Community Learning Centres, and the Literacy Resource Centres found in Member Countries.

Specifically, we have organized regional workshops/roundtables/seminars on Repackaging of EE Teaching-Learning Materials: Mobilizing the youth to take action on the Earth Pledge; Trained Teachers to develop their own teaching-learning materials using local environment and resources; prepared multi-media instructional materials on environment issues for promoting

functional literacy, etc.

PROAP is currently involved in the preparation for the Ministerial Conference on Environment, in cooperation with the Regional Inter-agency Committee on Environment for Asia Pacific (RICAP). The Conference will be hosted by the Government of Japan in August 2000. Before the Conference, Report on the “State of Environment for Asia and Pacific” will be distributed to Member Countries and agencies. The State of Environmental Education is one big chunk of the report.

Allow me now to give my impression on the three UNESCO/JAPAN Seminars on EE for Asia Pacific. The reports give very good recommendations based on the themes of the seminar. My concern is -- many recommendations have been put forward, and yet we are still repeating the same concerns. Where are the gaps? Are we focusing on traditional issues, and no follow-up actions are getting in place?

My friends, we have to admit that we have not done enough. The new millennium will be with us in 4 weeks time. I hope that we will be able to identify strategies which could be implemented without much difficulty. After all we have a commitment to make our planet earth a better place for our children and grandchildren. This same commitments were given by our world leaders and national ministers during the World Conference on Education for All (1990); Earth Summit (1992); World Conference on Science (1999); and other World Conferences on Social Development, Population and Development; Women; etc.

My friends, the challenge is before us. I hope that as lifelong learners, we will have enough time to listen and learn from each other.

Thank you and good day!

Opening Remarks

Mr. Shiro Kobayashi
Vice-President
Tokyo Gakugei University

Mr. Masamitsu Oki, Deputy Secretary-General, Science and International Bureau, Ministry of Education, Science, Sports and Culture

Professor Okamoto, President of Tokyo Gakugei University

Dr. Lucille Gregorio, UNESCO/PROAP

Mr. Masayuki Inoue, Director, International Affairs Planning Division, Science and International Bureau, Ministry of Education, Science, Sports and Culture

Distinguished Participants,

Ladies and Gentlemen,

It is great pleasure to join you and to exchange some information of environmental education in each country.

My role at the present time is to make you concentrate to the party. My speech is consist of three parts. The first part is to make a few remarks at this reception. The second is to tell you about a song which was taught in the classroom since Taisyuu era. The third is to propose a toast. It takes about three to four minutes from the first part to the final.

This morning, Mr. Oki, Secretary General, Science and International Bureau, Monbusho, Professor Okamoto, President of Tokyo Gakugei University and Dr. Gregorio, UNESCO/PROAP gave all of us very warm greeting and encouraged us from Monbusho's, UNESCO's, and University's standpoints.

Usually Mr. Oki is supposed to be dwellers among the clouds. I am not making a joke. But this morning he came down to the opening ceremony of seminar. It means how the Monbusho places a high value on not only this seminar but all of you.

A month and a day is left before the coming new century. Nowadays, everybody knows the interplay between economy, ecology and technology must make unique demands, scientific and ethical, on our age.

It is necessary for educators or the persons concerned to education to know that Education should enkindle a sense of joy in physical activity and nature's grandeur, of living in a beautiful country, the lines of a landscape, and in the changing seasons.

At the end of next century, what do our grandchildren say on environmental education?

The second part.

Here is a very famous song which has been sung by pupils in the school as the Monbusho songs. The title is Spring Rill or Stream. This song is very popular because of beautiful lyrics

written by Tatsuyuki Takano, in 1921. He lived in this Yoyogi area, within 10 minutes walk from here. He wrote this lyrics remembering a little stream he saw every morning during his walk. I also live not so far away from here. About 30 years ago, I used to try to find the stream which he saw 70 years before. But I could not find it. Can you imagine the poet could see a landscape of countryside in the midst of Tokyo. How do you develop this topic when you use as a teaching material in your classroom?

The last part. let me introduce an American high school teacher. She teaches 12th grade literature and composition. One of the courses she teaches is Environmental Literature. I promised to introduce her to the first class scholars and educators. I will leave here her e-mail, please read it and assist her with her curriculum.

Now it is the time to drink a toast. Let's drink to your health and the development of this seminar. Please say Kanpai in chorus.

Resource Persons' Presentation



Resource Persons' Presentations

GETTING THE PEOPLE RIGHT: QUALITY ISSUES AS PEOPLE ISSUES IN TEACHER EDUCATION FOR ENVIRONMENTAL EDUCATION

Dr. Paul Hart
University of Regina
Canada

Introduction

The truth is that, ecologically, sustainability will only be achieved when humankind recognizes the limits to growth and the need to adopt a new world ethic for living sustainably.

(Fien & Trainer, 1993, p. 36)

Thank you for the invitation to participate as a resource person in the Third UNESCO/Japan Seminar on Environmental Education in the Asian-Pacific Region. I have read with interest the reports of the first and second seminars which describe the current situation in the Asian-Pacific region and the evaluation of environmental education materials and resources, respectively. My purpose in this paper is to raise some issues and to pose some problems which may encourage discussion and debate as we attempt to merge ideas of environmental education and teacher education.

At the second seminar (December, 1998) keynote speaker Dr. Karen Hollweg, speaking about environmental education materials, asked a question about what makes environmental education materials “good?” In other words, how do we judge the relative merit of existing materials? It seems to me that the answer depends on our perspective, our view of the world, and our view of ourselves in the world. Although we may differ about the meaning of “good”, we all want “good teachers” teaching “good environmental education” in our schools. This shared value position assumes that we can agree on issues of meaning including the following questions. First, what qualities might we like to see in those people we educate as teachers? Second what qualities of environmental education should teacher education programs emphasize? In this paper, I raise issues for discussion about each of these questions.

Teacher Qualities

As the introductory quotation by Fien and Trainer intimates, environmental education, by any definition, implies change in both human thought and action. Environmental education is not merely a set of skills or school practices. It is a philosophy, a way of looking at the world. It tends toward an ecophilosophical worldview which contrasts with the dominant social-political-economic worldview (see Attachment 1). This notion that environmental education should

nurture a new ethic requires critical thought about the role, nature, and potential of environmental education as a transformative agent of personal, social, and planetary change (Sterling, 1993). It is a notion that has serious implications for teacher education.

Currently, teacher education for environmental education depends on the approach taken by the people who educate teachers. In other words, what prospective teachers are exposed to in their courses and programs depends on the philosophy and approach of teacher educators. Whether implicit or explicit, every person, every teacher educator, holds a worldview - a set of ideas, assumptions, beliefs, and moral values, both individual (unique) and cultural (shared) - which is that person's view of reality and which colours perception, thought, and action. It is both a filter and a processor. Because environmental education espouses an alternative worldview, environmental education within teacher education needs to provide opportunities for teachers to examine and critically reflect on their own perspective(s) and sense of identity. This is important because critical examination of contrasting worldviews may cause questioning of values which underlie these worldviews as well as the nature of social change processes. Put simply, social change requires that people know where they are, why they are there, how to change, and what direction to take, for example, toward an ecologically sustainable future (Sterling, 1993).

If we assume that teachers have an ethical right to determine the extent and nature of the personal changes they adopt then teacher education programs must recognize their responsibility to both challenge and support teachers as they struggle to understand themselves, their position on social and environmental issues, and their commitment to change their educational practices. Teacher education programs can create conditions for exploration and understanding of personal experiences through open discussions in settings where participants share their struggles to understand their own beliefs and values.

When teachers enter the profession they will encounter a rhetoric-reality gap, an extensive list of curriculum and pedagogical contradictions, between environmental education and schooling as an institution. Stevenson (1987) illustrates this contrast at several levels. For example, he suggests that environmental education has the revolutionary purpose of transforming values in contrast to the traditional purpose of schools which is to conserve the existing social order, that is, to reproduce the norms and values which currently dominate economic decision making. How can teacher education programs address such fundamental differences in purpose? Examination of the teacher education materials which accompany *Caring for the Earth* (IUCN, UNEP, WWF, 1991) reveals an alternative set of ethics - a comprehensive philosophy of education for sustainability which implies change in schools as institutions. Other environmental education materials are less overt advocates of social change. In fact, it is possible to distinguish between conservative and socially critical forms of environmental education (i.e., those which embed within or challenge existing forms of operation in schools) creating for teachers and teacher educators conflicts in their approaches to teaching and learning (Robottom & Hart, 1993).

In my inquiry into environmental education activities within Canadian elementary schools, it soon became apparent that the nature of curriculum and the form of environmental education depends more on the teacher's basic beliefs than the prescribed curriculum materials. Many primary/elementary teachers without a background in science or a sophisticated grounding in environmental ethics were nevertheless deeply committed to teaching in, about and for the environment (see Hart, 1996). Although these teachers are open to criticism from those who believe that environmental education must be grounded in scientific information and facts, we learned not to be too hasty in our judgment about the quality of these programs. Teacher knowledge is more broadly based in moral and ethical understanding than the critics give credit for. Canadian teachers we observed tended to view environment as an extension of basic moral values/personal-social ethics, thus grounding their teaching in those fundamental human values, ethics, and morals which govern basic human behaviour within society. Thus, our inquiry has raised the notion that teacher education can have a more lasting effect on what happens in schools if it attempts to understand how teachers construct their values, perspectives, perceptions as well as their knowledge and understanding of content and pedagogy. Payne (1999) refers to this phenomenon as understanding and helping teachers understand their sense of self (as embodied knowing) and then creating conditions within teacher education for self-examination which includes an introduction to notions of critical ecological ontology.

So, assuming that teachers are generally good people with good moral values who want children to become good citizens (personally, socially, and environmentally) how do teacher educators provide opportunities for preservice and inservice teachers to understand their often tacit and contradictory values and to investigate ways to extend their beliefs about personal and social virtues to include environmental ethics? Or, perhaps the question is better stated, are we prepared as teacher educators to engage teachers in active discussion and debate about social and environmental sensibilities as they struggle with basic values questions such as the following:

- What do my practices say about my assumptions, values and beliefs about teaching?
- Where did these ideas come from?
- What social practices are expressed in these ideas?
- What views of power do they embody?
- Whose interests seem to be served by my practices?
- What is it that acts to constrain my views of what is possible in teaching?
- How might I change?

And with respect to Teacher Education for Environmental Education, more specifically:

- How do we provide opportunities in teacher education for students to re-examine their values and ethics?
- How do we introduce environmental ethics as an extension of personal, social ethics?
- How do we create conditions for young adults in teacher education to consider alternative worldviews such as an ecophilosophical worldview?
- How do we create conditions for transformative learning, including full planetary

consciousness (see Clover, Follen & Hall, 1998; O'Sullivan, 1999)?

Teacher Education Program Qualities

Concerning the question of quality in teacher education programs, it is important to clarify assumptions about what counts as professional practice. Many who are not professional educators tend to interpret and assess teaching quality in terms of externals such as the demands of the workplace, economic needs or national interests. In other words, teaching is judged as a means to ends which are not themselves questioned.

In contrast, teaching may be judged in terms of internal educational values which recognize teachers as professionals, committed to their work. Within this view of assessment professional knowledge is not a systematically organized body of theoretical knowledge but a shared body of practical wisdom - a set of values in terms of which teachers make sense of practical situations. The knowing is in the action. This alternative epistemology of education may be seen as corresponding to the shift from dominant to ecophilosophical worldview. It implies a change in thinking about what counts as knowledge in teacher education and in the language we use to describe it. This language of teaching portrays teachers as translating abstract educational values as well as pedagogical content into concrete educational practice. It is an ethical language which recognizes that teachers are guided by moral values and that the quality of their practices can only be judged by those ethical criteria which teachers invoke to explain the educational purpose of their teaching.

Viewed this way, teaching may be regarded as social rather than a technical practice. And it should not be surprising that social and environmental consciousness now be considered as one of the traditions of thought shaping teachers' practical experience. Only by revising the knowledge and beliefs inherent in their own conceptual understandings can teachers change and improve the ways in which they pursue their own educational purposes and ends. Environmental education has a role to play in these educational considerations about consciousness and values.

Rather than examining qualities of teacher education programs in terms of performance criteria or standards, quality should be seen in terms of critical examination of heretofore taken for granted knowledge implicit in action and consciously made explicit, critically examined and reconstructed in the form of improved action. It is not that professional practitioners are stupid, bad or uncaring, says Grundy (1989), it is that the meaning systems which are informing their practice are unexamined or poorly considered. Teaching cannot be changed or improved other than by improving teachers' capacity to realize their educational values through their own thinking and practice. Change is a personally critical action inquiry process. Improvement of personal practical thinking cannot be differentiated from professional development.

As we address the current widespread focus on standards in environmental education, teacher education programs should be clear about which criteria we believe are appropriate, those of efficiency and cost effectiveness, of educational management, or those of educational values that a developing critical consciousness will expose and challenge? What agreement among teacher

educators might we have on criteria (posed as questions) for good environmental education in teacher education?

1) **Goals/Purposes/Outcomes:** What goals should Teacher Education for Environmental Education emphasize?

- ecological foundation (science) versus ecosystems foundation (interdisciplinary)
- ethical foundation (traditional ethics) versus environmental ethics (a different value system)
- political foundation (conservative status quo) versus radical (socially critical change)
- critical thinking foundation (rational versus emotional)

2) **Content:** What form should the curriculum in Teacher Education for Environmental Education take? What is the balance?

- traditional (science) versus context relevant (close to daily life of learner)
- rote learning (algorithms) versus cognitively challenging experiential forms of education (creating dissonance)
- subject-based curriculum versus issues-based (discovery, inquiry oriented)
- objective content versus controversial issues
- broad survey courses versus focused, in-depth study of issues

3) **Process:** What processes should inform Teacher Education for Environmental Education?

- social reproduction versus social change
- behavioural (instrumentalist) versus constructivist (builds on learners conceptions)
- didactic (transmissive) versus participatory
- conforming (reinforcing existing society) versus emancipatory (empowering, exposing gender and cultural inequities)
- conditioning (safe) versus transforming (uncertainty)
- individualism (agency) versus socially cooperative (collaboration)
- action competence (liberalist) versus socially critical action (ecosocialist)

4) **Evaluation:** What forms of evaluation are appropriate for Teacher Education for Environmental Education?

- objectivist vs. subjectivist vs. dialectical
- instrumentalist vs. constructivist vs. reconstructivist
- quantitative vs. qualitative vs. postmodernist
- deterministic vs. illuminative vs. emancipatory (see Robottom & Hart, 1993)

There are also many more general challenges and issues. For example, how do we integrate the many perspectives (health, peace, environment) with sustainability issues without losing the identity of environmental education? How does action competency match the universal concept of democracy? How do you encourage diversity and monitor practice to gain insights into program quality and transferability (see Oulton & Scott, 1997).

Moving Forward? in Teacher Education for Environmental Education

In her book *Environmental Education in the 21st Century* Joy Palmer (1998) refers to

education, including teacher education, as a priority solution in Agenda 21 for global problems. Quoting sources as far back as the 1960s she develops the case for environmental education which is explicitly values-based, education that can give people the environmental and ethical awareness, values and actions needed for sustainable development.

Environmental education, in its broadest sense, is about 'empowerment' and developing a sense of 'ownership,' improving the capacity of people to address environment and development issues in their own communities. It is about touching people's beliefs and attitudes so that they want to live sustainably . . .

(Palmer, 1998, p. 274)

What is important for teacher education for environmental education, is that those of us responsible for teacher education take stock of our own personal beliefs about the importance of environmental education in teacher education programs. If we believe that it should happen, it will happen. Get the people right within teacher education institutions and the program will take care of itself. Within Canada, where environmental education occurs within teacher education it is because of key people, people committed to an ecophilosophical worldview, people who believe that something can happen despite institutional barriers. As Sterling (1993) states, we need educators who are in touch with the ecophilosophical roots of environmental education, critically aware of how the dominant paradigm drives society, and who understand the role of environmental education with respect to social change.

I sincerely hope that a number of the points raised in this paper and in the seminar will lead us to extend our ideas of the meaning systems which have such uncritical acceptance as the models of teacher education programs. By asking about whose interests these meaning systems serve perhaps we can move beyond professionalism toward a more critical mode of action which involves personal, social, and environmental transformation. Again, thank you for the opportunity to raise a number of issues about environmental education within teacher education. Based as I am within a Canadian university I must acknowledge my limitations in attempting to pose questions about teacher education in countries where conditions are far different from my own. However, I believe that the only way forward is to come together to exchange these ideas of mutual concern and interest. Therefore we should be grateful to UNESCO/Japan for providing this valuable opportunity.

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The Contrasting Values and Beliefs of the Dominant Social Paradigm and the New Environmental Paradigm

Dominant Social Paradigm	New Environmental Paradigm
<p>1 Low Valuation on nature</p> <ul style="list-style-type: none"> ● use of nature to produce goods ● human domination of nature ● economic growth over environmental protection <p>2 Restricted compassion for those near and dear</p> <ul style="list-style-type: none"> ● exploitation of other species for human needs ● lack of concern for other people ● concern for this generation only <p>3 Risk acceptable to maximise wealth</p> <ul style="list-style-type: none"> ● science and technology a great boon to humans ● swift development of nuclear power ● emphasis on hard technology ● de-emphasis on hard regulation; use of the market; individual responsibility for risk <p>4 No limits to growth</p> <ul style="list-style-type: none"> ● no resource shortage ● no problem with population ● production and consumption <p>5 Present society satisfactory</p> <ul style="list-style-type: none"> ● no serious damage to nature by humans ● hierarchy and efficiency ● emphasis on market ● competition ● complex and fast lifestyles ● emphasis on jobs for economic needs <p>6 Current politics satisfactory</p> <ul style="list-style-type: none"> ● determination by experts ● emphasis on market control ● opposition to direct action; use of normal channels ● left-right party axis; argument over ownership of means of production 	<p>1 High valuation on nature</p> <ul style="list-style-type: none"> ● nature for its own sake; worshipful love of nature ● holistic relationship between humans and nature ● environmental protection over economic growth <p>2 Generalised compassion toward</p> <ul style="list-style-type: none"> ● other species ● other peoples ● other generations <p>3 Limits to growth</p> <ul style="list-style-type: none"> ● science and technology not always good ● halt to further development of nuclear power ● development and use of soft technology ● government regulation to protect nature and humans <p>4 Limits to growth</p> <ul style="list-style-type: none"> ● resource shortage ● increased needs of an exploding population ● conservation <p>5 Completely new society needed</p> <ul style="list-style-type: none"> ● serious damage by humans to nature and themselves ● openness and participation ● emphasis on public goods ● cooperation ● simple lifestyles ● emphasis on worker satisfaction <p>6 New politics needed</p> <ul style="list-style-type: none"> ● consultation and participation ● emphasis on foresight and planning ● willingness to use direct action ● new party structure along a new axis

(Fien 1993, p.95)

Principles of Environmental Adult and Popular Education

- ♪ we need to passionately re-connect with the rest of nature through all our sense and emotions;
- * we need to critically examine the unjust power relations behind contemporary social and environmental trends;
- * we learn best by beginning with our daily lived experience and by understanding our own locations, contexts and histories;
- * we are responsible for taking personal and collective action to re-creation a healthy planet for all species both now and in the future;
- * we can all transcend the bonds of traditional education
- * we are all artist, poets, storytellers, songwriters, dreamers, and more

(Clover, Follen & Hall, 1998, p.18)

Attachment 3

Three images of environmental education

	Positivist	Interpretivist	Critical
Purposes			
view of environmental education	knowledge 'about the environment'	activities 'in the environment'	action 'for the environment'
educational purpose	vocational	liberal/progressive	socially critical
learning theory	sometimes behaviourist	constructivist	reconstructivist
Roles			
role of goals of environmental education	externally imposed taken-for-granted	externally derived but often negotiated	critiqued (seen as icons of ideology)
teachers' role	authority-in-knowledge	organiser of experiences in the environment	collaborative participants/inquirer
students' role	passive recipients of disciplinary knowledge	active learner through environmental experiences	active generators of new knowledge
curriculum supporters	disseminators of prepared solutions to environmental problems	external interpreters of the learners' environments	participants in new problem-solving network
role of texts	pre-existing source of authoritative knowledge about the environment	pre-existing source of guidance about environmental experiences	emergent reports of outcomes of critical environmental inquiries
Knowledge and power			
view of knowledge	preordinate commodity systematic personal objective derived from expert	intuitive semi-structured personal subjective derive from experience	generative/ emergent opportunistic collaborative dialectical derive from inquiry
organising principles (source of authority)	disciplines	personal experience	environmental issues
power relationships (PR)	reinforces PR	ambivalent about PR	challenges PR
View of research			
research is	an applied science objectivist instrumental qualitative acontextual/ individualist deterministic	interpretivist subjectivist constructivist qualitative contextual/ individualist illuminative	critical social science dialectical reconstructivist qualitative contextual/ collaborative emancipatory
research design	predominate/fixed	preordinate/responsive	negotiated/emergent
researchers are	external experts	external experts	internal participants
prime example	Hungerford, Peyton & Wilke(1983)	Van Metre(1972)	Elliott(1991)

(Robottom & Hart, 1993, p.26-27)

Attachment 4

A model of the suggested relationships between modes of education modes of environmentalism

	Environmental orientations		
	Deep-green (Ecocentric)	Shallow-green (Technocentric)	Dry or non-green
Educational goal	Transformation	Adaptation	Transmission
Social orientation	Reconstructionist	Accommodationist	Replicative
Educational values	Intrinsic(focusing on the whole person) and instrumental (focusing on social change)	Largely instrumental (focusing on changing individual behaviour)	Intrinsic (focusing on academic ideals) and instrumental (focusing on the needs of the economy)
Curriculum organisation and scope	Curriculum integration(e.g. integrating environmental, global peace and human rights education)	Multidisciplinary (e.g. environmental science/studies)	Single subjects
Philosophy and emphasis	Holism - with an emphasis on values	Largely reductionist - an emphasis on skills and knowledge	Reductionism - with an emphasis on knowledge
Pedagogy	Critical, participative and experiential	Mix of old and new	Traditional reaching and learning styles
Political sensibility	Political - conscious inclusion and infusion of political dimensions of education	Non-political claims - no or little acknowledgement of political dimensions of education	Apolitical claims - denial of political dimension of education

(Sterling, 1993, p.90)

Resource Persons' Presentations

REORIENTING TEACHER EDUCATION TO ADDRESS SUSTAINABILITY

Mr. Charles Hopkins
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Background

In an attempt to cope simultaneously with the threatening issues of environmental degradation and the need to address global poverty and suffering as one holistic challenge, the world's leaders at the United Nations Earth Summit, (Rio de Janeiro, 1992) endorsed the concept of "Sustainable Development" and an accompanying action plan, Agenda 21. Their intent was to begin to move towards a more sustainable future.

Sustainability, in its simplest definition, means not living beyond the means of ongoing support. In this context, systems which are sustainable are self-maintaining and self-renewing. For thousands of years, until the advent of industrialized society, natural systems of which humans are but a part were sustainable. In this industrial era, human population growth coupled with rapid advances in technology has enabled the acceleration of the rates of extraction and harvesting of the earth's resources. As well, industrial processes now produce materials more rapidly than natural systems can absorb, as well as wastes that the natural systems cannot neutralize. Science has made it possible to manipulate and control natural materials and enhance or even engineer living organisms. However, it has not yet given its practitioners the social wisdom to undertake these activities within the limits of the earth's capacity for renewal.

It has become apparent, that to ensure the well-being of future generations, indeed the very prospect of the continued capacity of the natural systems to support human life, it is necessary to address the issue of reorienting our entire culture and world view to embrace the simplistic goal of a sustainable future. One of the primary tools of this critical endeavor is education. Education in its broadest and most inclusive forms, embracing formal schooling, the non-formal knowledge of public institutions, NGOs, corporate training and the multitude of informal opinion molders such as the mass media, needs to collectively develop widespread public understanding and critical analysis. This will hopefully become the fuel to sustain the democratic societal evolution towards sustainability.

CSD Work Program on Education for Sustainability (ESD)

It is with this recognition of the importance of education and public awareness that the United Nations Commission on Sustainable Development has requested UNESCO as the Task Manager, in conjunction with other UN Agencies and all UN member nations to institute a major work program on education for sustainable development (ESD). The program has 7 main

components comprised of the following priority areas for action.

- A. Clarify and communicate the concept and key messages of ESD.
- B. Review national education policies and reorient formal education systems.
- C. Incorporate education into national strategies for sustainable development.
- D. Educate to promote sustainable consumption and production patterns to all countries.
- E. Promote investments in education
- F. Identify and share innovative practices
- G. Raise public awareness.

Several critical tasks were identified as a part of B, above and it is no surprise that reorienting teacher education was identified as one of them.

The world has approximately 59 million teachers and experiences a minimum five-to ten-percent turnover each year. Retraining this number of teachers to address education for sustainable development (ESD) would be an immense task. To approach this global need, the UN Commission identified teacher education institutions as key change agents in reorienting education. The administrations and faculties of institutions of teacher education have the potential to bring about tremendous change, because they create the teacher education curriculum, train new teachers, provide professional development for practicing teachers, consult with local schools, and often provide expert opinion to regional and national ministries of education. Because of this broad influence in the curriculum design, implementation, and policy setting of educational institutions, faculty members of teacher education institutions can bring about change that will promote ESD. By working with the administrations and faculties of institutions of teacher education, the education community can bring about systematic, economically effective change.

Developing Teacher Education Guidelines for ESD

To begin this task, UNESCO was called upon to develop guidelines for teacher training institutions to consider when they begin their reorienting processes. To address this task of developing realistic guidelines, the United Nations Scientific and Cultural Organization (UNESCO) and York University, Toronto, Canada have agreed to establish a UNITWIN¹/UNESCO Chair. To accomplish this task, the Chair will establish an international network of teacher education institutions, willing to experiment and that will work collaboratively to identify various ways of achieving this goal. In addition, the Chair will publish a series of monographs, create a site on the World Wide Web, offer short courses, provide a forum for teacher educators to share their expertise, and generally support efforts to reorient teacher education to address sustainability.

¹ UNITWIN/UNESCO Chairs are programs that are jointly arranged by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and leading universities to jointly work on an international project.

Mandate and Work Plan of the New Chair

The work plan of the Chair calls for both short-term and long-term objectives:

Short-term: To undertake, with the assistance of an international network of teacher education institutions, research and experimentation on different approaches to reorienting teacher education toward sustainability. Institutions in the network will use a common research framework, which will allow comparison of results.

Long-term: To develop suggestions and guidelines for reorienting teacher education and associated realms of pedagogy, curriculum, and evaluation. The Chair will facilitate collaboration between researchers and educators within and between teacher training institutions.

Activities and Roles

To achieve these objectives, the Chair and the network will carry out the following activities:

- Form research networks.
- Develop an electronic ESD teacher-education research journal.
- Develop and maintain a section on the UNESCO Innovative Practices Website.
- Carry out research and development projects in reorienting teacher education towards sustainability.
- Publish research and curriculum guidelines and other documents.
- Identify policies required to support new skills and curricula.
- Engage informal and non-formal education entities and organizations.
- Develop recognition programs.
- Organize seminars, conferences, short courses or other meetings.
- Explore the use of the new technologies as a tool in teacher education regarding ESD.

International Network

The network will eventually be comprised of two tiers based on institutional involvement.

Tier 1 Institutions

Tier 1 will be comprised of teacher education institutions from various regions of the world. These institutions want to pursue large-scale changes in their teacher education programs in order to address sustainability. To take part in Tier 1, the institutions must meet the following criteria.

- 1 Senior administration (i.e., rector, dean of the faculty of education, the vice-rector of the institution, etc.) must be a part of the process and attend network meetings once every two years.
- 2 Institutions will research, describe, and publish the changes they initiate at their institutions and share their experiences with other institutions in the network. Based on these practical experiences, the network will advise UNESCO on how best to bring about institutional

change in teacher training facilities in general.

- 3 One faculty member must also attend a conference once every two years. English is the official language for conferences involving the entire international network; conference participants should speak English or have a personal translator. Optional faculty conferences, regional meetings and short courses may be held at any time between the major conferences depending on the wishes of participating institutions.
- 4 Institutions should also be ready to either allocate funding or be prepared to raise additional funds to cover travel and costs of the project they have undertaken.
- 5 Institutions will prepare a descriptive analysis of the status of education for sustainable development in their teacher preparation program, including the influence of national and regional policy on the program.

The Chair will encourage network members from the developed world to assist partner institutions in the developing world with participation costs by such means as developing joint innovative projects; however, this is not a prerequisite for membership. The Chair anticipates that Tier 1 institutions will convene April/May 2000. Administrators and faculty members will meet in plenary and concurrent sessions to discuss issues common to reorienting education to address sustainability and develop common frameworks for reporting their research.

Tier 2 Institutions

Tier 2 will comprise the many faculty members and administrators who are working alone within their institutions to incorporate sustainability themes and pedagogy but who cannot accomplish or research the wide-spread institutional change required of Tier 1 institutions. These participants should be prepared to finance activities at their own institutions and travel to Tier 2 network meetings. This second Tier will be developed in 2001. Tier 2 members will exchange ideas and experiences electronically with other faculty members in other institutions.

Network Membership

Currently, York University (Canada), Griffith University (Australia), The University of Girona (Spain), The University of Bath (England), The University of the Punjab (Pakistan), The University of Nuevo Leon in Monterrey (Mexico), The University of Edinburgh (Scotland), Rustov University (Russia), Chulalongkorn University (Thailand), Christchurch College of Education (New Zealand), University of Parana (Brazil) and Florida Gulf Coast University (USA) have affirmed their willingness to participate as Tier 1 institutions. Interest in joining the network has also been shown by faculty/administration at teacher education institutions in Denmark, Germany, Hungary, Nicaragua, Dominican Republic, India, South Africa and Japan. The Chair also anticipates that other teacher-preparation institutions in Asia, Europe, the Middle East, Central Africa, the Caribbean, South America, and Central America will join the network.

The goal is to find approximately thirty to forty diverse institutions that are representative of

the various teacher education programs to be found around the world. The selection and addition of other institutions from September 1999 to April 2000 is paramount. To this end, UNESCO has offered to assist the Chair in identifying potential institutional members.

Unique Roles for individual Universities

In order that the international network becomes a true collaborative partnership, member institutions will take on responsibility for developing and promoting locally relevant ESD. Activities such as organizing regional workshops, providing short courses, editing journals, and producing distance learning will be carried out at Tier 1 institutions. As institutions join the network and gain expertise, they will be invited to share their expertise with other institutions within the network and beyond.

Basic Thrusts of ESD for the Chair and International Network

For the purposes of the Chair and network, a common understanding of the concept of education for sustainable development is needed. Rather than spending precious time and energy defining ESD, the Chair proposes the network use goals and descriptions from Agenda 21, which were agreed upon and signed by 179 world leaders and further defined by a series of major UN conferences in the 1990s. Of course, ESD carries with it the caveat that it should always be implemented in a locally relevant and culturally appropriate fashion. This caveat increases chances of successful implementation of ESD programs and decreases the likelihood of importing inappropriate programs.

Chapter 36 of Agenda 21 outlines, but does not define, ESD. chapter 36 identifies four major thrusts to begin the work of ESD: (1) improving basic education and improving access to lifelong learning for “all”, (2) reorienting existing education to address sustainable development, (3) developing public understanding, awareness, and (4) specific vocational training and adult education.

(1) Improving Basic Education

For many nations, the path to a sustainable future for their citizenry begins with greater access to basic education. In much of the world, access, length, and quality of basic education are huge issues. In many countries, the current level of basic education is too low and severely hinders national plans for a sustainable future. Over the past decade, the definition of basic education has expanded to mean more than the ability to read, write, and cipher. At one time, literacy and numeracy assured individuals and nations of economic prosperity; however, today’s more complex international milieu calls for a broader understanding of society, economics, and environment, as well as their interconnections.

(2) Reorienting Existing Education

The term “reorienting education” has become a powerful descriptor that helps administrators

and educators at every level to understand the changes required for ESD. An appropriately reoriented basic education includes more principles, skills, perspectives, and values related to sustainability than are currently included in most education systems. Hence, not only is quantity of education important to ESD, but also appropriateness and relevance are essential. ESD encompasses a vision that integrates environment, economy, and society. Reorienting education is also seen as developing an education that involves learning the knowledge, skills, perspectives, and values that will guide and motivate people to lead sustainable livelihoods, to participate in a democratic society, and to live in a sustainable manner. To effectively and completely reorient education to address sustainability, all disciplines in a teacher preparation institution can and should be involved in the reorientation process.

In addition, sustainability, and therefore education regarding sustainability, involves three realms: environment, society, and economy. Teacher preparation institutions involved in the network can specialize in any or all of these areas. It should be noted that the need to address (3) and (4) listed above, public awareness and adult education, is addressed in other national, UNESCO, NGO² and corporate initiatives.

A Concerted Effort

The work of the teacher education institutions will require simultaneous development on several fronts. Work will need to be done to address or consider issues regarding ESD policy, pedagogy reform, the modeling of ESD values by the institutions themselves, the development of curriculum materials and the eventual creation of recognition schemes for progress in ESD. Many of these issues need to be addressed in a concerted fashion and it is hoped that the network can facilitate the exchange of successes that can be modified for locally appropriate implementation by other institutions.

One of the greatest challenges, however, will be the overall approach taken in introducing the initiative. The need for ESD is not generally seen as a priority in education reform. Many other issues come to mind such as the introduction of new communication technology and/or the modernizing the curriculum to address globalization. ESD cannot be seen as yet another adjectival education cause such as population education, AIDS education, development education, environmental education or even driver education. ESD must somehow be embedded in the mainstream curriculum. It must become subsumed in the essence of the knowledge, skills, values, and perspectives of the basic education program. It is to become a way of understanding the world and our relationship to it in everything we do.

How then to launch such a task with little or not resources. It is obvious to those grappling with this question that the undertaking cannot begin with the traditional retraining or “needs” model of teacher reform. It is also obvious that no one program, discipline or teacher can achieve the goals of ESD. It is to be a collaborative effort built upon the creativity and “strengths/assets”

² Non governmental organizations such as the World Wide Fund for Nature, Teachers International etc.

of talented and creative teacher educators in the world's higher education institutions.

“Strengths Model”

In theory, every discipline, core subject or “adjectival add-on”, can contribute to ESD from its current repertoire of lesson plans and curriculum units. Each discipline can provide knowledge, skills, perspectives and values that when woven together, will help create a holistic ESD program. For example, mathematics can help everyone understand extremely large and extremely small numbers. So when we hear that a toxic element is present at 4 ppb (parts per billion) we know that it is a weak concentration and it is 1,000 times smaller than 4 ppm (parts per million). Likewise, language arts teachers can help us become media literate. In such media literacy classes for example, students can learn to understand and analyze the covert messages delivered by advertisers. History teachers can talk about the concepts of time and change to help students put evolving current issues such as climate change in perspective. Social studies and natural sciences can help students understand environmental, social, and economic issues from different stakeholder perspectives.

Fortunately, every educator in every discipline has some existing expertise or strength to bring to ESD. In this approach, the strengths of each traditional discipline can be used and leveraged with the strengths of other disciplines to convey the knowledge, issues, skills, perceptions, and values associated with searching for and progressing toward sustainability.

The caveat for using an interdisciplinary approach is that at least some of our educators must be sufficiently well-versed in the principles of ESD to form a complete picture of the role of individuals, communities, and nations in a sustainable world. These educators must also be given the mandate and resources to accomplish this critical task.

An Invitation

To move forward, we need to find examples of the possibilities, and also educators willing to try new approaches and ways of empowering the whole process. This third step of empowering or facilitation includes the full range of structural supports known to existing education change theory, from the sharing of initial ideas, through policy development to in-service and rewards/recognition programs and all the subtle steps in between.

As we launch this undertaking, I would like to invite all who would like to help by considering what you could contribute as part of this “strengths” model. It could be curriculum innovation, policy suggestions, in-service training to other teachers in your field or discipline, or engaging other disciplines such as economics, language arts, visual arts or the social sciences, to take up the challenge of developing their role and contribution to ESD. To further this engagement of innovative and concerned individuals, we are seeing the development of national replications of the UNESCO Chair international network. I would like to encourage this development and urge those caring individuals in Japan to find a way to facilitate the formation of such a network.

Country Reports



Country Reports

AUSTRALIA

Trends and Issues in Education for Sustainability in Australia

Ms. Debbie A. Heck and Dr. John Fien

THE NATIONAL SCENE

It is not possible to provide a detailed picture of environmental education in Australia due to the complex nature of the education system in Australia where two of the three levels of government — Commonwealth and State/Territory — have differing responsibilities for education. The six State and two Territory governments have major responsibility for education policy, the provision of schools, teachers, syllabuses, and teaching resources in public schools. The Commonwealth government provides special purpose funds for educational projects of national significance (e.g. gender equity, multicultural education, and school-industry links) but most interest in and support for environmental education at the national level comes from environment and resource management departments not education. However, in recent years, the Commonwealth has acted to try to bring a degree of co-ordination and uniformity to education policy and curricula across the various State/Territory systems.

In 1989, the Commonwealth, State and Territory Ministers for Education agreed on the Hobart Declaration of ten “Common and Agreed National Goals for Schooling in Australia”. These goals include two of direct relevance to environmental education: developing “an understanding of and concern for balanced development of the global environment”, and “a capacity to exercise judgement in matters of morality, ethics and social justice”. These goals are now incorporated into educational programmes in all school systems. The national curriculum process identified eight areas of knowledge for co-operative curriculum action: Studies of Society and Environment, English, Foreign languages, Science, Technology, Mathematics, Health and the Arts. Studies of Society and Environment is recognised as the “home” of environmental education but it is included also in Science, Technology and Health.

Actions in the field of Studies of Society and Environment have included a national audit of environmental education materials and an in-depth review of the pattern of curriculum provision for environmental education in Australia through an analysis of all relevant educational policies and syllabuses throughout the country. The results of these reviews were incorporated into a National Statement on Studies of Society and Environment and the development of “Profiles” through which a common template for syllabus development and for identifying and describing student performances may be achieved. These agreed national documents are now being implemented in schools in ways that suit the priorities of each education system.

Now that most States and Territories have accepted the eight key learning areas the State, Territory and Commonwealth Ministers of Education agreed in April 1999 on a new set of goals

titled know as the “Adelaide Declaration on National Goals for Schooling in the Twenty-First Century”. In this document it states that when student leave school they should: “have an understanding of, and concern for, stewardship of the natural environment, and the knowledge and skills to contribute to ecologically sustainable development.” They should also be “active and informed citizens” who have the “capacity to exercise judgement and responsibilities in matters of morality, ethics and social justice.” The eight key learning areas are reaffirmed as well as the inclusion of a separate statement related to social justice within schools. It is clear that environmental education has been strengthened by the revised National Goals for Schooling in Australia Declaration.

It is difficult to judge these developments and their implications for environmental education at this early stage, but the general feeling amongst environmental education teachers in Australia is one of caution. They are pleased that environmental education has an official home in the curriculum that enables the interdisciplinary study of natural systems and people. However, concern has been expressed about the overly-anthropocentric orientation in the National Statement, its treatment of resources mainly from an economic viewpoint, its lack of a strong global perspective in a too heavy emphasis on Australian studies, and its lack of emphasis on critical enquiry and education for active citizenship. It is also feared that the tradition of school-based curriculum development that has been very good for the professional development of teachers might be constrained by tighter syllabus and assessment controls.

Indeed, there is a very strong tradition of school-based curriculum development in Australia where schools and teachers are responsible for developing the detailed objectives, content, teaching methods and assessment of student learning within the parameters of broad-framework syllabuses. This has lead to much innovation and the development of programmes, including many in environmental education, which suit the needs of students in their individual schools and communities. This autonomy and diversity of practice may enable schools and teachers to withstand the standardising tendencies of centralised curriculum actions. However, they also make it very difficult to keep up with what is happening and, coupled with the division of Australian education into eight State/Territory systems, makes the task of providing a national picture very difficult. Thus, this overview of the responses of Australian environmental education to international conferences is necessarily a selective one and focuses on only one state, Queensland

ENVIRONMENTAL EDUCATION IN QUEENSLAND: A CASE STUDY

This section focuses on the policy and curriculum initiatives of the Queensland Department of Education (recently renamed Education Queensland). The Department’s first policy on environmental education was a two page document published in 1976. This brief paper used the International Union for the Conservation of Nature (IUCN) definition, listed aims for environmental education - including one on environmental citizenship, and identified key

Departmental agencies involved in implementing the policy. It also provided the impetus for the establishment of field study centres throughout the state. In 1988 the policy was revised and reprinted as Policy Statement 20. This document augmented advice about how the original policy might be implemented in schools and included teaching guidelines. These policy documents were largely focused on learning about the natural environment, but over the next couple of years a number of important events and publications influenced the Department's concept of environmental education.

The publication of *Our Common Future* by the United Nations World Commission on Environment and Development legitimised a more holistic view of environment and brought the concepts of social justice and ecologically sustainable development to environmental education. This view was reinforced by the publication of *Caring for the Earth: A Strategy for Sustainable Living* by IUCN, United Nations Environment Program (UNEP) and Worldwide Fund for Nature (WWF) in 1992. In the same year Australia endorsed and signed the four key agreements relating to social and ecological sustainability at the Earth Summit in Rio de Janeiro. These developments had a major influence on environmental education in Queensland as did attempts to coordinate environmental policies between the various levels of government in Australia. Thus, 1992 saw the development of a National Strategy for Ecologically Sustainable Development in Australia. All states endorsed this strategy and in Queensland the Education Department has been assigned a key role in its implementation. An objective of particular relevance proposes the incorporation of the principles of ecologically sustainable development into the curriculum, assessment and teaching programs of schools and higher education.

As a result of these and other developments the focus of environmental education in Queensland has changed. The new aim is to deliver effective learning and teaching which assists students to acquire the understandings, skills and values to participate as active and informed citizens in the development and maintenance of an ecologically sustainable, socially just and democratic society. A number of events and publications have resulted from this changed focus.

Firstly, Field Study Centres were renamed Environmental Education Centres to reflect this broadening of the focus of environmental education. Second, the Department published *Environmental Education P-12: A Resource List* following the national audit of environmental education resources in 1990. The Department also published *Teaching for Ecologically Sustainable Development: Guidelines for Years 11 and 12 Geography*. Linking ecologically sustainable development (ESD) with senior syllabi in geography and economics, this document pays particular attention to values education. Listing core democratic values and principles essential to the achievement of ESD, the Guidelines draw on *Our Common Future* for the definition of key issues and presents several sample activities and case studies that illustrate how schools may teach for ecologically sustainable development. Interestingly, these examples anticipated several of the themes that would emerge in later UN conferences, such as indigenous rights, the links between health and the environment, and the 'healthy cities' movement.

Active and Informed Citizenship is a national priority and links between it and environmental

education became important, signifying the importance of being ‘citizens of the earth’. *Active and Informed Citizenship: Information for Teachers* was published in 1993 and describes these links and those with other Departmental social justice initiatives which focus on social and personal environments. In 1993, a *P-12 Environmental Education Curriculum Guide* was developed which drew together these influences and presented an holistic notion of environmental education based upon the themes of “healthy people living in healthy communities within the limits of healthy natural environments”. Thus, the document proposes that the environment has natural, social and personal elements which are inextricably linked. The eight principles of sustainability in *Caring for the Earth* (IUCN, WWF and UNEP 1991) were used to provide the philosophical basis for the *Guide*. This curriculum guide is presently informing the development of environmental education practice in Queensland. The aims and objectives of environmental education as outlined in this document are outlined below:

Aims

An effective environmental education program in schools would provide all students with the opportunity to acquire:

- an awareness of and concern for the (total) health of the planet and its people
- the knowledge, skills, attitudes and values needed to protect and improve the environment (natural, social and personal)

Objectives

Skills

Teachers can help students to think critically about and act for the environment by developing skills such as these. Students will:

- explore a variety of environments using all of their senses
- observe and record information, ideas and feelings relating to environments
- evaluate and reflect on explorations in various environments
- investigate and communicate concerns about environmental matters and issues
- experience a variety of perspectives on environmental matters and issues
- debate and discuss alternative viewpoints on environmental matters and issues
- identify, clarify and express value judgements relating to environmental concerns
- consider and predict consequences (ecological, social, political, economic, etc) of possible courses of action
- select, design and implement appropriate courses of action on environmental matters and issues
- co-operate and negotiate with others in order to resolve conflicts arising over environmental issues
- make oral, written and graphic presentation of information gathered in investigations of the environment

- develop political skills necessary for active citizenship (eg. lobbying, petitioning, forming a delegation, letter writing)
- learn the skills of lateral and creative thinking.

Attitudes and Values

Teachers can help students to develop an environmental ethic based on the values of social justice and ecological sustainability by providing students with opportunities to develop:

- a sense of joy in, and enthusiasm for the environment
- a respect for nature
- an enthusiasm for inquiry about human interaction with the environment
- a concern for the quality of environments, and a preparedness to actively care for them
- a sense of place and an appreciation of the unique character of particular environments
- an appreciation of indigenous peoples' cultural knowledge and experience of the environment and their contribution to a unique understanding of the environment
- an appreciation of the need for personal, community, national and global co-operation in preventing and resolving environmental problems
- a preparedness to evaluate and change one's personal lifestyle to support the concept of sustainable, healthy futures
- a preparedness to participate in making informed decisions
- a willingness to work individually and with others to improve the environment
- a willingness to be open-minded, challenge pre-conceived ideas, accept change and acknowledge uncertainty.

Knowledge

Teachers can provide opportunities for students to learn about the environment by addressing concepts such as these:

- *Natural systems* are complex, self-regulating and interconnected. Physical cycles continually recycle energy and matter, making it possible to sustain a diverse range of living things. Within these ecosystems a myriad of interdependent organisms flourish, their diversity keeping the natural system resilient.
- *Social systems* have political, economic, cultural and religious facets which are interconnected with each other and with natural systems.
- *Personal ecology*: The way we see the world is often a reflection of the way we see ourselves, and so has a bearing on our attitudes to our environment. In return our inner self is affected by our social and natural environments.
- *Ecologically Sustainable Development (ESD)* is an approach to development that meets the needs of the present without compromising the ability of future generations to meet their own needs. For development to be sustainable it must also be socially just, and appropriate to the culture, history and social systems of the place in which it occurs.

- *Citizenship* requires that all people be responsible for their own actions and work together in their local, national and global communities to make the world a better place.
- *Sacredness*: Nature has its own value, regardless of its value to people. A harmonious relationship between people and nature is both natural and essential for well being.
- *Knowledge and uncertainty*: Although we understand that everything is connected to everything else, there is much we do not understand, and so we should make decisions accordingly. We need to act rationally and intuitively, carefully and truthfully.

Source: *P-12 Environmental Education Curriculum Guide*,
Department of Education, Queensland, 1993.

The practice of environmental education in schools is diverse. To encourage excellence in environmental education practice within this diversity, the Department recommends pedagogical principles to be incorporated into program. These principles encourage the development of programmes which are interdisciplinary, holistic, student-centred and community-orientated and which use an action research or community problem solving approach for examining issues.

The quality of environmental education programmes is changing significantly as a result of these developments. This is due, in part, to increased student, teacher and parent interest, the availability of resources, and support from the community. Thus, environmental education is now on the agenda of many organisations in Australia who are actively seeking the co-operation of schools in promoting more soundly based resource utilisation and management. Local councils, State government departments, business and community groups have been partners in the upsurge of school involvement in community based environmental education projects.

FACILITATING CHANGE THROUGH TEACHER EDUCATION

Pre-service teacher Education in Environmental Education

Lack of teacher education and professional development in environmental education is a major matter in Australia. When asked about their pre-service teacher education experiences, only 4.9% of the respondents in one study (Spork 1992) said that they had undertaken any studies in environmental education. While over 85% claimed that they had received no training at all in environmental education through pre-service, in service (only 6.6%) or postgraduate studies (3.1%).

This pattern is found in all states where there are:

- No mandated subjects in environmental education in any teacher education course,
- No attention to environmental education in general education courses
- Few opportunity for students to elect to study a limited number of environmental studies content courses in primary teacher education
- Opportunities for students training as secondary teachers of geography, science and social

education to undertake environmental studies with environmental education strategies included in some courses.

One reason for this neglect despite all the UNESCO-UNEP declarations on the importance of teacher education may reside in the fact that the Commonwealth of Australia has responsibility for international relations (i.e. UNESCO seminars and declarations) whilst the State/Territory governments and individual universities are responsible for the content of teacher education programmes. However, there has been some action in three states to consider and promote the role of environmental education in teacher education. In Queensland, for example, the Board of Teacher Registration established an Environmental Education Working Party to write a discussion paper for pre-service teacher education programmes (Board of Teacher Registration 1993). This paper outlined the need for environmentally educated teachers and the way in which this need may be met through pre-service teacher education programmes. The Environmental Education Working Party presented recommendations for action in pre-service teacher education that are being considered by universities.

The Australian Association for Environmental Education has developed the Environmental and Development Education Project for Teacher Education to provide a guide for teacher education on ways of incorporating education for sustainable living into their teacher training programmes. The project involved twenty educators, in writing and trialing a set of eighteen three hour modules on environment and development education for use in pre-service teacher education courses. These modules have been published in a project manual, titled "Teaching for a Sustainable World" (Fien 1993). The modules illustrate how environmental education and development education are related and provide practical assistance for teacher educators would like to include these important fields in their programmes. During 1993 and 1994, a series of project dissemination workshops were held for all teacher education faculties in Australia. All who attended were provided with a free copy of the "Teaching for a Sustainable World" manual. It has been so popular that it is now located on the web
<<http://ee.environment.gov.au/pd/tsw/intros/index.html>>.

Professional Development for Teachers in Environmental Education

One of the groups very active in providing in-service teacher education in environmental education is the Australian Association for Environmental Education (AAEE). AAEE has been involved in a special National Professional Development Programme (NPDP) through grants worth almost \$500000 was made available between 1994 and 1996. The aim of the NPDP has been to develop a series of training manuals and projects to develop teachers' appreciation of the issues, skills and resources involved in cross-curricular planning for environmental education. Seven professional development programmes have been developed through national collaboration and provided to teachers in Australia. The four programmes that have had most impact are described.

Teaching for a Sustainable World illustrates how environmental and development themes are related, and provides practical assistance for teacher educators who would like to include these important themes in their courses. There are 26 modules. Modules 1-4 provide an overview of the interdependence of environment and development, and introduce environmental and development education and the linkages and similarities between them. These four workshops may be considered as a hub while the remaining ones are spokes that address particular themes and needs in education for sustainability. Modules 5-9 explore the nature of sustainable development, sustainable futures and the role of environmental values and beliefs in culture and religion. They may be used in any combination and sequence but, preferably, after the four core workshops have been completed. Modules 10-24 provide workshops on how the theme of sustainable living may be introduced into the teaching of particular subjects, such as science (Module 10), health (Modules 11 and 12) and consumer education (Module 16), and in the teaching of particular cross-disciplinary themes, such as community based environmental education (Modules 13 and 14), women, environment and development (Module 17), population, food and agriculture (Modules 18 and 19), and waste management (Module 22). The focus of these modules are to illustrate ways in which small starts may be made to change the focus of traditional subjects and topics to begin the process of education for sustainability. Module 25 provides guidelines for reviewing existing curriculum materials to diagnose how they may require revision or supplementation in order to ensure that resources are conducive to education for sustainability. Once again, the purpose of this module is to provide a starting point for those who may lack up-to-date curriculum materials and otherwise feel disempowered from beginning the process of education for sustainability. Module 26 provides a range of strategies for aiding teachers and student teachers to clarify their sense of commitment to sustainability and uncover the inner resources they have to feel empowered to teach for a sustainable world.

Teaching and Learning Through the Environment is primarily for K-7 teachers and focuses on curriculum planning and teaching methodologies for environmental education, in particular those which deal with values and action. It is a sixteen hour course which can be provided in eight two-hour workshops or over a weekend. Teaching and Learning Through the Environment courses have been conducted in several parts of Queensland where, in some cases, the workshops have used some of the modules from the UNESCO-ACEID Learning for a Sustainable Environment project in order to respond to the needs of particular groups of teachers.

Red Gold: Environmental History Through Story is a two day workshop on environmental history in Australia. It is presented by a team of five specialist drama teachers. The impact has been to lead teachers to research their local history, construct their own settings and adapt the methodologies to weave a story-thread into a powerful drama for their students. A training workshop has also been provided for drama teachers to encourage them to include environmental themes in their drama-in-education activities.

Eco School: An ESD Approach is a programme which seeks to promote a whole school approach to resource management in a school. It requires a commitment by principal, staff and

community to ensure changes in curriculum, school operational procedures, and personal and group lifestyles to bring about an ethos of conservation. The process of change in two trial schools, one primary and one secondary, is documented as is an array of curriculum alternatives for K-10 on the conservation of energy, water and materials. A companion volume, *Energy in Profile*, suggests ways for schools to save energy and money through a comprehensive energy education program.

The National Professional Development Programme for Environmental Education as a whole is yet to be evaluated. However, there are several positive signs. First, all the programmes represent a three way partnerships between AAEE, a university and the education system. Second, many teachers have taken the opportunity to participate in the design and delivery of their own professional development. For every dollar provided by the Australian government it appears that teachers have put in the equivalent of another two dollars. This is due to the voluntary nature of much of the materials development and the conduct of most of the programmes outside of schools hours, particularly on weekends. Third, some of the programmes have voluntary assessment components and have led to credit in university postgraduate courses. AAEE is also issuing certification for teachers who complete particular professional development tasks and all employing authorities have been invited to recognise these certificates in the promotion of teachers.

TEACHER EDUCATION IN ENVIRONMENTAL EDUCATION AT GRIFFITH UNIVERSITY: A CASE STUDY

Griffith University in Brisbane has been at the forefront in developing teacher education programmes in Australia and the Asia-Pacific region. This case study illustrates two aspects of it work that may lead to global partnerships in the future. However, a brief overview of the university is presented by way of background.

Griffith University is the eighth largest university in Australia with a high reputation for its expertise in environmental science and environmental education. Griffith's Faculty of Environmental Sciences is the largest inter-disciplinary environmental science teaching and research institute in the Asia-Pacific region, and is widely recognised for its active involvement in the region. Activities include training courses, institution building partnerships (e.g. UNESCO UNITWIN agreements), research and research training projects in many countries, e.g, China, Korea, Japan, Philippines, Vietnam, Thailand, Indonesia, Singapore, India, Malaysia, New Zealand, Fiji, India, Pakistan and South Africa.

The Centre for Innovation and Research in Environmental Education is a collaborative Centre of the Faculty of Environmental Sciences and the Faculty of Education. Its mission is to promote innovation and excellence in the theory and practice of environmental education in school, university and community settings. The Centre is active in many international projects:

- UNESCO multimedia professional development programme on "Teaching and Learning for a

Sustainable Future”

- UNESCO-ACEID project on ‘Learning for a Sustainable Environment: Innovation in Teacher Education’
- Evaluation of the global education efforts of the WWF network
- Seminars and training courses on environmental education and teacher education in the Asia-Pacific region for WWF, UNEP and UNESCO
- Seminars and training workshops on environmental education in Japan, Philippines, Indonesia, Thailand), China, Vietnam, South Africa and Taiwan.
- Publication of the UNESCO-UNEP International Environmental Education Programme, *Teaching for a Sustainable World*
- Co-ordination of 13 country research project on youth environmental knowledge and attitudes in Asia and the Pacific
- Global Education Partner of the World Resources Institute (USA)
- Consultant to WWF-USA Windows on the Wild Education project
- Evaluation of WWF’s international environmental education programme
- Writing the discussion paper on ‘reorienting formal education for sustainability’ for the 1997 UNESCO International Conference on Education and Public Awareness for Sustainability’
- Writing the issues paper and facilitating the 1998 OECD international workshop on ‘education and learning for sustainable consumption’
- Membership of two AusAID capacity building projects for environmental education for universities in South Africa

Professional Development Manuals

Griffith University has developed two professional development manuals for teacher education. Both reflect current thinking about education for a sustainable future and interactive participatory teaching methods.

Teaching for a Sustainable World was described in a previous section is one of these.

Learning for a Sustainable Environment is an eleven module manual which focus on the curriculum and pedagogical skills needed to implement programmes of education for a sustainable future in schools. It was developed in partnership with UNESCO-ACEID with additional support from UNESCO-EPD, UNEP-NETTLAP, AusAID, the Japanese National Institute for Educational Research and the Japan Foundation. It was published in November 1997 to assist teacher educators promote skills in the innovative curriculum and pedagogical processes necessary to help teachers - in both pre-service and in-service education programmes - empower their students to work for a sustainable future. Ten modules cover such themes as cross-curriculum planning, integrating indigenous knowledge in the curriculum, story-telling, experiential learning, enquiry learning, values education, community problem solving, learning outside the classroom and appropriate assessment. An eleventh module provides skills in

workshop planning and facilitation. All of these themes are vital for reconceptualising the nature of curriculum organisation, teaching and learning strategies and assessment so that they foster the reorientation of education for sustainability.

Each module in both manuals contains the workshop leaders' instructions and all associated resources (masters for OHP transparencies, activity worksheets, student readings and leaders' background notes, etc.) needed to conduct a 3-5 hour workshop on the topic concerned.

Both *Teaching for a Sustainable World* and *Learning for a Sustainable Environment* have now been placed on the Internet.

A self-study CD-Rom and Internet version of the major components of both these manuals is currently in preparation. Called *Teaching and Learning for a Sustainable Future* it will be a multimedia professional development guide and will enable teachers, even in isolated locations, to develop an appreciation of the emerging concepts of sustainable development and education for a sustainable future on their own or in small self-study groups.

The objectives of *Teaching and Learning for a Sustainable Future* are to enable teachers to develop:

- an appreciation of the scope and purpose of education for a sustainable future and how the subjects they teach can contribute towards this;
- an understanding of concepts and themes related to sustainable development and how they relate to the school curriculum; and
- skills in using a wide range of interactive and learner-centred teaching and learning strategies that underpin the knowledge, critical thinking, values and citizenship objectives of education for a sustainable future.

The 25 modules in *Teaching and Learning for a Sustainable Future* are being written to a common format to facilitate ease of navigation and use. Each module is based upon:

- a common set of five headings - introduction, objectives, activities, references and acknowledgments.
- experiential learning strategies that invite you:
 - to analyse and interpret information in a variety of forms (eg text, tables, diagrams, and linked WWW-sites);
 - to apply the ideas you develop to your own curriculum and teaching contexts and practices; and
 - to reflect on these ideas in relation to your deepening appreciation of education for a sustainable future via a Learning Journal.

Teaching and Learning for a Sustainable Future also provides links to numerous Internet sites in order to provide multiple perspectives or alternative viewpoints and can be used:

- as extra sources of information;

- to enrich critical thinking about the emerging concepts of sustainable development and education for a sustainable future;
- as additional and alternative sources of professional development;
- to enrich content and provide information in non-print modes for developing learning activities for students.

Postgraduate Courses in Environmental Education

Griffith University began teaching a mid-career professional development degree called a masters of Environmental Education in 1991. Nearly one hundred students have graduated, including several from Japan, Hong Kong SAR, India, USA, Canada, UK, Netherlands, New Zealand and Germany. They include a diverse and exciting group of pre-school, primary, and secondary teachers, college lecturers and community educators from government departments, NGOs and industry to complete a Masters Degree specialising in environmental education.

Objectives

- Integrate innovative content themes such as: sustainable communities, green consumerism, environmental impact assessment, environmental planning, Indigenous perspectives in land management, international issues in environment and development, environmental economics, waste management, and biodiversity.
- Develop skills and activities to teach for higher order thinking skills and environmental values through student enquiry, fieldwork and community projects
- Develop skills in re-orienting teaching programmes and school operating practices for sustainable development

Subjects

Students have to study a minimum of five core subjects, selected from

- Introduction to Environmental Education
- Innovation in Environmental Education
- Natural Resource Management Education
- Education, Sustainability and Social Change
- Community Environmental Education
- Experiential Learning in Environmental Education (in partnership with Christchurch college of Education in New Zealand).

A wide range of elective subjects from other Griffith University Masters degrees, e.g. in environmental management, planning or engineering may be taken. Students also have to complete an Applied Environmental Education Project or an Honours thesis to complete the degree.

Flexible study options

Flexible study options mean that students can complete the course

- in two semesters full-time or two years part-time,
- through on-campus study and/or distance education, and
- with all subjects available through a combination of part-time evening classes, intensive weekend and vacation school study, and flexible learning study packages.

International partnerships

The degree is currently being taught in New Zealand in partnership with Christchurch College of Education and plans are in hand to develop a joint degree with Chulalongkorn University in Thailand. Other partnerships of this type are welcome.

Doctor of Environmental Education

As well as the traditional PhD degree, Griffith introduced a new professional doctor of Environmental Education degree in 1999. This degree provides both coursework and research studies for professionals in both the formal education sector and in community education, and develops approaches to research that enhance skills for professional leadership and for improving professional practice. The degree involves three components:

Environmental education bridging studies

Students without an approved background in masters level environmental education are required to complete 1-2 semesters of bridging studies, as appropriate, from Griffith's Master of Environmental Education degree. Many of these bridging subjects are available through off-campus study.

Research development studies — 1-2 semester full-time

- Research Design in Environmental Education
- Professional Practice in Environmental Education
- Research Seminar in Environmental Education

Research thesis — 3-4 semesters full-time research project and preparation of either (i) a 40000 - 50000 word thesis, or (ii) a portfolio of related published articles and/or reports that result from the research project and the student's professional practices.

International students are encouraged to spend two of these three semesters conducting their research in their home country and workplace and then to return to Griffith University in the final semester to write their final reports.

Past and current doctoral research projects by Griffith University students in environmental education focus on such themes as:

- Teachers' perceptions of citizenship in environmental education
- Environmental education for the hearing-impaired
- Learnscaping and professional development

- A grounded theory of community environmental education
- Experiential environmental education in teacher education
- Whole school planning for environmental education
- Curriculum implementation in social and environmental education
- Social theory and environmental education
- Professional socialisation of environmental engineering students
- Learning for environmental activism within NGOs
- Community participation and local environmental management
- Organisational culture and corporate environmental management
- Environmental learnings from ecotourism
- Workplace training for ecotourism workers
- Eco-historical tourism and education in natural park management

Further international partnerships in the development of similar or joint degrees are welcome.

CONCLUSION

These examples of developments in environmental education in Australia are reflective of broader developments in Australia. In summary, there has been a sound response to the sustainable development agenda that arose from the 1987 publication of *Our Common Future* and the 1992 Earth Summit. There has yet to be time for education systems to respond to other international agendas such as the UN's Copenhagen conference on social development (1994), the Beijing women's conference (1995), the Cairo population conference (1995), and the Istanbul Habitat II conference on cities (1996). However, the holistic nature of the policies of *ecologically* sustainable development in Australia has meant that equity, gender, human rights and urban issues are being supported as key elements of environmental education.

However, environmental education is more than just another 'social problem' which requiring a response from schools. David Orr has argued that "the crisis of sustainability ... is not only a permanent feature on the public agenda; for all practical purposes it is *the* agenda" (Orr, 1992, p. 83). No other issue facing the world today is of such pervasive and long-term significance as the need to find ways of living within the resource limits of the planet and our social systems. This has been recognised by many people from all walks of life and is manifested in the rising levels of public awareness of environmental problems and growing public concern over the stability of ecosystems and the sustainability of present patterns of development. This means that, as environmental educators, we need to remain flexible and reflexive and have processes in place to ensure that the highest of possible standards of excellence are met in planning and delivering environmental education.

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CHINA

Teacher Education for Environmental Education The China's National Report

Dr. Wu Yan

The United Nation's two conferences on mankind's environment (one in Stockholm, the other in Rio de Janeiro) gave a great impetus to China's environmental policies. China has made <Environment Protection Laws> and six other related ones, <Forest laws> and nine other laws concerning resources. State Council Promulgated <Nature Reserves Regulations> and other twenty-eight administrative rules. The National Environment Protection Bureau has made three hundred and seventy-five environment standards, each province, autonomous region and city has issued nine hundred and more local environmental regulations, primarily formulating China's environmental law system. Meanwhile, the administrative managerial agencies of each province, autonomous region, city and county have kept on strengthening. Personnel working, in environment protecting of China's environment system all over the nation amounts to 100,000. But the natural environment' state in China is critical. According to the publication of China's environment state issued by National Environment Protecting to the publication of China's environment state issued by National Environment Protecting Bureau in 1998, in 1997 China reinforced the waste disposal in cities and some of the main regions, with some improvements of environment in part of cities and areas. But as the population keeps rising and the economy develops, the nationwide surrounding are deteriorating. Problems as waste water, gases, residues, urban noises and garbage enclosing cities go worse. There are four major problems about environment. 1) The population is great, with a net increase of 13,000,000 people per year, which is as big as the population of Australia. 2) Urbanization is fast, there was a rise of 180,000,000 in city population from 1978 to 1998, in addition to the 50,000,000 shifting population from rural areas. 3) Economy increase rapidly, while heavy chemistry industry takes a greater ratio in the industrial structure, consumes large quantities of energy and disposes of enormous waste. 4) The comprehensive decision systems are imperfect. We don't have a perfect comprehensive decision system. More stress is laid on the immediate interests, not on long-term profits, resulting in the lack of sustained development.

Teachers play an important part in the environmental education of elementary and high schools, Participating in the environmental education are not only school directors, but also full-time teachers (those giving lectures on "Environment Protecting"). Teachers who add environmental knowledge in their relevant courses as well as instructors in change of extra-curricular activities, the awareness of protecting the environment, knowledge and skill, and the ability to teach environmental knowledge of teachers definitely influence the environment quality and effects. The major problems about teachers' education in environmental education are as the following:

1. Teachers occupied in full-time environmental education are insufficient, particularly

trained teachers in environmental education are even less. Many of these environmental education teachers are medical workers in school clinics. Allowed to act as part-time teachers in environmental education, they don't have the ability and specialized knowledge to fulfil the task.

2. The modernized metropolis in China, such as Beijing, Shanghai, Guangzhou and Tianjin put more emphasis on environmental education, arrange the environmental education courses in elementary and high school by compulsive measures, requiring full-time teachers be employed in schools. They have trained the teachers in environmental education by inviting environment protecting experts to give lectures, doing scientific research on environmental education. But in those small town and rural areas, the reverse is the case.
3. The funds in environmental education are scarce, and the funds for training teachers in environment education can not be provided on due time.
4. Teachers of other subjects pay less attention to environmental education. They are not fully aware of the importance of teaching their student's environment protecting knowledge and responsibility. Because the lack of these courses, it is hard for students to develop their awareness of environment protecting.

We suggest that special funds be increased for training teachers who are engaged in environmental education, every school compulsively set up courses of environmental protecting, teaching hours for environmental education be guaranteed, full-time teachers of environmental education be employed.

**Teacher Education for Environmental Education in Fiji:
Assessing the Current Situation and What It Should Be Like**

Mr. Waisea Votadroka

Introduction

The key to successful environmental education (EE) is the classroom teacher. If teachers do not have the knowledge, skills and commitment to environmentalize their curriculum, it is unlikely that environmentally literate students will be produced (Wilke, 1985(p.1)). This report examines the current situation of Environmental Education in the Fiji Education System and focuses more specifically on teacher education.

1.0 Overview of Environmental Education for Teacher Educators in Fiji**1.1 Background**

The establishment of EE began during the 1970's under a joint UNESCO and South Pacific Commission (SPC) project (Bernklau, 1997). Curriculum modules were developed for use by the SPC for primary schools, and in 1978, UNDP and UNESCO developed Social Science programs for secondary schools. According to Kumar (1997), UNDP assisted in the production of the Basic Science Handbook, which had environmental themes. In the 1980's, further progress was made to incorporate EE into other subject areas like Biological Science and Physical Science, however, it wasn't until the late 1980's that EE became structured into the Social Science curriculum (Taylor, 1992).

1.2 Current Status

- 1.2.1 At the moment EE is incorporated into the curricula in aspects of Basic Science, Social Science, Agricultural Science, Biology, Chemistry, Physics, Geography, and Marine Biology; Geography being a subject which is predominantly environmental in nature (Taylor, 1992). Cabinet, in 1981, approved the formation of Environment Management Committee to advise the Curriculum Development Unit (CDU) on environmental components of the curricula and to run awareness programs (Kumar, 1998).
- 1.2.2 Curriculum developers have infused environmental issues across the curriculum at both primary and secondary schools but have no intention of including EE as a separate subject.
- 1.2.3 EE in teaching institutions is also 'fused' across the various subjects offered.
- 1.2.4 The Ministry of Education (MOE) conducts training workshops for teachers as the only 'formal' form of EE training.

2.0 Existing Programmes in Teacher Training Institutions

2.1 Lautoka Teachers College.

The Lautoka Teachers College has developed an EE course which is a major step towards the main intentions of EE.

2.2 Fiji College of Advanced Education (FCAE)

The FCAE institution has EE components spread into the various courses under the following fields: Geography, Chemistry, Biology, Physics and Economics. Some of the topics covered are: mining, water pollution, soil pollution and abuse, endangered species, cost-benefit analysis of projects, landforms, climate, vegetation and coastal environments.

2.3 Corpus Christie Teachers College and Fulton College.

The above two teacher training institutions do not offer any EE components in the curriculum.

2.4 University of the South Pacific(USP)

USP offers environmental studies specially tailored for environmentalists but not for teacher educators.

2.5 In-Service Teacher Education in EE

The MOE and Peace Corps Fiji started in-service workshops for EE in 1991. These workshops are the only form of 'formal training' in EE for teachers in the country.

The MOE conducted two series of workshops for teachers in 1997, where Resource Personnel from various division in Fiji were trained and expected to organise Awareness workshops in their areas

3.0 Problems and Issues

3.1 Problems

a) Structural Support

EE will require structural support that would include: support for a new subject area and new teaching methods; flexibility within the class structure to allow activities to take place outside the classroom; and, the availability of resources (Bernklau, 1997).

b) Funding - Internal and External

The Fiji Government would need to provide valuable financial support for the high priority it has placed on paper in terms of EE rather than passively await external support. The current funding is mostly from donor countries like New Zealand and the US.

c) Curriculum design - the Need for Consultations

In the development of curriculum for schools and more importantly for teacher institutions, consultations would need to be made with DOE and also NGO's.

d) Networking

Formal networks are needed to be formed between the main stakeholders of EE for its possible success. The benefits of uniting and strengthening efforts through networking (of both formal and informal nature) are well recognised by the region's band of educators and trainers (SPREP,1998).

Regional network has been established but teacher education institutions may need to utilise the opportunities and develop their EE structures through support from local and regional organisations.

e) Cultural Perspective

For the two major populations, the indigenous Fijians and the Indo-Fijians have very different views on land and resources. Because of their inaccessibility to land ownership, Indo-Fijians, are disinterested in longer term investment into the preservation and conservation of that land (Bryant, 1989). Indigenous Fijians seriously consider as cultural heritage, but view it as plentiful and as something which will always be there (Bryant, 1989).

Such trends in cultural views would have to be addressed since it would filter right into classrooms for both students and teachers; a vital area to be considered in the teacher education structure.

f) Lack of Affective Aims

There is a general lack of Affective aims and objectives within the existing subjects which involve EE components. More cognitive elements are stressed at the expense of the affective components.

g) Change of Approaches in Teacher Education Institutions

The current EE components in teacher education institutions places more emphasis on providing environmental information rather than considering EE approaches and methodologies.

3.2 Issues

a) Political Support

In the case for Fiji, the government's support of EE seems to be a "paper policy" only without sufficient Government funding and support as requested in the NES and Fiji's last Development Plan. Policies for the establishment of EE in teacher education institutions needs to be formulated. The establishment of EE as a separate subject should be a projection for the government at this stage.

b) Review of Infused Mode

Since the Ministry of Education clearly has no intention of having EE as a separate subject the effectiveness of infused mode needs to be reviewed continuously. Negative

review results should lead to the establishment of EE as a separate subject.

c) Lack of Resources

The lack of teaching resources is a major issue. Many schools use only the subject textbooks to support them in teaching. Teachers would need to identify a wider range of resources to utilise in teaching. Human resources is also important. Teacher educators would need to be formally trained in EE.

d) The Need for Relevant Materials

At senior secondary level, particularly in subjects like Biology and Geography, the recommended texts are written outside the Pacific region and therefore do not contain relevant material. Such materials would have to be developed by local and regional personnel.

e) Teaching Methodology

The teaching methodology used for the delivery of the environment component of the curricula is such that it fails to develop the desired behavioural changes in students.

4.0 Recommendations

- 4.1 A more facilitative role to be taken by the government in terms of financial assistance and provision of support structures for long term effects and sustainability.
- 4.2 Teachers need to be trained in cross- disciplinary teams to foster learning processes for students in developing teaching by systematically researching their practices together.
- 4.3 Strengthening of the Schools Broadcasting Unit by involving other information dissemination centres.
- 4.4 Conduction of training workshops for all teachers in all disciplines including school administrators (Principals and Head Teachers).
- 4.5 An increase in the coverage of marine and forest components in the curricula since these areas make up the majority of resources in the country.
- 4.6 Teaching Institute courses to undergo a major review to assess the EE components within their teaching structures. Appropriate teaching methodologies developed. Pre-Service training needs to have EE as a core component and also follow-up programmes developed for In-service courses.
- 4.7 Networking between local institutions needs to be established and developed prior to strengthening links with teaching bodies in other countries which have developed standard EE structures.
- 4.8 Local teaching institutions need to develop a network within local and regional organisations involved in EE.
- 4.9 The CDU should have detailed consultations with NGO's and DOE in the development of further curriculum in schools and also teacher education institutions.

5.0 Conclusion

The classroom teacher has been recognised as the vital component that needs to be developed for any success in environmental education. Efforts would need to be made to develop skills, critical awareness of problems and possess a variety of techniques and approaches in teachers. Political, structural and societal support are needed and the government must provide the financial footing and support to develop EE to any success.

Teacher education institutions needs to develop the framework for EE and provide well designed programs which are not simply “infused” into their course structures. Environmental education writers across the globe, having placed teacher education as the “priority of priorities” for EE (Tilbury, 1992), is indicative of the important task teacher educators have.

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INDIA

Teacher Education for Environmental Education in India

Ms. Mamata Pandya

Educational System in India: An Overview

There are over 744,000 primary and middle schools and about 92,000 Secondary schools in India; with a total enrolment of about 150 million students. Schools are run by state governments, central government bodies, local municipalities and private institutions. These range from large urban schools with modern equipment and facilities, to single teacher schools in rural areas where children in four grades or more share a classroom. Instruction across the country is in more than 20 languages. Higher education is imparted through 207 universities in the country.

Education in India is the joint responsibility of the government at the Centre and the States. The Central Government has an overall responsibility regarding the quality and character of education. Decisions regarding the organization and structure of education are largely the responsibility of the states. The department of Education, Ministry of Human Resource Development (MHRD) shares with the states, the task of educational planning.

Environmental Education

India is one of the very few countries in the world where a commitment to environmental protection and improvement is enshrined in the constitution. Environmental Education has been a major thrust of both the Ministry of Environment and Forests (MOEF) and the Ministry of Human Resource Development (MHRD) of the Government of India.

While the MHRD works towards the environmentalization of the formal curriculum, the MOEF focuses on non-formal educational programmes and strategies to reach the larger community that includes children, youth, urban and rural communities, industry, decision makers etc.

In addition to the efforts of the government a large number of voluntary organizations are involved in promoting EE in both formal institutions and non-formal settings.

The main sources of the educational institutions and NGOs for EE activities are the government (Central and States), independent trust, donor agencies, etc.

The National Policy on Education, 1986 states “There is paramount need to create a consciousness of the Environment. It must permeate all ages and all sections of society, beginning with the child. Environmental consciousness should inform teaching in schools and colleges. This aspect will be integrated in the entire educational process”

The National Policy of Education visualizes a national curricular framework, which contains a common core including several elements having direct bearing on the natural and social environment of the pupils. these core areas are expected to occupy a place of prominence not

only in instructional materials but also in classroom and out-of school activities.

Today EE in the formal educational system in India is handled at three levels. It is a composite subject called Environment at the primary school level, it is infused into environment in regular school subjects at the middle and secondary school level, and is a separate subject at the college level.

For EE to be effectively taken up in the curricular, co-curricular and extra-curricular mode, resources and facilities have to be built up and strengthened both within and outside the school and college system.

Teacher Education for EE

The effectiveness of EE relies heavily on the knowledge, skills and attitudes of the educator.

EE is not only a change in ‘what’ is being taught (the content), but also a new perspective on ‘why’ (the objectives and goals) and how (the approaches and attitudes).

The key to any change in the formal educational system is the teacher, and unless the teacher is convinced about and feels competent to handle this, very little will change. The teacher has to internalize a change in his/her role from one of “giver of knowledge” to one of “facilitator in the learning process”

If teachers are to be effective facilitators in bringing EE into teaching and learning their capacities in understanding and internalizing the characteristics of EE and skills in transacting these need to be built and strengthened. One way to do this is through pre-service and in-service orientation and training.

EE in Pre-service Teacher Education (Primary level)

Pre-service teacher education for primary school teachers is a two-year course. It covers foundation subjects as well as methodology subjects including education philosophy and psychology, educational administration, methods of teaching etc.

The detailed guidelines and syllabus for the course has been developed by the National Council for Educational Research and Training (NCCRT). The State Departments of Education in the respective states administer the institutions for pre-service teacher training courses.

The teaching of Environmental Studies (EVS) is placed under both Science and Social Studies syllabi recommended by the NCERT. Context related to EVS teaching takes up a large part of the first year syllabus. Training in EVS covers a total of 80 hours in the two-year course.

EE in Pre-service Teacher Training (Secondary level)

Teacher Training for secondary level is offered by B.Ed. Colleges affiliated to universities have introduced environmental education as one of the optional or elective papers at the B.Ed. level. This course covers a total of 40 hours and is graded for 100 marks. The course content includes basic concepts and processes of environment and is ecology, as well as teaching-learning methodologies in EE, evaluation techniques etc. Practicals and assignments are also part

of the course.

In some universities EE is integrated as an exclusive chapter under one of the foundation courses called “Education in Emerging India”.

The National Council of Teacher Education has recommended EE as a chapter in its overall syllabus and guidelines for B.Ed. colleges in the country.

At the post-graduate level (M.Ed.) some universities have introduced EE as a special paper, while a few have given it the status of a full fledged course of two semesters.

EE in In-service Training

The NCERT, State Councils of Educational Research and Training (SCERT) and the District Institutes of Educational Technology (DIET) are largely involved in in-service training in India. The in-service training/orientation programmes range from one week to one month. Several of these include an focus and expertise in EE have been invites to run short courses on EE and EE approaches and methodologies as part of in-service teacher training. Another experiment has been to train the teacher instructors of the DIETs in EE approaches so that they may incorporate this into their teaching as part of the in-service teacher training curriculum, and thereby pass these on to the teacher trainees.

Programmes of Teacher Education for EE: Some Experiments and Examples

EE is not a static body of knowledge. It demands considerable changes in approaches to teaching as well as a multidisciplinary orientation to education. There are not enough formal training programmes available that the equip persons in this field. Environmental educators often have to learn “on the job”. It is also important to reach out to educators who are already in the profession and share their experiences.

Thus it is crucial to have some system from outside the school, which can provide ongoing support to the teachers. To draw upon the rich and varied NGO resources across the country has been one strategy to achieve this.

There are growing numbers of examples of linkages between NGOs, government and educational institution to reach EE into schools and colleges.

A pilot project in preparing modules in EE for training in-service primary teachers is underway in the state of Karnataka in South India. The modules are aimed at helping DIET staff in effectively organizing EE training workshops for primary school teachers in developing training materials in EE and effective use of these materials. The modules include introduction to EE, processes and methods in EE, educational technology for EE, and EE activities in schools.

The project has been in the state of Karnataka involves developing a curriculum plan in EE for pre-service teacher education at the secondary level and institutionalizing it as an additional/ optional subject in all the B.Ed. colleges. The strategy involves curriculum development, tryout and training.

In this context, during 1995-96 a broad curriculum framework and relevant instructional

materials were developed through a participatory process involving 9 B.Ed. colleges representing all the six universities of the state. These were tried by the project colleges as part of their regular B.Ed. instruction and assessed for effectiveness and practicality. During 1997-98, administrative support to train at least two teacher educators from all the state. Trials of materials also continued and included close monitoring and feedback, which revealed that the course was found useful, interesting and relevant. This project was undertaken by Centre for Environmental Education in collaboration with the State Department of Education several B.Ed. colleges in Karnataka.

One of the major initiatives at building links and developing synergies between a variety of organizations is a programme called National Environmental Education Programme in School(NEEPS). NEEPS is a national network of NGOs, schools and the State Departments of Education, facilitated by National and Regional institutions. Part of the initiative is supported by the national Ministry of Environmental and Forests. Development of locale[^]specific teaching learning materials by this network is supported by the national Ministry of Human Resource Development.

The NEEPS works through a cluster approach based on the principals of networking and horizontal communication with training, material and monetary support provided through the Centre for Environment Education (CEE).

Each cluster is an autonomous unit comprising of an NGOs with 20-25 schools in an area. The NGOs are oriented in EE approaches and methodologies by CEE, and they in turn train and support teachers to effectively infuse EE into their teaching as well as school activities. NGOs remain in touch with the teachers in their cluster, providing guidance and support for year-round EE activities in their schools.

The NGO also plays an important role in facilitating the development of locale-specific programmes and materials.

The NEEPS model has the advantage of decentralization where the responsibility is shared by a number of institutions and also in achieving a multiplier effect to reach greater numbers of teachers.

Today the NEEPS network includes over 50 NGOs and 1500 schools across the country.

Several other NGOs such as World Wide Fund for India (WWF-India), CPR Environmental Education Centre, BVEERI have been organizing teacher orientation programmes for many years.

Teacher Education for EE: Concerns and Issues

- * There is lack of adequate pre-service training in EE.
- * There is also lack consensus on what should be the scope and content of EE at various levels of pre-service training programmes. A major concern is the danger that EE should not be perceived as mere introduction of environmental concepts and facts.
- * While “Environment” as subject has been incorporated in one way or another in most school curricula, training in EE has not yet infused the curricula of teacher training courses. Thus

teachers are not well equipped to deal with the new subject area.

- * Where EE has been introduced as an optional or elective subject into teacher training courses, it is not perceived to be as other subjects such as Educational Technology, multimedia Education, Computer Education, etc.
- * EE is generally perceived as having a heavy natural science content and hence is not chosen by “non-science” students who feel they may be able to grasp it.
- * In-service training is usually a one-time training module. This may help in orienting teachers, and perhaps motivate them in initiating EE efforts. But this may be inadequate to sustain these efforts over a period of time.
- * There is need to provide some system through which teachers can receive ongoing support both through formal training programmes and through continued networking.
- * There is great need for relevant source/resource/reference materials and other resources for teachers. The immense value of locale-specific EE materials extends beyond language to also address content, context, concepts, issues and example.
- * Lack of resources and support from institutional managements and other crucial agencies may also restrict the access of teachers to training, opportunities, resource and reference material and ongoing support in implementing EE methodologies and activities in their course of work.

Conclusion

Teachers need to be prepared to become EE facilitators, who will proactively adopt the activity oriented approach to teaching and learning through, about the for the environment. This will require in addition to teacher training, ongoing support that will reach into schools/colleges and influence the EE programme. This support could be perhaps from an external resource agency that closely interacts with the educational system on an ongoing basis.

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INDONESIA

Teacher Education for Environmental Education in Indonesia

Prof. Dr. I Made Putrawan

An Overview

Since Environmental Education (EE) has been recommended by Tbilisi Conference (1977) to be implemented at all level of society, teacher education at the tertiary/university level has been anticipated by us as a potential and powerful institution to achieve the objectives of EE.

We have 12 public teacher education institutions at the university level through out country and many other private institutions. Teacher education at the State University of Jakarta is one of public which EE has been offered compulsory for students teacher since 1979, particularly for those who specializing in teaching mathematics, sciences such as biology, chemistry, physics, and geography.

The monolithic approach has been used with 2 credit semester and the main topics include the concept of ecosystem, ecological principles, population issues, teaching methods of EE, evaluation strategy, and instructional development on EE.

Students teacher would be expected to be able to integrate those ecological concepts and principles into their own subject matters when they have been graduated to be a teacher at the either primary or secondary schools.

The competence of lecturers in teaching EE has also been improved by assigning them to take a postgraduate master and doctor program on EE at the post graduate school of education, the state university of Jakarta.

A Few Examples of Programs

Annually, we conduct an “in-service teacher training” on EE which participated by more than 100 teachers from primary and secondary schools during the school holiday and the last two days training has been carried out on Oct., 27-28 1999.

We have also post graduate program master and doctor on EE since 1981 and participated by lecturers and private sectors from though out the country. Most of their thesis and dissertation are directed to solve EE problems and issues such as the effective strategy and method of teaching EE at all level of education, non-formal EE, and EE materials development and evaluation.

Besides, we have also a research center on EE and its activities focussing on research, teacher training, and evaluative research. We are preparing a workshop on EE integration or infusion into several subject matter for primary and secondary school teachers around Jakarta, which will be held on the third week of December 1999.

Problems and Issues

Actually, we do have a problem of teacher education for EE which is sound rather technical

instead of academic problem or issue that is how to propose EE to be compulsory course which must be offered to all students teacher from all departments at our institution.

We would try to negotiate with all Deans of the Faculty in order to consider the possibility of EE to be compulsory subject matter at our University. It would take time since we believe that this is a matter of cognition and attitude of the policy maker at the level of University.

However, at the State University of Semarang, Central Java, EE has been offered compulsory to all students teacher.

*** This country report was prepared by Dr. Putrawan who could not attend the Seminar because of illness.**

JAPAN

Teacher Education System and Environmental Education Programs in Japan

Dr. Mikio Kimata

Most people take a great interest in global environmental issues such as the greenhouse effect, acid rain, deforestation, desertification, biodiversity erosion, urbanization, depopulation in rural communities and food security. Environmental education has recently attracted much attention, as it can play an essential role in solving these problems. This education requires both analytic and integrated methods because of the complexity of interconnecting several disciplinary fields, and also requires both academic and practical processes because of its social property. Therefore, a total theory and a practical framework are necessary to integrate the entire program field.

I An overview of teacher education for environmental education

Teacher education for environmental education has been conducted for in-service teachers by the Ministry of Education, Science, Sports and Culture (MESSC), and each regional board of education, for students by the Faculty of Education and universities, and the other educators by non-profit nature conservation and environmental education organizations.

There are two methods of learning about the environment, analyzing literature and experiential learning. Most Japanese teachers and students have concentrated on literature-based classroom studies, especially at the secondary level. This is regarded as a more efficient method of teaching and learning in order to prepare for entrance examinations to upper grades of schools and universities. This approach usually causes students to lose interest in natural and social materials, because it is not intellectually satisfying. Students learn segmental knowledge of nature and human society through textbooks, but they lack an understanding of the whole. Some educators have attempted a cross curriculum and an interdisciplinary approach. They begin with a comprehensive learning system, and then add experiential learning in outdoor classrooms and in the community.

Currently there are two subjects that involve the aspects of environmental education, “Environment” in kindergarten and “Life Environment Studies” in the 1st-2nd grades of elementary school. After the 3rd grade, and in junior and senior high schools, teachers conduct classes on the environment through the other subjects such as “Natural Sciences,” “Social Sciences,” and “Home Economics.”

MESSC may have recognized this situation, and will implement a new national curriculum including “Comprehensive Studies” within a few years. The concept of this new subject contains environmental education programs such as active learning in nature and culture. Comprehensive Studies will receive 105 - 110 hours of teaching per year in the 3rd - 6th grades of elementary schools, 70 - 130 hours per year in junior high schools and 105 - 210 hours within three years in

senior high schools. Therefore, environmental materials will be taught mainly through both the compulsory subjects and Comprehensive Studies. It will be necessary to educate teachers to create new programs and content for environmental education.

II A few examples of teacher education programs for environmental education

1 Teacher education programs at Tokyo Gakugei University

1) Undergraduate program for environmental education

The undergraduate program for environmental education was begun at Tokyo Gakugei University (TGU) in 1979. TGU began with two lectures, “Environmental Education,” begun in this year and “Field Studies,” begun in 1981, which were a part of general education of undergraduate students in the Faculty of Education. The undergraduate curricula were restructured in 1995, when TGU enriched the program and offered about 20 lectures on environment and its education. These lectures include:

Environmental Education, Field Studies, Environment (viewpoints of natural sciences), Man and the Environment, Interpreter Training, School Garden and Biotope, Nature Conservation and Economics, Environmental Design, Environmental and Areal Change of the Tama Region, Life Environment and Stress, Communication Skills, History of Science and Technology, Global Environmental Problems (their nature and preventive measures), Natural Environment and Health.

Next year TGU will establish a major field in environmental education and welcome 25 freshmen in the Environmental Education Major that includes two additional fields, Natural Environmental Sciences and Cultural Asset Sciences. This will be the first department of its type in Japan. The curriculum, which is currently under constructing, consists of four parts: common subjects, compulsories, and electives A and B.

Common subjects: Introduction to Environmental Education, Environmental Administration and Politics, Biodiversity and Environment, Preservation and Practical Use of Cultural Heritage and Natural Environment.

Compulsory subjects: Introduction to the Environment, Introduction to Ecology, Introduction to Natural History, Environmental Ethics and Natural Environment, Life Environment, Environment and Industrial Society, Landscape, Biotope and Conservation of Plant Genetic Resources, Field Work: Natural Environment I and II, Field Work: Social Environment I and II, Environmental Education Seminar I, II, III and IV.

Elective subjects A: Soil and Global Environment, Water Resources, Conservation Biology, Ethnobotany, Environmental Economics, History of Environmental Culture, Pollution and Global Environmental Issues, Consumption and Sustainable Society, Environment Assessment, Environmental Design and Planning, Introduction to

Interpretation, Environmental Law, Environmental Psychology, Environmental Pollution and Indicator Organisms, Geographical Information System, Overseas Environmental Education, Outdoor Environmental Education.

Elective subjects B: Ecology, Biological Evolution, Resources and Environment, and others.

In addition, there will be lectures on the environment for general education as mentioned above, and a new subject “Project Studies,” which deals with food culture.

The Field Studies Institute for Environmental Education (FSIFEE) was established at Tokyo Gakugei University in 1987. This institute is the oldest research center for environmental education in Japan and coordinates programs at TGU. FSIFEE has special interpreter training for the global education as well, including a workshop on “development and education” and an exercise on “traditional food culture.”

Overall, the new curriculum is distinguished by the fact that it promotes field works in nature and communities, and it is an integrated method that includes practical processes in environmental education. We hope that the students will become school teachers, social educators, researchers and officials after their graduation.

2) Graduate program for environmental education

Master’s course for in-service teachers:

It is essential to change the values of teachers and educators if environmental education is to play an important role in solving environmental issues. As we study the curriculum and pedagogy of environmental education, it becomes clear that environmental problems must be solved from the perspectives of humanities as well as social and natural sciences. This master’s course is comprised mostly of night classes in environmental education in the Division of Comprehensive Education Development. Seven students have entered the Environmental Education Course each year since 1997. While remaining at their respective work positions, they can earn credit taking night classes. The environmental education program consists of nineteen lectures categorized in three groups.

Foundations of environmental education: Foundations of Environmental Education, Introduction to Educational Thought of Ecology, Integrated Environment Studies.

Methodology of environmental education: Methodology of Environmental Education, Environmental Education Research, Integrated Curriculum, Environmental Education Seminar, Outdoor Environmental Education Seminar, Methodology of Environmental Education Seminar.

Environmental sciences: Natural History, Environmental Conservation, Biodiversity Conservation, Environmental Urban Climatology, Biological Activities and Environmental Changes, Environmental Change and Local Communities, Environmental Geography, Environmental Health, Environmental Economics, Theory

of Resources and Energetic Environments, Environmental Mycology, Environmental Design Seminar.

Doctoral course in education:

The United Graduate School was established by Tokyo Gakugei University in 1996. This school consists of the education faculties of Tokyo Gakugei University and three other universities. TGU has two lectures on Environmental Education Studies in the Division of Study on Structure of Education. A small number of graduate students take lectures each year. We hope that a consistent curriculum from the undergraduate to graduate programs will develop substantially.

3) Special programs sponsored by the Ministry of Education, Science, Sports and Culture :

FSIFEE conducts five programs sponsored by MESSC.

GLOBE Program-Japan (Global Learning and Observations to Benefit the Environment Program in Japan) begun in 1995.

EILNet Program (Environmental Investigation and Learning Network) begun in 1997.

UNESCO/Japan Asian-Pacific Seminar for Environmental Education begun in 1998.

Comprehensive Studies on the Promotion of Environmental Education begun in 1997.

Guidance Teachers' Training Course for Environmental Education, held from 1994 to 1997.

Of these programs, GLOBE Program-Japan and the EILNet Program are environmental education activities designed for pupils of junior high schools that utilize the internet. FSIFEE also offers annual training courses in environmental studies for GLOBE and EILNet teachers. FSIFEE has also held guidance teacher training courses in a rural community located in a national park near Tokyo. More than one hundred teachers from around the country participated in this course.

4) Extension course for teacher training in environmental education in 1999

FISFEE conducts the following extension courses.

Adventure School for Children in Chichibu-Tama National Park (since 1988).

Training Course of Outdoor Environmental Education (since 1986).

Environmental Education Seminar (since 1984).

The Adventure School is an educational camp held in a national park for children in the 3rd-6th grades of elementary schools. However, this program also presents a unique experience for staff, who are mainly in-service teachers. The purpose of these extension courses and seminars are to train in-service teachers in environmental education.

2 Other teacher education programs

1) The Center for Environmental Education and Lake Science (CEELS), Shiga University

CEELS was established in 1995 to study and expand environmental education. The main purposes are to conduct interdisciplinary and collective studies on environmental education using Lake Biwa and its watershed, and to train coordinators for environmental education and provide them with opportunities to enhance their practical ability, theory and knowledge about the environment.

CEELS runs this course in partnership with the Shiga Prefectural Board of Education, and plans to create a database of teaching materials and programs on environmental education and offer them to schools (Kawashima 1997). The Prefectural Board of Education has published books on environmental education since 1974, and has chosen 30 schools as promotion schools to practice environmental education every year since 1980 (Shirai 1997).

2) Tokyo Metropolitan Environmental Learning Center (TMELC)

Since reducing of current pollution associated with urban lifestyles requires the understanding and cooperation of every citizen, the significance of environmental education becomes very important. Tokyo Metropolitan Government extends various promotive measures for environmental education for citizens. TMELC was opened in 1994 as a place where people can gain a broad learning of the regional environment. To promote environmental education, TMELC provides information, holds exhibits, supports educational training including for in-service teachers, exchanges activities, and conducts surveys (Bureau of Environmental Protection, Tokyo Metropolitan Government 1998).

III Problems and issues concerning teacher education for environmental education

It is necessary to understand both the integrated whole and the separate parts of nature and culture. Experiential and comprehensive learning methods should be reintroduced into the K-12 curricula. The Comprehensive Studies of the new national curriculum should act to promote of environmental education, but several problems and issues concerning teacher education still remain.

- 1) Even after Comprehensive Studies is started, teachers may not deliver classes on environmental education because they are able to freely select the contents. As a result, the hours of teaching for environmental education may decrease or be eliminated altogether both in compulsory subjects and in Comprehensive Studies. We hope that teachers will devote many teaching hours to environmental education in all subjects as well as Comprehensive Studies. We also wish to propose that a new subject “Environmental Studies” be made compulsory as quickly as possible.
- 2) The Faculty of Education and university must endeavor to create an efficacious curriculum of teacher education for environmental education. It is especially important to take into account learning methods such as practical activities, field studies and laboratory work for

environmental studies at the tertiary education level.

- 3) A sufficient number of capable staffs and technicians will be necessary at the Faculty of Education and university to conduct and support a useful curriculum, something that Japan currently lacks.
- 4) More research facilities and learning centers for environmental education will also be necessary in the next 21st century. An international network among such centers will also help.

MALAYSIA

TEACHER EDUCATION PROGRAMME FOR ENVIRONMENTAL EDUCATION IN MALAYSIA

Mr. Asmawi Abdul Kadir

1. INTRODUCTION

Environmental studies is a discipline which aims to develop an understanding of the close interaction between man and his environment, with specific emphasis on the management of the environmental resources for the benefit of mankind. This process involves the study of the environment and its benefits to enable us to gain a deeper understanding and knowledge as well as to instil an acute sense of awareness on managing the environment responsibly and wisely. Man plays an important role in guarding the balance and harmony of the environment, a view as expressed by Jesse Jackson.

“We must stop mortgaging the future to the present. We must stop destroying the air we breathe, the water we drink, the food we eat, and the forests that inspire awe in our heart... We need to prevent pollution at the source, not try to clean it up later... It's time to remember that conservation is the cheapest and least polluting form of energy... We need to come together and choose a new direction. We need to transform our society into one in which people live in true harmony - harmony among nations, harmony among races of mankind, and harmony with nature... We will either reduce, reuse, recycle, and restore - or we will perish.”

Jesse Jackson

It cannot be denied that environmental and natural resource problems in the Asian and Pacific region have reached critical proportions. This situation is so serious that future development programmes in the countries of the region will be jeopardised if steps are not taken immediately to reverse the ecologically destructive trends. The seas and rivers have become so polluted by industrial effluents, oil tankers and raw sewage that the health and even lives of people along the sea-coast and rivers are being threatened.

Environmental issues should be given priority. These include intensifying efforts in carrying out research, monitoring the environmental impacts on development, promoting educational activities on the environment, raising public consciousness and mobilising people on environmental issues. Although the present situation appears critical, there is room for optimism if the people become consciously aware of the problems and of what should be done.

2. AN OVERVIEW

Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm

belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving a high level of personal well-being as well as being able to contribute to the harmony and betterment of the society and the nation at large.

In Malaysia environmental studies has been incorporated in all school subjects taught under the Integrated Curriculum for Primary School (KBSR) and the Integrated Curriculum for Secondary School (KBSM). In the preservice teacher education programmes such as The Malaysian Teaching Diploma (DPM) and the Post Graduate Diploma in teaching (KPLI) course, Environmental Education is being offered as a compulsory subject. This effort is aimed at instilling a positive attitude towards the environment amongst the teacher trainees. Hopefully these teachers will develop good values and attitudes and take appropriate actions to upgrade the quality of our environment.

The Environmental Studies was programmed was taught to enabling the teacher trainees to understand and be aware of issues related to the environment as well as to take the necessary action to protect and preserve the environment either individually or as a group. This programme is intended to equip the teacher trainees with knowledge, skills and values to enable them to teach effectively environmental studies across the curriculum in school.

3. PROGRAMS

3.1 Objectives

Upon completion of this course, the teacher trainees will be able to:

- 3.1.1 gain basic knowledge and understanding on the equilibrium of the environment and the concept of conservation (protection and preservation of the environment);
- 3.1.2 apply ecological knowledge and concepts to analyse and solve problems of the environment;
- 3.1.3 understand the concept of development and the importance of a planned usage of natural resources;
- 3.1.4 instil positive values and attitudes towards the environment and understand issues on the environment locally and globally;
- 3.1.5 take action and get involved as an individual or as a group in conserving and restoring the environment;
- 3.1.6 teach elements of environmental studies in all school subjects.

3.2. Arrangement of content and time allocation

The contents of this course are organised under 5 main topics introducing basic contents such as ecology, ecosystem, pollution and development. Each main topic is further expanded through sub-topics according to knowledge, skills and values. All the five main topics will be taught in one semester based on the allocated time as shown in Table I.

CONTENTS	TIME (Hours)
1. Introduction to Basic Ecology	2
2. Issues And Problems Of the Environment	3
3. Balanced Development	3
4. Environmental Studies Across The Curriculum	5
5. Inhabitants Of The Environment	2
TOTAL	15 hours (1 Credit)

Table I: Topics of environmental studies

3.3 Instructional Strategies

Instructional strategies on environmental studies include activities which teacher trainees partake either inside or outside the lecture room. Activities suggested are:

3.3.1 Brainstorming: To create new ideas and perspectives through expansionary thinking

3.3.2 Discussion: To discuss issues, problems and share concepts and Information

3.3.3 Practical: Hands-on experience such as:

- taking care of plants
- rearing animals
- building a compost heap
- cleaning up the school compound
- creating a learning station

3.3.4 Experiment: Research on plants, animals and the soil and also conduct studies on air, water, soil and sound pollution.

3.3.5 Demonstration: Activities such as:

- recycling of paper
- usage of “throw away” materials

3.3.6 Project: Scrap book on “throw away” or “recycle” materials

3.3.7 Campaign: To promote issues such as:-

- Love Our Environment
- Keep Our Rivers Clean
- Greening Program

4. ISSUES AND PROBLEMS

4.1 Curriculum

The contents of the curriculum are arranged systematically in a progressive manner to enable the teacher trainees to achieve optimum learning. However, a time allocation of 15 hours of interaction (1 credit) to incorporate knowledge, skills, values, and attitude seem to be rather ambitious pursuit. The heavy demand of the curriculum is indeed a great challenge to the teacher trainers given the limited time frame of study.

4.2 Teaching Staff

For an effective implementation of any curriculum, it is imperative that the lecturers directly involved in the teaching-learning process, should have adequate professional training, the relevant experience and related expertise. In this college, most of the lecturers who are teaching environmental studies are given orientation courses and inducted to the curriculum. Although teaching environmental education to the DPM groups do not pose much significant problems, these lecturers do face more challenges with the KPLI groups as some of these teacher trainees already possess a basic degree in environmental studies. Alternative strategies such as project work and debate are employed by the lecturers to meet the needs of the KPLI groups.

4.3 Teaching Modules

The planning and design of a teaching module require mastery of specific skills in the selection of content, teaching methods, assessment and evaluation procedures to achieve the desired goals and objectives. Hence in providing guidance on activities to initiate effective teaching-learning experiences. Therefore, lecturers and education officers should be encouraged to produce teaching modules, manuals, and teacher's guides and handbooks.

4.4 Organisation for effective instruction

Environmental studies should be taught across the curriculum in schools. The contents need to be delivered through 'continuity', 'sequence' and 'integration'. Considerable emphasis should be placed on rational planning to be reflected in a 'coherent programme', 'efficiency of instruction', and an 'effective organisation'.

4.5 Lack of Teaching resources

Textbooks and other supplementary materials are considered to be the main component of the subject curriculum. As the circulation of these subject-based journals is limited, an integrated set of video programmes, slides, and tape recording materials should be provided for lecturers and teacher trainees.

4.6 Collaboration with environmental agencies

In line with the objective of the government to involve organisations and Individuals in an effort to preserve nature, the college has taken collaborative measures with the State Environment Department to expose our teacher trainees to issues and problems with regard to nature and the environment. Besides such joint effort with the State Environment Department, the college also seeks cooperation from Non-Governmental Organisation such as the Malaysian Nature Society to organise an "Orientation Course in Nature". This nature camp focused primarily on the ecosystem of the forest, and our teacher trainees received first-hand experience in the forest reserved areas. Through such activities, it is hoped that the teacher trainees will observe good and noble values with regard to nature and the environment and subsequently transmit them to their students at large.

5. CONCLUSION

Environmental studies play an important role in the lifestyle of every human being and is

essential for serving and improving national environments. The subject has been successfully implemented in Western countries with immense benefits to their environments. Therefore it is justifiable to introduce the subject in the preservice training curriculum. If environmental studies is to be relevant and beneficial to teacher trainees, the curriculum must reflect human events and aspirations. This means that environmental studies should be taught with great commitment. Teacher trainees need to be more aware of ways to enhance the quality of life through available solutions for personal and community development to sustain the improved environmental situations. It is important, therefore, that the environmental studies curriculum be expanded in the light of recent dangers of environmental influences which may encourage or retard human development. The adoption of an appropriate education in environmental studies in Malaysia can promote its own needs and may be able to influence lifestyles and ecosystems in positive ways. To achieve this, schools should play a major role in educating future citizens about the values and potentials of environmental studies.

COURSE CONTENT

KNOWLEDGE	SKILLS	VALUE/COMMENTS
1. Introduction to fundamentals of ecology (2 hours). 1.1 Definitions of Environment Basic components of the environment - natural environment - man-made environment - sociocultural environment 1.2 Biosphere and ecology Biosphere is the part of the world which is capable of supporting life Ecology is a field of science that studies the relationship between plants and animals as well as their environment 1.3 Ecosystem Definition of biotic and abiotic ecosystem 'Niche' concept Energy transfer in the food chain Balance in the ecosystem Natural cycle such as the nutrient cycle, carbon cycle and water cycle 2. Environmental issues and problems (3hours). 2.1 Source and effects of air pollution, water pollution, land pollution and sound pollution. 2.2 Sources of environmental crisis: <ul style="list-style-type: none"> ● Increase in population ● inappropriate use of technology ● Natural disasters ● Politics and war ● Culture and ethics ● Ineffective enforcement of laws 	Explain the meaning of 'environment' and differentiate the various components in the environment Explain and give examples of the various components in the environment Explain the meaning of 'biosphere' and 'ecology' Explain that every organism has a role in maintaining the balance of the natural cycle in ecosystem Carry out studied on the ecosystem of rivers, beaches, urban areas, slump areas, industrial areas Compare and contrast the ecosystem's ability to sustain life Plan and carry out experiments to detect water, air, land and noise pollution. Discuss and identify the sources of environmental crisis Give suggestions on solutions to the environmental crisis/ problems. Make inferences on the sources of environmental pollution through the use of interactive multimedia. Explain the concept balanced development and its importance to self-sustenance of life. Give suggestions on the intelligent use of natural resources.	Value: Thankful to God for creating the natural environment Strategy: Gather information on the concepts of 'environment' and its component through viewing video programmes and the multimedia Strategy: Charts and transparency on Biosphere, ecology and ecosystem Strategy: Use video programmes and the multimedia to get further information on the concept of biosphere and the ecosystem Value: Appreciating the role of every organism in maintaining the balance in the ecosystem Strategy: Use video programmes and multimedia to strengthen the concept of the food chain Value: Appreciate and internalise the important of the natural cycle in our life. Note: Water pollution is measured through Biological Oxygen Demand (BOD) Strategy: Detect air pollution with litmus paper. Note: Make trainees realise that every individual has to play his/her role to upgrade the quality of the environment. Strategy: Discussion, brainstorming, debates ,quizzes Value: Gather relevant information. Value: Appreciate the importance in maintaining the biodiversity for self-sustenance of species. Value: Understand and internalise the natural order of thing in nature.
3. Balanced Development (3 hours). 3.1 The concept of balanced development: <ul style="list-style-type: none"> ● Balance between development and the quality of the environment ● Type of development that have to consider the needs of the future 		

<p>generations</p> <ul style="list-style-type: none"> • The intelligent use of natural resources 		
<p>3.2 Strategies for balanced development</p> <ul style="list-style-type: none"> • Recycle and reuse products • The use of inexhaustible source of energy such as the sun, wind and the waves • The organisation of Love the Environment and Replanting • Reduction in waste disposal such as: <ul style="list-style-type: none"> - Produce more durable products - Reduce usage of package • Enforcement of policies and laws at National level: <ul style="list-style-type: none"> - National Land Law - Forest Act 1972 - Wildlife Act 1978 • Laws and International conventions: <ul style="list-style-type: none"> - Langkawi Declaration 1989 - Agenda 21 (Earth Summit) - Kuala Lumpur Accord 1992 - UN Commision on Sustainable Development (UNCSD) - International Whaling Commission (IWC) 	<p>Compare and contrast exhaustible sources of energy.</p> <p>Plan and carry out campaign e.g:</p> <ol style="list-style-type: none"> Love Nature Reuse waste materials Recycle waste <p>Evaluate the effectiveness and suitability of policies and laws to protect the environment. Gather information on Acts and Laws by preparing Scrap books/ folios/ bibliographies.</p> <p>Evaluate the effectiveness and suitability of policies and laws to protect the environment</p> <p>Gather information on laws and conventions by preparing scrap books/ folios/ bibliographies</p>	<p>Value: Practise the strategy of balanced development in every day life.</p> <p>Value: Appreciate the fact that the country is based on a balanced development. Strategy: Brainstorming exhibitions, demonstrations. Strategy: Use computer to produce a poster and beautiful graphics for the campaign. Value: Create the awareness that human activities influence the balance of nature</p> <p>Value: Awareness regarding the rules to protect the environment. Strategy: E-mail the relevant bodies/ organisations to get the relevant rules and laws.</p> <p>Value: Awareness regarding the rules to protect the environment. Value: Aware of the fact that the solutions to environmental problems require international co-operation.</p>
<p>3.3 Government and non-government organisations that are responsible for the upkeep and rehabilitation of the environment</p> <p>Government organisation such as Department of Environment, Forestry Department, Wildlife Department and National Park.</p> <p>Non-government organisations eg Malaysian Nature Society, WWF, Sabah Nature Society</p>	<p>Discuss the functions and roles of government organisations to maintain and rehabilitate the environment.</p> <p>Locate and gather information, scrap books, films and articles on non-government organisations' efforts to maintain and rehabilitate the environment.</p>	<p>Strategy: Gather information on the maintenance and rehabilitation of the environment by E-mailing the relevant organisations. Value: Aware of the fact that the maintenance of the quality of the environment is a combined responsibility of the individuals, community and government Value: Aware of the fact that the maintenance of the quality of the environment is a combined responsibility of the individuals, community and government</p>
<p>4. Environmental education on across the curriculum (5 hours)</p>		
<p>4.1 Definition, objectives and aims of environmental education across the curriculum.</p>	<p>Explain the definition, objectives and aims of the environmental education.</p>	<p>Value: Appreciate the importance of environmental education in an effort to upkeep and maintain the</p>

<p>4.2 Environmental Education Programmes.</p> <ul style="list-style-type: none"> ● Environmental education across the curriculum ● Using the college environment and its surrounding areas as teaching-learning resources. ● Greening Programme 	<p>Plan leaning activities to integrate elements of environmental education in KBSR subjects.</p> <p>Plan a variety of educational activities at natural environment such as beached, undergrowth, swamps, pools and recreational parks.</p> <p>Carry out greening programme in college such as: The setting up of recycling centre Establishing Compost centre The planting of different types of plants Setting up a resourse centre for environmental education The management of pools</p>	<p>balance of nature.</p> <p>Reference: Teacher's Guide on environmental education across KBSR, published by Curriculum Development Centre (CDC).</p> <p>Strategy: Using the INTERNET to gather information on existing environmental education.</p> <p>Note: Aware of facts that the environment is a treasure of knowledge to motivate learning.</p> <p>Note: Aware of facts that the greening programme gives the teacher trainees a chance to experience a good life-style.</p>
<p>5. Inhabitants of the environments (2 hours)</p>		
<p>5.1 Practise an environment-friendly lifestyle i.e.</p> <ul style="list-style-type: none"> ● Recycle products ● Avoid wastage ● Avoid buying products made of things that have life or things that grow ● Avoid buying and using things that pollute the environment 	<p>Identify and practise an environment-friendly lifestyle</p> <p>Identify alternative products to replace products that pollute the environment</p>	<p>Value: Be thrifty in our everyday life.</p> <p>Value: appreciate the importance of various living thing in nature in maintaining the balance of nature.</p>
<p>5.2 Self - involvement in effort to maintain and rehabilitate the environment</p> <ul style="list-style-type: none"> ● Take part in Love the Environment campaigns. ● Take part in recycling campaigns. ● Take part in community projects to clean the college grounds, the district and the beach. ● Support and become members of Environmental Association/ Bodies. ● Set up an Environmental Society in the college. 	<p>Plan and carry out campaigns or activities to maintain or rehabilitate the environment</p> <p>Prepare brochures, posters, and other materials for Love the Environment campaigns.</p> <p>Become an active member in such societies in the society.</p>	<p>Value: Aware of the fact that humans play an importance role in maintaining the balance of nature.</p> <p>Strategy: Using electronic means to schedule activities to maintain and rehabilitate the environment.</p> <p>Value: Aware of the fact the beauty of nature is the responsibility of the individuals and society.</p> <p>Value: Aware of the fact that humans play an important role in influencing the balance of nature.</p> <p>Strategy: Have discussions with environmental organisations through E-mail.</p>

NEW ZEALAND

Environmental education in teacher education in New Zealand

Mr. Barry A. Law

Introduction

The NIER seminar 'Environmental Education and Teacher Education in Asia Pacific' held in Tokyo Oct-Nov 1993 provided a rare opportunity to focus on some of major issues that concern teacher educators across the region in addressing the pedagogy of environmental education in teacher education.

The objectives of seminar were:

1. to review the state of environmental education in the participating countries focusing on:
 - curriculum
 - teaching and learning methods
 - problems and issues.
2. to review the state of teacher education in the participating countries and identify problems and issues in developing competencies required for teaching new learning areas such as environmental studies; and
3. to identify common problems and issues concerning the content and teaching-learning strategies of environmental education as well as needs and requirements in teacher education emerging from curriculum reforms.

The New Zealand Scene

in 1993 the delivery of environmental education in New Zealand was constrained in formal school education, tertiary education and in the wider community by a lack of direction and guidance. The major issue was lack of understanding of the guiding principles of environmental education, a lack of policy, how it should be implemented and who was responsible for delivering it.

Environmental Education Development

New Zealand responded to the issues that across from the first NIER seminar in 1993 by establishing three key priorities. The first priority focused on establishing a national policy statement on environmental education across all education sector groups, The second response was to support the development of environmental education modules for teacher education through the joint Griffith / ACEID 'Learning for a sustainable environment - Innovations in Teacher Education through Environmental Education' project. The third priority was to write and implement environmental education curriculum guidelines for schools.

Priority 1

The Ministry For The Environment released the government's strategy for the environment in 1995 entitled 'Environment 2010'. It provide management strategy for dealing with the major environmental issues in New Zealand. The document outlines a six-part management agenda to help achieve the vision of a 'clean, healthy and unique environment, sustaining nature and people's needs and aspirations'.

The six-part plan included:

1. The integration of environment, economic and social policy
2. The establishment of a coherent framework of law
3. A sharpening of the policy tools
4. The development of quality resources
- 5. The promotion of education for the environment**
6. Involving people in decision making

Part five 'The promotion of education for the environment' outlines four proposals for action, namely the development of:

- **A National Environmental Education strategy**
- **Guidelines for schools**
- **Tertiary education programmes**
- **Community education policies and action plans that acknowledge their roles.**

A National Environmental Education strategy "Learning to Care for Our Environment was published by the Ministry for Environment in June 1998. This Document provided six strategic issues for environmental education:

- encouraging the integration and coordination of Environmental Education activities
- evaluating and improving the effectiveness of environmental education activities in the transfer of knowledge and the implementation of policy
- maintaining and enhancing the capacity of tangata whenua to fulfill their responsibilities as Kaitiaki
- incorporating the aims of environmental education across the school curriculum
- promoting environmental education in business education and training
- providing individuals and communities with the information and understanding to enable them to make environmentally sound decisions

Priority 2

In 1995 the UNESCO office in New Zealand supported a four day seminar on Environmental Education in Teacher Education held at the Environmental Education Centre of New Zealand at Craigieburn Forest Park. The meeting involved five of the six teacher education institutions in

New Zealand.

The 1995 meeting introduced participants to the UNESCO / ACEID and Griffith University project “Learning for a Sustainable Environment (LSE) - A Professional development Guide for Teacher Educators”. The seminar identified the barriers to maintaining current courses and examined the possibilities of developing new programmes for environmental education based on the LSE project. The recommendations from this seminar are outlined below.

1995 Teacher Education seminar on Environmental Education Recommendations

The following resolutions were made by participants who attended the final Friday morning session.

1. a. That seminar participants support the publication of Ministry of Education’s Guidelines for Environmental Education.
- b. That seminar participants develop a coordinated plan of action to promote the Environmental Education Guidelines to ensure that they are eventually published.
- c. That seminar participants support initiatives to promote the Environmental Education Guidelines once they are published.
2. That the Colleges of education and Regional Councils support the trialing of the UNESCO Modules “Learning for a Sustainable Environment”. Colleges of Education offering to trial the LSE Modules include:
 - Auckland
 - Waikato University Schools of Education
 - Massey University School of Education
 - Wellington
 - Christchurch
3. That each College of Education set up an internal network and strategic plan for Environmental Education.
4. That each College of Education, Regional Council Branch of NZAEE of strategic plan for environmental education.
5. That the seminar participants take the opportunity in a variety of contexts to promote environmental education.
6. That seminar participants write, trial and share new environmental education modules using the LSE format.
7. That seminar participants meet again within twelve to eighteen months to focus on resource development in Environmental Education. This meeting should include resource developers, teacher educators, regional and local body representatives and teachers that are all involved in environmental education.

It took four years for the Environmental Education Guidelines for Schools to be produced

and three has been no subsequent meeting of this group to establish or refine recommendations 6 and 7.

Priority 3

In January 1995 the Ministry of Education issued a contract Robyn Baker (Wellington College of Education) and Barry Law (Christchurch College of Education) to write a guideline document for environmental education in formal school curriculum. The development of the draft document for schools involved consultation with over 100 hundred different individuals and organisations. The document was developed in consultation with the Ministry for the Environment so that a common approach and direction for environmental education could be developed in New Zealand. The guideline were finally released by the Ministry of Education in August 1999.

Environmental Education in Teacher Education in New Zealand: A brief Overview of Programmes.

A small number of teacher education institutions have begun to respond to the current developments of EE by establishing environmental education course within their teaching Diploma programmes. The following information (points 1-5) gives a brief overview of how this is happening.

1. Environmental Education in teacher Education is occurring in a number of ways.
 - Environmental education is taught as a separate course at Christchurch College of Education and Massey University School of Education Palmerston North
 - Environmental education is taught as a separate course at Christchurch College of Education and Massey University School of Education at Palmerston North.
 - Sustainability and social change is taught as environmental science at Wellington College of Education, Waikato University School of Education, Auckland and Dunedin College of Education.
 - Health and the environment is taught at Christchurch College of Education
 - Environmental Education is taught as a specialist in-service course or postgraduate course at Christchurch College of Education and Massey University School of Education at Palmerston North.
2. The main audience is beginning teachers from early childhood to secondary and trained teachers through in-service courses or postgraduate programmes.

Short course of programmes have also been developed for ‘other’ sector groups ie, Regional Council, Ministry for Youth Affairs, Department of Conservation by the Christchurch College of Education.
3. Partnerships with other organisations have been effective. Christchurch College of Education has a strong partnership with Department of Conservation, Christchurch Regional Council,

Christchurch City Council, Canterbury Environmental Trust and World Wide Fund - NZ. Waikato University School of Education has strong links with the Hamilton City Council, Environment Waikato and the “Enviro Schools” programme.

4. Curriculum development opportunities in environmental education. All the college's of education and schools of education have contributed to the development of both "Learning to Care" and the "EE Curriculum Guidelines for Schools" (in numerous ways) ie, as writers, consultants, reviewers or contributing information.

All college's of education and school's of education have a responsibility to information to inform beginning teachers of the EE Guidelines in areas that specifically deal with the environment. The EE guidelines are yet to be implemented in a formal and structured way throughout New Zealand. This is planned for 2000.

5. Example of a Teacher Education programme of study in Environmental Education.
Christchurch College of Education.

Pre-service courses:

Primary Teaching ● Environmental Education(20hrs)

Secondary Teachers ● Environmental Education(20hrs)

In-service Course: ● One day and two day courses available on “Learning for Sustainable Environment” Griffith / UNESCO.

- One day and two day courses available in Experiential Learning for Environmental Education.

Post Graduate: Master of Environmental Education (Jointly with Griffith University in Brisbane Australia).

Master of Teaching and Learning (MTchLN) There is one optional paper entitled 'Experiential learning in Environmental Education'.

Barriers/ obstacles and opportunities for the successful implementation of environmental education in teacher education.

The following matrix is a list of barriers / obstacles to quality environmental education identified by teacher educators in 1996 and re-visited again in 1999 by the New Zealand National Environmental Education Coordinating group. The two pages matrix identifies the developments since 1996 and outlines the remaining issues to be resolved to ensure the effective delivery of environmental education in teacher education.

Barriers to Environmental Education in Teacher Education

	BARRIERS IN 1996	ACTIONS BY 1999	REMAINING ISSUES
1	The absence of a national curriculum document, (and the consequent lack of focus in schools) creates difficulty in legitimising EE as part of teacher education	Establishment of national education guidelines for EE in schools.	Three still remains a lack of commitment and focus to EE in College of Education.
2	The lack of incentives to hammer out (local) definitions and guiding principles for EE.	Agreed definition and guiding principles between Ministry of Education, Ministry for the Environment, D.O.C.	
3	The lack of good role models for EE Teaching methodology especially interdisciplinary approaches.	UNESCO teacher education material “Learning for a sustainable environment,” has provided this	Require in-service courses to share this information.
4	Lack of clarity about the integrated stand alone curriculum structure of EE.	An integrated and holistic approach has been advocated in the national education guidelines.	primary schools can achieve both, secondary are still limited by school timetables.
5	The lack of formal in-house dialogue between curriculum areas i.e. geography, science, Maori studies etc.		In secondary teacher education a stand alone subject approach is used rather than an integrated cross curriculum approach.
6	Establishing a higher profile for EE in light of campus and school restructuring to meet curriculum implementations.		Quality - EE still languishes at the edge of the curriculum.
7	The lack of mechanisms to foster and/or respond to children and students knowledge, enthusiasm and concerns.		Education is often reproductive and not transformative.
8	Confusion about conflicting data or lack of data, in order to make informed decisions on value issues.	Resource directory completed as part of a 1998-1999 sustainable management fund project, MFE.	Conflict between Environmental Science and quality EE resources remains. UNESCO office in Japan is trying to explore this.
9	Lack of appropriate structures to allocate staff responsibility in EE in teacher education.		This will continue unless College management can be convinced EE is a critical component of teacher education.
10	The lack of political power on the part of teacher educators to influence decisions in Central Government		This is still remains a major issues.
11	The lack of a handbook to advise teacher educators on how to set up an EE programme.	Learning for a sustainable environment provides a structure and detailed modules for the effective delivery of EE in Colleges of Education.	We need to develop a range of action competence and cross curriculum planners to assist and guide teachers.

Opportunities in teacher education for 2000 and beyond

1. enthusiastic people are still driving and sustaining programmes and projects despite the lack of support from some areas of government.
2. New courses and modules within teacher education programmes are being developed to assist with the new EE Guidelines.
3. Networking and links between Colleges and schools of education and other organisation are continuing to grow
4. Environmental Education now has a sound theoretical base. National and international conferences and research seminars are beginning to address many of the outstanding issues related to the effective implementation of EE in teacher education.
5. There is growing client interest in environmental education. Christchurch College of Education is providing a second EE course because of student demand in 2000. This will result in up to 50 students completing the secondary programme Environmental Education course in 2000.
6. Public policies have increased the emphasis and pressure on teacher education to formally address EE in their core programmes. However, it is still up to each institution to state how they will do this, and to what extent they will address EE in their Diploma of Teaching programmes.
7. Experiential learning has been an effective tool and provides teaching and learning strategies for reflecting on attitudes and values.
8. The 'Learning for a Sustainable Environment' (LSE) project has provided more diversity of teaching more diversity of teaching and learning approaches for EE.
9. In the last four years there has been an increase in local and national research reports on EE completed as part of Master's or post-graduate programmes.
10. The New Zealand Association for EE has moved forward since 1994 and is now a national organisation that is still growing and development.
11. There is more cross cultural awareness and support by indigenous people to view EE as a critical aspect of formal teacher education
12. There is a new emphasis and focus placed on EE by World Wide Fund - NZ and the support they have given teachers and teacher educators in the last two years has helped create new opportunities.

PAKISTAN

Current situation of Environmental Education and Teacher training for Environmental Education in Pakistan.

Dr. Mohammad Rasul Jan

Pakistan is a vast country, comprising four provinces, that is Sindh, Punjab, Balochistan and N.W.F.P. Pakistan has population of 84.3 million (1981) with a population density of 105 person per Sq km. The majority of Pakistan (71.7%) live in villages. The urban population is about 28.3. population is growing at a very fast rate. It increased by 28.3% from 1972 to 1981. If the growth rate of 1972-81 continues, the population will be 149.4 million by AD 2000.

Literacy:

Literacy has increased 0.4-0.5% a year from 13.2% in 1951 to 21.7% in 1972 to 26.2% in 1981, but with a different definition of literacy at every census.

1981: Ability to read a news paper and write a simple letter in any language.

Literacy rate of population by age, sex, and province wise is given in the table 1 to 5

Environmental Education:

There are two aspects of Environmental Education i.e. formal and Non-formal.

Among the Non-formal sources of Environmental Education, the following have played very effective role particularly in the area of mass awareness, and Environmental preservation/conservation,

(1) N. G. O. (2) Print materials (3) Electronic Media

Formal Environmental Education:

The curriculum status covers primary, secondary education. The course contents covering environmental education could be found scattered both in the primary and secondary education. No separate text book is available, neither Environmental Education as such is part of the curricula of primary and secondary education. However a chapter on drugs, medicine and pesticide is there in the chemistry book of Class 9

Sufficient material regarding Environmental education is available in the secondary education, in the text book of Ecology and Geography. The topics covered on ecology and geography are given in tables. (Table 6)

Curricula of tertiary education:

Like other countries of the world, Pakistan is also facing environmental challenges. The environmental problems of Pakistan are growing at faster pace than the sectoral growing in the country. Realizing the gravity of situation, in 1974, govt. of Pakistan launched the environmental

and Urban Affair division within the provision of environmental protection ordinance 1983. This ordinance provided for the creation of national Environmental.

Council, Federal and Provincial Environmental Protection agencies. Apart from these steps under taken, the Environmental Education and research was also felt. Here DEPM was established at University of Peshawar to formal Education and research in the Environment at graduate level, the Department is the only of its kind in the country.

Barriers/Problems in Environmental Education Programme in Pakistan:

Our education is job oriented.

Environmental is still not a priority issue.

Lack of resources.

Not a formal part of the curriculum.

Solutions:

1. Environmental Education should be introduced as a compulsory subject at college level.
2. refresher training for teacher working at the primary/secondary Education in Environmental Education.
3. Provision of information of existing Environmental Education/teachers programme in other countries.
4. Incentive for Environmental Education teacher/graduates.
5. Creation of jobs for Environmental graduates.
6. Restructuring of Educational directorate with emphasis on Environmental Education.

Table 1
Literacy ratio of population (10 years and above) by age, sex, urban and rural area, 1981
Pakistan

Age Group (Year)	Total			Urban			Rural		
	Both Sexes	Male	Female	Both	Male	Female	Both	Male	Female
10 and above	26.2	35.1	16.0	47.1	55.3	37.3	17.3	26.2	7.3
10-14	26.0	31.3	19.6	45.8	48.1	43.2	17.9	24.8	9.7
15-19	36.6	45.0	26.6	59.1	63.3	54.1	25.6	36.2	13.1
20-24	35.0	46.0	22.8	57.5	65.3	48.0	23.4	35.4	10.9
25-34	28.7	40.4	15.9	51.0	62.0	37.7	18.8	30.2	6.9
35-44	23.2	35.1	11.1	43.3	56.6	28.3	14.7	25.3	4.3
45-54	19.0	28.1	8.5	36.8	48.3	21.7	12.2	19.8	3.8
55 and above	13.6	20.2	5.0	28.0	38.8	13.1	9.1	14.3	2.5

Table 2
Literacy ratio of population (10 years and above) by age, sex, urban and rural area, 1981 and
1972 censuses
Baluchistan

Age Group (Year)	Total			Urban			Rural		
	Both Sexes	Male	Female	Both	Male	Female	Both	Male	Female
10 and above	10.3	15.2	4.3	32.2	42.4	18.5	6.2	9.8	1.8
10-14	8.4	11.2	4.7	27.1	32.5	20.4	5.4	7.9	2.0
15-19	13.4	17.3	7.1	39.8	48.9	27.4	8.2	11.7	2.6
20-24	14.7	21.3	6.5	41.3	53.1	24.4	7.9	12.4	2.3
25-34	12.3	19.3	4.5	37.0	50.1	18.9	6.8	11.5	1.6
35-44	9.4	15.5	3.0	29.6	42.2	13.3	5.6	9.9	1.3
45-54	7.9	12.8	2.6	23.9	33.6	11.2	5.2	8.9	1.3
55 and above	6.3	9.8	2.1	18.4	26.6	7.4	4.5	7.2	1.4

Table 3
Literacy ratio of population (10 years and above) by age, sex, urban and rural area, 1981 and
1972 censuses
N. W. F. P

Age Group (Year)	Total			Urban			Rural		
	Both Sexes	Male	Female	Both	Male	Female	Both	Male	Female
10 and above	16.7	25.9	6.5	35.8	47.0	21.9	13.2	21.7	3.8
10-14	14.3	20.1	7.4	29.8	34.3	24.7	11.8	17.9	4.5
15-19	24.3	35.2	10.9	46.3	55.7	34.2	19.7	30.9	6.2
20-24	24.3	37.6	9.9	47.5	60.1	30.4	19.0	31.7	5.8
25-34	19.3	31.7	6.5	40.1	54.4	22.0	15.1	26.4	3.8
35-44	14.6	25.7	4.3	32.8	48.3	15.7	11.1	21.0	2.4
45-54	12.2	19.9	3.7	26.9	39.3	11.3	9.6	16.4	2.5
55 and above	8.5	13.8	2.3	20.8	30.8	6.9	6.8	10.7	1.7

Table 4
Literacy ratio of population (10 years and above) by age, sex, urban and rural area, 1981 and 1972 censuses
Punjab

Age Group (Year)	Total			Urban			Rural		
	Both Sexes	Male	Female	Both	Male	Female	Both	Male	Female
10 and above	27.4	36.8	16.8	46.7	55.2	36.7	20.0	29.6	9.4
10-14	28.0	34.0	21.0	44.5	46.7	42.0	21.6	29.2	12.7
15-19	39.1	49.0	28.0	59.3	63.5	54.4	30.3	42.7	16.7
20-24	37.4	49.3	24.6	58.6	66.7	49.1	27.8	40.8	14.3
25-34	30.3	42.6	17.0	51.8	63.7	38.0	21.5	33.6	9.0
35-44	24.0	36.7	11.3	43.7	58.4	27.7	16.4	27.8	5.3
45-54	19.2	28.4	8.3	35.6	47.8	20.3	13.4	21.3	4.4
55 and above	13.7	20.4	4.8	26.4	37.1	11.8	10.0	15.5	2.8

Table 5
Literacy ratio of population (10 years and above) by age, sex, urban and rural area, 1981 and 1972 censuses
Shindh

Age Group (Year)	Total			Urban			Rural		
	Both Sexes	Male	Female	Both	Male	Female	Both	Male	Female
10 and above	31.5	39.7	21.6	50.8	57.8	42.2	15.6	24.5	5.2
10-14	32.4	36.9	26.9	52.2	54.1	50.2	16.6	24.0	7.4
15-19	41.6	46.8	35.1	62.3	65.4	58.7	19.5	28.2	7.9
20-24	38.0	47.1	27.5	58.7	65.0	50.9	17.7	28.3	6.3
25-34	33.4	44.1	20.8	52.7	61.7	41.6	17.6	29.0	4.8
35-44	28.5	40.0	16.1	45.3	56.4	32.4	14.9	25.8	3.8
45-54	24.6	34.3	12.8	41.0	51.4	26.7	12.4	20.4	3.7
55 and above	17.9	25.9	7.7	35.9	44.2	17.0	9.0	14.2	2.6

Table 6

Material Available on Environmental Education in the curricula of secondary education

Ecology

The environment

1. Climatic, topographic, edaphic, and biotic factors.
2. ecosystem
3. trophic level and food ecosystem
4. energy flow in the ecosystem
5. bio-geo- chemical cycle
6. ecological pyramids
7. ecological succession
8. environmental pollution
9. Applied ecology
10. soil erosion
11. soil conservation

Genetic and evolution

Heredity and environment

Physical geography

Atmosphere

Structure and composition, distribution of pressure and temperature, wind, weather, humidity and precipitation.

Ocean

Composition, waves and tides, ocean deposits in the ocean floor, coral reefs and islands, delta and estuaries.

Land

Earth crust, earth movement, outline of the structure of earth, shorelines, physical characteristics, rocks, soil, volcanoes, rivers, snow and ice, topography, floods, storms.

Biology

Ecosystem interaction in ecosystem, Man and his environment

PHILIPPINES

An Overview of Teacher Education for Environmental Education

Dr. Josefina T. De Jesus

1 An Overview of Teacher Education for Environmental Education

The 1991 review of the state of environment education in the Philippines and the results of the recent field visits reveal that many schools and universities are already integrating environmental concepts and issues in the different learning areas. Environment related courses continue to be offered in many tertiary level programs including the teacher training institutions.

However, most of the curricular programs of teacher training institutions do not feature environmental education as a course. Environmental Education is not shown as a formal component of the pre-service training of teachers. Environmental Education is introduced incidentally through environment - related topics and like in most countries, the incorporation and integration of Environmental Education depends on the teacher's orientation and motivation to do so. Environmental Education is generally integrated to Science. It is also touched in technology courses as well as in some social science courses. Although Environmental Education is generally not featured in the curriculum for teacher-training (except in one or two institutions), some institutions have developed initiatives for raising environmental awareness through campus greening activities. Some Institutions offering Bachelor of Science in Industrial Education feature Environmental Education as a course in the curriculum. There are also some graduate degree programs which feature Environmental Education as subject in the curriculum either as a major or elective course.

The teacher training program on EE is anchored on basic principles of balance, sustainability, integration and dynamism.

2 Examples of Programs of Teacher Education for Environmental Education

1. Offering of Bachelor's, Master's and Doctoral Degrees in Environmental Science.
2. Holding of seminars and training workshops for teachers.
3. Preparation of modules/videos on EE which can be used by teachers in their classes.

3 Problems and Issues Concerning Teacher Education for Environmental Education

1. Only very few teachers pursue master's and doctoral degree on EE.
2. Should EE be integrated into the pre-service curriculum in teacher education as a separate core subject, as a teaching course, or simply be integrated in environment-related subjects?
3. Lack of local experts to write modules/books on EE.
4. There is a great emphasis on mastery of knowledge and skills to the neglect of values formation and ethics.
5. There is generally expressed desire of teachers to be involved in in-service training on EE concepts, teaching strategies, etc., however, the rising cost of living has prevented them from doing so.

REPUBLIC OF KOREA

Environment Education and Training Program for Environmental Education Teacher in Korea

Dr. Woun-Sik Choi

Purpose

1. Review of Training Program for Environmental Education Teacher in Korea
2. Presentation of Program of Ewha Multimedia Education Institute
3. Problem of Environment Education in Korea

1. Brief Review

As urbanization and industrialization has continued in the last three decades, substantial environmental threats has continued to be higher and higher in Korea. The land, air, and rivers have continued to heavily polluted Technological change, innovation, and the drive for economic growth have resulted in the creation of a new high growth industry required for economic expansion. Economic expansion and economic growth are responsible for environmental problems.

As economic growth is essential for the human being as well as the growing environmental problem, The new economic vision is needed; one with the capacity not only to satisfy real human needs but to preserve the global environment.

Korea has established the Environmental Agency in 1974 to protect the environment from deteriorated and the Agency was promoted to the Ministry of Environment in 1992. To raise the consciousness of the student to environmental problems and to give the opportunity of environment education to students, An environment course has been taught as a elective in middle and high school in the 6th curriculum (1995-2000). Ewha Womans University has established a training program for certification toward a second major in environment education in 1994, which produced 100 teachers of environment education in middle and high schools. Kangwon National University established same program as Ewha Womand University in 1995. The above three universities produced a total of 210 teachers of environment education in 1995. The number of environment education certificate holders increased to over 250 in 1999. (Table 1)

We have two types of training system for secondary school teachers; one type of teacher is produced by institute of in-service for secondary school teachers and colleges of education. Another type is trained by college of natural science or college of engineering, which screened 20% of their graduated qualified to be teachers.

Kongju National University (College of Education) Korea National University of Education, Sunchon National University (College of Education) established departments of environment education in 1996 and taught 20 students each academic year. Two years later Taegu University

(College of Education) selected 20 freshmen in the department of environment education each year. (Table. 2)

Table 1 Increase in Environment Education Teacher

	1994	1995	1996	1997	1998	1999
Ewha Womand Univ.	100	120	150	150	151	72
Pusan Natl. Univ.			120	120	40	52
Kangwon Natl. Univ.		40				
Chungbuk Natl. Univ.		50	50	50	50	
Chonnam Natl. Univ.			50			
Kyungbuk Natl. Univ.					25	36
Taejon inst. for in-service						80
Cheju inst. for in-service						40
Total	100	210	370	320	266	280

**Table 2 Number of students Majoring in Environment Education,
College of Education**

	1996	1997	1998	1999
Kongju Natl. Univ	20	20	20	20
Korea Natl. of Edu.	20	20	20	20
Sunchon Natl. Univ.	20	20	20	20
Taegu Univ		20	20	
Total	60	60	80	80

Graduate schools of education at each university such as Ewha Womans University, Kyunghee University and so on have produced graduates in environmental education major since 1996. Now graduates of graduate school amount to over 50 person from 16 university in Korea.

College of engineering or college of natural science in each university such as Yonsei University, Korea University and so on produced graduate majoring in environment education as a minor, who number 100 persons from 30 universities each in Korea.

2. Program for Ewha Multimedia Education Institute in Environment Education

Ewha Womans University established the Ewha Multimedia Education Institute in Environment this year in cooperation with the Ministry of Environment and The Ministry of Information and Telecommunication. The EMEI aims to increase the public awareness of the environmental problem, to promote the training program for environment education, and to

expand the opportunity for the public to take the environment education. The EMEI is composed of cyber environment learning material center, cyber institute of in-service for environment education teacher, cyber education center for environment politics and management, cyber environment center for field experience learning, and cyber museum for natural history. The institute of in-service for the environment education teacher is to offer a retraining program for the environment education teacher and a program for certification toward a minor in environment education. The cyber environment leaning material center is to establish a network of environment information nationwide as well as international. The cyber environment center for environment politics and management is to develop the environment manuals and to establish a database for environment information.

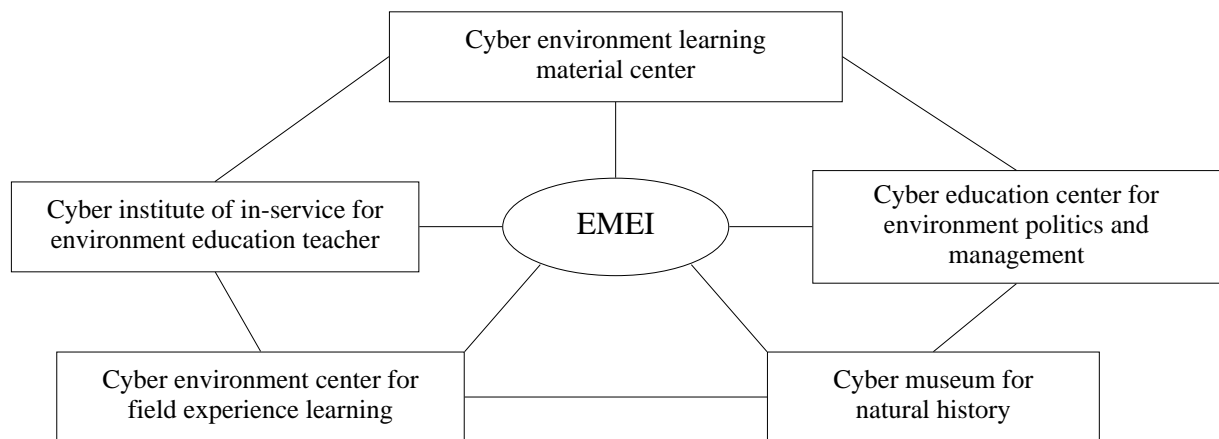


fig. 1 Structure of Ewha Multimedia Education Institute

The cyber environment center for field experience learning is to operate the class of field experience for the public as well as students. The cyber museum for natural history is to open a biological section and earth science section for the public as well as students.

Now I'd like to introduce the curriculum of Ewha Multimedia Education Institute in Environment. The EMEI offer 320 hours of credits which are required to earn a teaching certificate in environment education in secondary school. The course is divided into 8 subjects with 21 credits. (Table 3)

Table 3 Curriculum for Ewha Multimedia Education Institute

course	credits	Hours	Contents
Environment Philosophy	3	48	environment law, environment ethics, environment administration
Human Environment	2	32	population, urbanization, economic development
Environment Ecology	3	48	biology, zoology, eco-system
Introduction to Environment Science	3	48	physics, chemistry, geology, geomorphology, climatology
Environment Science and Labs	1	32	lab.
Environment Education	3	48	environment education goal, curriculum, evaluation
Environment Pollution and Counter-Plan	3	48	prevent and treatment of air, water, and noise
Teaching Methodology of Environment	3	48	teaching manual, presentation, discussion
Total	21	320	

3. The Problems To Be Solved

The primary and secondary school place much emphasis on environment education and the environment course is selected as an elective subject but only 12 % of the 2727 middle school established the environment course and 15 % of the 1908 high school selected the environment subject as elective one in 1998. The environment education course is not popular among students.

The environment education is an inter-disciplinary subject which is composed of natural science, social studies, earth science, and medical science, that is why the subject is so unsystematic and complicated that appropriate teaching methods and contents for school classes are not able to be developed. Moreover, material and manuals in environment education for students and teachers are limited.

The contents of environment education is composed of field experience learning and experiment learning but lecture-concerned teaching is emphasized in school because of materials time, and experts.

Over 400 environment education teachers are annually produced, few of whom are employed, and a retraining program for environment education teacher needs to be developed.

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THAILAND

Teacher Education for Environmental Education in Thailand

Dr. Wilawan Charanyananda

1. An Overview of Teacher Education for Environmental Education

With reference to the two country reports of Thailand presented at the National Institute for Educational research (NIER), Japan in 1993 and 1996 respectively, concerning Teacher education and Environmental Education. I would like to present here in brief that courses on Environmental Education have been offered both as required and elective in general education in teacher education programs of various Schools of Education of the universities under the Ministry of University affairs and those of 36 Rajabhat Institutes throughout the country under the Ministry of Education. In the degree programs in science, social studies, and health education, there are some courses in environmental education and integration of environmental education in various courses, for example: Man and Environment, Environmental Conservation, Environmental Sciences and so on. There are few colleges of education offering higher degree level in Bachelor's, Master's and Doctoral degrees programs of study in Environmental Education, due to the currently limited career positions. These Schools of Education often offer short courses in Environmental Education during summer and between the school break of teachers in-service. Also, other governmental organizations and non-governmental organizations arrange seminars and/or workshops to help improve the teachers' teaching potentiality in environmental education as well. (For detail information, please read the mentioned, 1993 and 1996 country reports).

The Rajabhat Institutes Act of 1995 has brought changes. Rajabhat Institute are to be considered as institutes of higher learning for community development. Hence, one of its duties and responsibilities is to take a lead in solving the locally environmental problems. Establishing positive attitudes in individual students/learners about the environmental protection and conservation is the 'must' now-a-days. Rajabhat Institute Pranakorn offers an Environmental Education Program leading to the master's degree, starting the second semester of 1999. It is worthwhile to devote the next section to clarify further this newest program.

2. The Newest Program of Teacher Education for Environmental Education: A Master of Science in Environmental Education

Rajabhat Institute Pranakorn, the Office of Rajabhat Institute Council (ORIC) is offering a Master of Science in Environmental Education. The ultimate goal is to produce personnel for not only governmental and non-governmental agencies, but also for "schools" at all levels. There are three objectives as follows:

- (i) To produce environmental education personnel with environmental and research knowledge in order to develop a better quality of life and quality environmental conservation.

- (ii) To produce academic leadership in environmental education with ability to teach and to disseminate environmental education under appropriate technologies and processes.
- (iii) To produce administrators and managers who have environmental vision and ethics in order to develop sustainability in society and local communities.

Concerning curriculum structure, Master of Science in Environmental Education comprises of a total of 45 credits. There are 6 credits for related subjects, not less than 23 credits for the specialization area, 12 credits for the thesis, and at least 4 credits for free electives. The following are the core subjects : Environmental Science (3 credits), Environmental Education Philosophy and Ethics (3 credits), Environmental Toxicology (3 credits), Resource Science (3 credits), Environmental Education (3 credits), Design for Environmental Education Programming (3 credits), Human Resource and Environment (3 credits), Seminar 1 (1 credit) and Seminar 2 (1 credit). Besides the 12 credits for the Thesis and 4 credits for free electives, the graduate students must earn 6 credits, at least, in one of the five following areas of specialization: Environmental Technologies, Environmental Pollution, Environmental Resources, Education, and Man, Society and Environment, Furthermore, there are some prerequisite subjects. These are English for Environment (2 credits), Statistics for Research, and Research Methodology for 2 credits and 3 credits respectively.

Learning Plan: The following learning plan would clarify the curriculum.

<u>Year</u>	<u>Semester</u>	<u>Credits</u>	<u>Courses</u>	<u>Credits</u>
1	summer	-5	English for Environment*	2(1-2)
			Research Methodology*	3(3-0)
1	1	-2	Statistics for Research*	2(2-0)
		9	Environmental Science	2(2-3)
			EE Philosophy and Ethics	3(3-0)
			Environmental Education	3(2-3)
1	2	13	Design for EE Programming	3(2-3)
			Environmental Toxicology	3(3-0)
			Seminar 1	1(0-3)
			Elective	3
			Human Resource and Environment	3(2-3)
2	1	14	Elective	3
			Resource Science	3(3-0)
			Free Elective	4
			Seminar 2	1(0-3)
			Thesis	3
2	2	9	Thesis	9
			Total	45

(*means prerequisite courses)

However, there has been a Bachelor's degree program in Environmental Science offered by the ORIC since 1996, in 5 areas of specialization: General Environment, Environmental Health,

Environmental Pollution, Environmental Management and Environmental Technology. Students may choose one area from these five according to their preference. Therefore, after graduation, he/she may continue a Master of Science in Environmental Education at Rajabhat Institute Pranakorn.

3. Problems and Issues Concerning Teacher Education for Environmental Education

As a matter of fact, any problems and issues of concern in teacher education will be certainly of concern in Environmental Education. The following represent types of major problems:

- (i) Teachers: There is lack of teachers in number and some in quality. Teachers well equipped with a multidiscipline background, positive attitude, responsible decision-making capacity, and action-research experience, are seriously needed. Concerning teaching and learning capabilities, teachers need more abilities to employ a variety of teaching and learning styles in order to achieve Environmental Education goals, including individual to the whole class learning, active to passive, co-operative to competitive learning. Activities such as issue investigation, case studies, simulation, games, plays, and especially action-research activities are to be exercised to attack the environmental problems.

Concerning environmental skills, teachers need ability to observe, collect, investigate, identify, classify, critically examine, debate, interpret, assess, write and present the resolution to the public for supporting environmental actions and non-actions. Moreover, abilities to negotiate, persuade, predict actions, consequences and etc. are also important to be developed. Last but not least, the environmental educators should have a wide range of curriculum and pedagogical knowledge and skills.

Effective environmental educators should have the ability to develop the competence in understanding of issues and problems in the environment, practice critical thinking and prediction of consequences, promote environmental values and attitudes and perform educational action.

- (ii) Learning/teaching materials and environment: Setting up learning/teaching materials and learning environments for students to obtain environmental experiences is quite a problem, due to limited materials, equipment, budget and especially personnel and assistants. According to the 1997 Constitution Law and the 1999 Education Law, teachers should be the manager who arrange self-learning materials for students/learners. It is a belief that student have potentials to learn by themselves and to learn with peers. Everything should be set up in order to pull out their highest potentiality. Individuals will have their own way of learning to search for new knowledge, to arrive at and sum up their conclusion, with teachers assistance and guidance at only some points whenever the students needed this. Techniques of observation are most important for teacher educators. They must be able to observe the whole class at once, knowing what is going on, but not interfering with student's attention. They should act at the right time to guide and to ask guiding questions.

Lack of teaching/learning materials has been an issue. However, assorted materials and

multimedia have been produced by variety governmental and non-governmental organizations all along. It could be the matter of managing and organizing the available materials to suit the objectives and lesson plans. Furthermore, teachers could make use of environmental problems and issues at local level as learning materials themselves and integrate them with available materials for the class. These environmental characteristics around the students, then, will be picked up, critiqued, analyzed, synthesized and problem solved. When learning is about the environment, students can become proficient in environmental protection and conservation.

- (iii) Complexities: There is a problem of introducing a variety of environmental dimensions — such as social, economical, political, historical cultural, aesthetic, physical, and biological, — and environmental perspectives (e.g. women and indigenous people) in environmental actions in order to improve the local and global environment. Such actions would involve significant knowledge, skill and attitude changes related to each of the above dimensions as well as a variety of social skills needed to perform the actions in the real life situations.

4. Conclusion

In conclusion, it may be useful to consider the personal tasks of a teacher educator in this respect in terms of well known operational questions:

Who: Who should be concerned with the environment? This question needs to be clear first.

Should it be the concern and responsibility of teacher educators in all disciplines: Natural sciences, Social Sciences, Political Sciences, Humanities, economics, as well as Education and etc. ?

Why: Because, firstly, the environment is everything around us including the human being.

Secondly, everything around us belongs to the public, to the communities, countries and the world. With the limitation of quality and quantity, it needs good management for minimum use with maximum benefits. Thirdly, most importance of all, everyone uses resources in the environment all the 24 hours of a day. Are everyone and all teacher educator, therefore, the environment-mentor? Should a whole school approach be exercised?

What: Is it everyone's duties and responsibilities to protect, conserve, develop, and solve the environmental problems which are dynamic at all time?

When: When all people consume public resources and contaminate continuously, then, support to maintain the environment should also be continuously and seriously undertaken?

Where: Consciously manage the environment anywhere and anyplace at all. Is it too idealistic?

How: First, begin at home, by yourself and your family members. then, second, share experiences with your neighborhood, your friends, your age group, and your community respectively. Third, be as their good examples of everyday living style. There are 2 categories to be exercised. One is "routine work" and another is doing it as "development" based on action-research. Fourth, gathering peer groups and groups of various dimensions of background to work on case studies, small projects, local projects, national and international

projects respectively. Most importantly, once the journey starts, try to roll it on and on without reluctance. Be confidence with positive attitude and “step by step” expectation. Will it finally come to an agreement that everyone is the environment- mentor and every teacher shall practice as the environmental teacher educator?

VIETNAM

Teacher Education for Environmental Education in Vietnam

Dr. Nguyen Thi Minh Phuong

1. An overview of teacher education for environmental education

Vietnamese Government has acknowledged the necessity of promoting environmental protection in the course of industrialization and modernization and has emphasised that the key task at the threshold of industrialization is integrating environmental protection into educational programs at every school level of the Vietnamese educational system.

Environmental education has been becoming a pressing and necessary task for Teacher training colleges. Teachers, with their knowledge, should contribute to environmental protection and sustainable development by their attitude and action. The best way to integrate environmental education into general school programs is to create environmental protection/matters lessons in student training programs and teacher re-training/fostering programs.

At present, in Vietnam there are 25 teacher training colleges for pre-school and primary schools, 55 colleges for lower secondary school 10 universities for upper secondary schools. The number of teachers and students at the above mentioned colleges reaches to 10,000 teachers and 100,000 students.

The teachers at the said above colleges have developed educational programs, written teaching materials, researched, practiced and enhanced professionalism on environmental issues.

In-service teachers at general schools have also been trained and fostered environmental professionalism through further training courses. The recent courses were from 1992 to 1996 and from 1997 - 2000.

One of those courses aims at improving teachers' knowledge on environmental education and protection.

Environmental education is aiming at:

- + Providing learners with environmental matters/issue: diversities and limitation of natural resources, close-link between environment and development, relation between local and country environment and regional and global environment.
- + Helping learners acknowledge the important and significant influences of environment on individuals, localities, countries and international communities.
- + Providing learners with environmental knowledge which not only directs learners/people to act properly but also plays an important role in meeting the demands of environmental protection and sustainable development.

One of three contents below is being integrated into training programs at each department of teacher training colleges.

- + Human and Environmental
- + Science and Environmental
- + Environment and Development

Besides, each department of teacher training colleges creates its own special program on environmental education.

2. A few examples of teacher education for environmental education

At present, Teacher Training University is teaching the program titled “Human and Environment” (20 periods) and “Laws on Environment” (10 periods).

Other programs are implemented by departments at other (teaching training) colleges; For example:

- Program on education, ecology; environmental management of Geography Department.
- Program on environmental chemistry, toxin control and management of chemistry Department.
- Program on Cultural Environmental management; Ecological safety of Literature, History, Politics Department.
- Selective program on Botany and Environmental, Ecology-system (Eco-system) and Environmental Protection ... of Biology and Agricultural Technology Department.
- Program on Population Education - Environmental - AIDS - Drugs (30 periods) of Teacher Training College.

In general, programs on EE often consist of the following:

- 1/ Environmental education’s aims and tasks.
- 2/ Environmental education’s contents in each subjects (geography, biology ...)
- 3/ Methods of implementing EE through subjects.
- 4/ Conditions for implementation of EE. Through subjects at general school.
- 5/ EE appreciation/assessment (Appreciate implementation of EE).
- 6/ Methods for learners to research EE through subject.
- 7/ Out-door practice and research.

3. Problems and issues concerning teacher education for EE

- Aims, contents and methods of Environmental protection education at each school level have not been defined clearly.
- There have not been compulsory programs on environmental protection education for students at teacher training colleges.
- Contents of EE programs are poor and not interesting. Phenomenon description and explanation occupy a great part of EE; information on EE is not updated.
- Contents of EE programs concentrate on education about environment not for environment

and in environment.

- Teaching methods are backward and lack of practice; EE programs have a little influence on learners' thinking and attitude.
- There have been difficulties for teachers in carrying out EE due to the lack of knowledge and information on environment.
- Laboratories, teaching aids, materials for EE are inadequate.
- Documents are not updated and united; There are not enough documents for teachers to carry out EE.

Future Hopes



Debbie Heck (Australia)

Teaching and learning for EE education should be the focus of the next workshop. I would hope that we could share more through small group workshops to contribute to the discussion. Maybe some active workshops presented by some participants to then explore what types of teacher education. This could consider also how this fits across curriculum areas.

I think we should consider carefully whether ministry officials attend the entire workshop. I think people from management in Universities and Teachers Colleges should also consider attending.

It would be great to invite some teacher education students or beginning teachers or even teachers to attend the workshop (from Japan) with a session to explore their feelings.

Wilawan (Thailand)

The topic for future seminar should concern “in depth” the possibility of all three approaches: (1) interdisciplinary, (2) individual subject, and (3) integrated Environment into the curriculum of various subjects. Examples of effective “case studies” from various countries could be shared. Sharing and discussion will be not only presenting “what” and “who”, but also “why” and “how” in order for individual participant to pick up and exercise them at home.

If the above suggestion is possible, such planning has to be taken into consideration at the early stage.

Barry Law (New Zealand)

- (1) A workshop style seminar that explores different teaching and learning strategies for effective environmental education. The outcome of the seminar could be to produce a document that outlines a range of strategies/approaches that focus on developing awareness, knowledge, skills, attitudes and values that result in actions for the environment.
- (2) A short meeting/seminar (1.5day) to brief Ministry of Education officials or managers on the developments of the three seminars held so far and evaluate to what extent they believe some of the recommendation from these seminars have been met. This meeting should be attached to a 3 - 4 workshop seminar.

Asmawi Abdul Kadir (Malaysia)

- * I hope the future UNESCO/Japan seminar on Environmental Education will be attended by two participants from each country. Beside the regular participant, the other member should be a non-educator or a government officer who can influence the government in implementing the resolutions.
- * Beside the seminar in proper, I hope there will be more visits, especially to the places where the Ministry of Education/Schools in Japan had successfully implemented certain projects in relation to environmental Education.
- * The next logical step will be ‘Effective Networking among the Environmental Educators/

teaching strategies.'

Sik Choi (Korea)

1. I suggest to put all of contents on the internet (website), which were spoken and discussion by members.
2. I suggest to hold Seminar like this one twice a year, which is very interesting and contributes to development of EE over the world.
3. I suggest to hold a field trip workshop twice or more during the seminar.
4. Next subject: networking of EE program

Thank you for well prepared.

Nguyen (Vietnam)

There are 6 issues of EE which we have raised in this seminar. We started with the discussion about direction for EE. I think is one of the most important problem and it is availability of and access to relevant EE content, EE material and resources for teacher and schools.

For the next UNESCO/Japan Seminar main hopes are:

- Discussion about core messages for EE on SD or about important materials, resources
- Discussion about their implementing in our education system.

I am we can share our informations and experiences.

Wu Yan (China)

This seminar, we have very hard work, but our job is excellent. We make many issues, solutions and suggestions. I think that teacher education for EE is very important. All teacher should have environmental education as part of their teacher education program. All teachers are involved in ongoing professional development (PD) that explores effective and strategies for use in their classroom. EE should be the part of sustainable development education. UNESCO should organize seminars/workshops/symposia for teacher education on EE. UNESCO/National Government and local government should provide resources persons founding materials for teachers training on EE. Industry/business should provide funding for publishing books/teaching and learning materials on EE. I hope future UNESCO/Japan Seminar on EE should discuss another important issue, it is about how to teach students of different level (For example, students in elementary school, secondary school, university and college) on EE.

Mohammad Rasul Jan (Pakistan)

In future, we would like that UNESCO/Japan will continue the Seminar on EE on annual basis regularly. The discussion in future can be on the curricula for EE in school and colleges. It may also focus on Teaching and learning material on EE. If teaching and learning strategies could be incorporated in the future theme, it will be useful.

Paul Hart (Canada)Topic or Theme?Teaching & Learning Strategies Workshop

- concrete examples of these activities in workshop format
- bring senior administrators along to participate and learn about
- materials distribution (teaching & learning materials and strategies)
- use teaching & learning strategies to better explore EE materials (all levels)

or Networkingor How to access & adapt materials to various countries (workshop made)

- need to carry back to government and to carry practical materials

Mamata Pandya (India)

One of the common needs that seems to have emerged during the discussions was availability of and access to relevant EE materials/resources for teachers and schools (curricular and extra-curricular support). A future seminar may take up this area for discussion.

The meeting could attempt to review the existing resources in the region, work out modalities of sharing/accessing these resources, and most importantly, discuss ways of adapting and using available material*.

It may be valuable to also invite non-government agencies in different countries that are developing such resource material (such as WWF, etc.).

The meeting could be organized as much more of an experience sharing, and if possible workshop mode to facilitate more practical sharing of ideas and experiences.

* Tied up with teaching-learning strategies.

Waisia Votadrika (Fiji)

Future topics for next:

- Assess the effects/establishments or achievements the precious seminar to the next.
- Any

Anonymous

First of all, I'm really very thankful for giving this opportunity to attend this 3rd UNESCO/ Japan seminar on Environmental Education in Asia-Pacific Region.

I hope that this seminar will continue to flourish between the UNESCO and Japan. Based on the intellectual discussions, I think we have to focus on the Development of Teaching-Learning materials, teaching methodologies and strategies on Environmental Education (EE).

Toshihiko Higuchi (Japan)

- (1) I'm interested in the structure of curriculum and detail learning materials in teacher training. So, I hope that the theme of next meeting will be curriculum structure by seeing and examining 2 or 3 examples on teacher training. Especially, the structure of curriculum.
- (2) I'm also interested in the adaptability of solution and recommendation proposed in this meeting. I think there is difference in adaptability of recommendation among countries. Could be, the interdisciplinary (integrated) EE or ESD is not suitable to some countries. I want to know the barrier to ESD in those countries. I think, that barrier itself is the target or theme of ESD. So, I'm interested in adaptation of recommendation, especially integrated EE and ESD.

Fumiaki Taniguchi (Japan)

Themes

1. Teaching Materials how to teach educators according to the ideas of sustainable future — maybe: pedagogy of EE or theory of EE
2. To follow up today's recommendation is important. Why don't we bring the results or records of the concrete practice of EE according to today's recommendations and show them to the participants at the next seminar?

Shuzi Yamashita (Japan)

- * Environmental Ethics
- * Curriculum & Cross Curriculum relating to the educational system
- * Environmental Goals in your country

K. Mikami (Japan)

Environmental problems and the importance of the sustainable development are given attention in the world. The word of environment sounds like a justice. Of course, we have to continue discussion and efforts for environmental education.

The next seminar is the 4th. Therefore, the discussions at the 3 times of seminars should be materialize or should take concrete shape. In this sense, how to build up the network and how to build up supporting system for EE are important.

An example of the theme,

“Strategies for networking and supporting environmental education”

Jossefina de Jesus (Philippines)

First and foremost in the list of impressions are the deep indentations made by the sharing of ideas and made possible by the expertise of the resource speakers.

This seminar gave us exemplars for conducting meaningful and friendly training. It afforded the participants opportunities for democratic, collaborative and participative experiences which

we can exemplify.

The organizers, moderators/ facilitators and participants have a comfortable arm-to-arm links of cooperation. For all these we are grateful.

I do believe that the objectives of the seminar were fully realized.

Every participating country was given the chance to present their country report, however, the time given was so limited.

The insights and learnings we gained from the intellectual discussions cannot be exchanged for anything else.

We are very sure that this seminar we have undergone helped us to go on through a process of transformation and growth that will give us the right direction and ultimately make us indispensable educators of the future.

Let this day then be the springboard for a new vision and for a determination to match that vision with great accomplishments, always subordinating self to the interests of our country.

In a nutshell, this seminar was stimulating and soul-searching.

The spirit of camaraderie, the glows of enthusiasm, the interchange of experiences all these will be ours to remember and cherish.

Closing Remarks



Closing Remarks

Mr. Hiroyuki Uchiyama
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Japanese National Commission for
UNESCO

Professor Yamashita, Director, the Field Studies Institute for Environmental Education of Tokyo
Gakugei University,
Distinguished participants,
Ladies and Gentlemen,

On behalf of the Japanese National Commission for UNESCO and Ministry of Education, Science, Sports and Culture, let me congratulate all participants on your success of the seminar.

I am sure that an active exchange of views and lively discussion on the particular theme of teacher education for the promotion of environmental education have been made during these three days and the seminar has highly productive outcome.

I extend my sincere gratitude to all participants for your valuable contribution to the seminar. Taking this opportunity, I heartily thank Mr. Harako for his dedicated chairperson ship and Mr. Cates for his hard work as a facilitator.

I understand that the organization and theme for the next seminar was discussed today. I believe that the fourth seminar will make a continued contribution to the promotion of environmental education in this region and the development of regional cooperation in this field.

In closing, I would like to express our sincere appreciation to Prof. Yamashita and all members concerned of Tokyo Gakugei University for their excellent management of the seminar. I am looking forward to seeing again all the distinguished participants at the next seminar.

Thank you for your attention.

Closing Remarks

Dr. Shuji Yamashita
Director,
Field Studies Institute for
Environmental Education
Tokyo Gakugei University

Distinguished participants,
Ladies and gentlemen;

It is my great honour to make closing remarks at this third seminar, and just now I can feel at ease because maybe only for me these three days are tremendously fruitful but tuff experiences. Anyway as a member of Japanese committee I really appreciate that all of you can reach some agreed syntheses. These recommendations, I think, are useful and fruitful at all levels of organizations and from national to individuals.

By the way, I want to say a little bit environmental education: In Japan a few years, ten or twenty years ago I heard very often that teachers were complaining of attitude of parents, that is if parents would be in favour of teacher's attitude to environment, then teacher could easily teach their children. And if their parents would be only interested in entrance examinations, then teacher would have big difficulty to teach them. This is true even now in one sense because in this seminar also parent support has been discussed. And theme of this seminar is teacher education which means more philosophical meaning. Who needs environmental education most at present? My opinion is that adult or grown-up persons are most necessary to be taught environmental education, and this must be or may be carried out through children. That is, a teacher should or can teach adults or parents through his children or students. Now many teachers become to notice the environment, change their mind and try to communicate with parents through children as you saw at the Chigasaki Elementary School in this morning.

Now I am really convinced that our seminar has been successfully and fruitfully finished thanks to your sincere cooperations. I heartily appreciate all participants for your serious, very serious discussions, meaningful talks and active exchange of opinions and ideas made during the seminar. I would like to appreciate all participants from abroad because I think all members of the Japanese steering committee could have very joyful and fruitful time during the seminar. I wish to thank you by calling each participant's name, however please permitting me as a director of Field Studies Institute for Environmental Education of Tokyo Gakugei University to pick up two persons. First I thank Professor Harako, though he is my staff, but I would like to thank him here, who is organizing this seminar as a secretary of general. Also he could lead Japanese members to this fruitful and meaningful work of this seminar. Next I sincerely appreciate

Professor Kipp Cates who has been facilitating this seminar and has done very tuff work. Finally I thank all participants again and also our university staffs who have been supporting us with too many office works from the beginning and also have to thank Mr. Watanabe and Mrs. Harako for their patient works done during the seminar.

For the time being I have to close this seminar, however we still have two more days as a sequence of this seminar.

That is, tomorrow we have two plans for field excursion, one is “Old Tokyo and Environmental Policy of Waterfront of Tokyo Bay Area” leaded by Dr. Furuta and another is “Urban Nature Watching” by Dr. Katayama. These three days we have been confined to this building. Needless to say this kind of activities is very important, however as environmental

education outdoor or field activities are equally important and necessary. So I hope all of you experience and observe another aspect of downtown Tokyo or nature in the Metropolitan Tokyo, and again exchange your opinions about the town of Tokyo.

Also on Friday we have the symposium “Environmental Education with a focus on the Asian/Pacific Region: Learning from overseas environmental education practices” which is held at Tokyo Gakugei University. This symposium is planned so that our results of this seminar is returned to the public, so is open to everybody. Last year there were many opinions that were wanted to attend the seminar from outside or even as a observer. But this UNESCO/Japan seminar is originally closed, therefore we plan this open symposium. Among you delegates from Philippine, Australia and India are supposed to give a presentation. And I would appreciate if you other delegates would introduce any opinions from the floor. Anyway we are pleased that our results and environmental education are popularized and spread. So please let cooperate us and I hope you enjoy two more days.

Now I would like to close the seminar, and thank you very much all participants again, and please have a safe trip back to your home.

Agenda



Agenda

November 30 (Tuesday) Day 1

- 9:30 - 10:00 Registration
- 10:00 - 10:25 Opening Ceremony
- 10:25 - 10:40 Group Picture
- 10:40 - 11:00 Self-introduction
- 11:00 - 13:00 Group Work I
*The participants were divided into four small groups.
The purpose of this Group Work I was 1) to share country reports which each group member has brought, and 2) to find out common issues and problems on teacher education for environmental education in the region.*
- 13:00 - 14:00 Lunch
- 14:00 - 15:00 Roundtable Discussion I (Chairs: Dr. Higuchi & Ms. Ueda)
*The reporters from each group reported their discussion.
The purpose of this Roundtable Discussion was to learn the issues and problems common to the region.*
- 15:00 - 15:30 Break
- 15:30 - 17:00 Problem-posing presentations by Resource Persons (Chairs: Dr. Kozawa & Mr. Taniguchi)
Two resource persons presented their viewpoints through which the participants would reflect on their thoughts.
- 17:00 - 18:00 Free Time
- 18:00 - 20:00 Welcoming Reception

December 1 (Wednesday) Day 2

- 9:30 - 10:00 Orientation for Group Work
- 10:00 - 12:00 Group Work II
The purpose of this Group Work was to discuss possible solutions to the common problems.
- 12:00 - 13:00 Lunch
- 13:00 - 14:30 Group Work III
The group members wrapped up the discussion to come up with a list of suggestions on the development of quality teacher education for environmental education.
- 14:30 - 15:00 Break
- 15:00 - 17:00 Roundtable Discussion II
The reporters from each group reported their discussion on possible solutions and present a list of suggestions. The participants had further discussion on these suggestions.

December 2 (Thursday) Day 3

- 8:00 - 12:30 School Visit to Chigasaki Elementary School in Yokohama
- 12:30 - 13:30 Lunch
- 13:30 - 16:30 Roundtable Discussion III (Chairs: Mr. Cates & Mr. Ichikawa)
The purpose of this Roundtable Discussion was 1) to finalize possible solutions and make recommendations in the whole group, and 2) to discuss plans and themes for the next seminar.
- 16:30 - 17:00 Closing Ceremony

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