Report of the ESD-NET Training Workshop: Reorienting Teacher Education to Infuse Education for Sustainable Development through ICT

21-24 August 2007
Bangkok, Thailand

December 2007

Co-organized by APEID, UNESCO Bangkok and Chulalongkorn University

Asia-Pacific Regional Network of Teacher Education Institutes for ESD (ESD-NET)
EXECUTIVE SUMMARY

The August 2007 ESD-NET Training Workshop, co-hosted by UNESCO Bangkok and the Faculty of Education at Chulalongkorn University, was the first activity of the Asia-Pacific ESD-NET. The workshop aimed to determine how teacher education curricula currently align with ESD and to identify gaps for focusing future ESD curriculum development, research and integrating ICTs. Prior to the workshop, representatives from participating TEIs carried out an analysis of their existing teacher education programmes to identify the strengths and gaps for teaching and learning in line with ESD. Findings were presented through pre-workshop reports and summary presentations which set the stage for workshop content and discussions on: 1) institutional policy and understanding of ESD; 2) ESD programme aims, objectives and desired outcomes; 3) school and community-based approaches to ESD; 4) teaching and learning strategies for ESD; 5) reorienting curricula; and 6) ESD-related research. Within the workshop, participants engaged in a variety of discussions and carried out several activities including a simulation exercise on reorienting curricula. The workshop concluded with teacher education institutions developing tentative ESD action plans to initiate and revise upon their return home, in addition to identifying next steps and contributions to the Asia-Pacific ESD-NET.

This workshop report is intended to act as an additional resource for Teacher Education Institutions in the Asia-Pacific region. The report documents the main points captured during workshop discussions and activities and attempts to encapsulate the fruitful variety of ESD contexts found throughout the region. Following a brief summary of each workshop session, the report aims to emphasize what was learned.

TABLE OF CONTENTS

1. Introduction .................................. ................................................... ......... 2
2. Workshop Objectives and Expectations ................................................. 3
3. Opening ........................................................................................................ 3
4. Overview of Key Concepts ........................................................................... 4
5. Situational Analysis of Teacher Education Curricula Vis-à-vis ESD ....... 5
6. Research on ESD .................................................................................................... 9
7. Accessing and Using ESD Resources ........................................................... 11
8. Teaching and Learning Strategies for ESD .................................................. 12
9. Designing and Developing ESD Curricula and Courses .......................... 14
10. Reflecting on Lessons Learned: Question Circle ..................................... 15
11. Plans for Action: The Way Forward ......................................................... 17
Appendices

Appendix I. Workshop Participants ................................................................... 18
Appendix II. Activities for ESD Capacity Building Workshops .................. 25
Appendix III. Progress Ranking Statements (Indicators) ............................ 26
Appendix IV. Curriculum Analysis Guiding Questions ................................ 27
Appendix V. Research Design Examples ........................................................... 30
Appendix VI. ESD Integrated Curricula: Example Outlines .......................... 32
1. INTRODUCTION

In March 2005, the United Nations declared 2005-2014 as the UN Decade of Education for Sustainable Development (ESD) and designated UNESCO as the lead agency for the Decade. To implement the Decade, UNESCO is committed to reorienting education programmes to address sustainability, building public understanding and awareness of the goals of sustainable development, and providing practical training to all sectors of the workforce.

To pursue the objective of reorienting education programmes to address sustainability, in May 2006 the UNESCO Bangkok Asia-Pacific Programme for Educational Innovation for Development (APEID) initiated the “Expert Meeting on Education for Sustainable Development: Reorienting Education to Address Sustainability” in Kanchanaburi, Thailand. The meeting sought to identify and conceptualize the content areas for ESD; to analyze the relationship of ESD with other education initiatives, such as Environmental Education (EE), Education for International Understanding (EIU), Education for All (EFA), the UN Literacy Decade (UNLD) and the Millennium Development Goals (MDG); and to recommend guidelines for reorienting existing education programmes to address sustainability.

Following the Expert Meeting, APEID organized a consultation meeting on “Reorienting Teacher Education to Address Sustainability” in Penang, Malaysia in August 2006. This meeting examined key components of EIU and ESD with regards to Teacher Education including policy, curriculum development and the production of educational materials and activities that can bring sustainability perspectives and content to teacher education in different national contexts. A key outcome of the meeting was the establishment of the Asia-Pacific Regional Network of Teacher Education Institutes (TEIs) for ESD (ESD-Net). The main goal of the Asia-Pacific ESD-Net is to coordinate efforts by member-TEIs to reorient their curricula for ESD.

The August 2007 ESD-NET Training Workshop, co-hosted by UNESCO Bangkok and the Faculty of Education at Chulalongkorn University, was the first activity of the Asia-Pacific ESD-NET. The workshop aimed to determine how teacher education curricula currently align with ESD and identify gaps to focus future curriculum development, research and integration of ICTs. Prior to the workshop, representatives from participating TEIs were requested to carry out an analysis of their existing teacher education programmes to identify strengths and gaps for teaching and learning in line with ESD. Findings were presented through a pre-workshop report which set the stage for workshop content and discussions on curriculum, pedagogy, research and resources for ESD. The workshop concluded with TEIs developing action plans and next steps toward reorienting teacher education programmes for ESD.

Workshop participants included representatives from the TEIs who attended prior meetings in Penang in addition to representatives from TEIs in the Asia-Pacific region wishing to participate in the ESD-NET for the first time. Thirty-nine participants attended the workshop, including curriculum developers, teacher educators and researchers from Australia, Bangladesh, India, Indonesia, Macau, Malaysia, Mongolia, Nepal, Philippines, the Republic of Korea, Sri Lanka, Switzerland, Thailand, the UK and Viet Nam (see Appendix I for a list of participants).
2. WORKSHOP OBJECTIVES AND EXPECTATIONS

Objectives

- To determine how teacher education curricula currently align with ESD, including the strengths, areas for improvement and steps for reorienting curricula for ESD;
- To build capacity for curriculum design and pedagogical approaches relevant to ESD; and
- To embark on action research at the institutional and national levels on locally relevant issues or topics relating to ESD.

Expectations

Participant expectations were expressed at the beginning of the workshop as follows:

- To learn more about ESD, the importance of ESD and how to move beyond aspects of the environment to consider the social, economic and cultural aspects of sustainable development;
- To premise the development of teacher education curricula for ESD;
- To compare and establish linkages between ESD and current curricula; and
- To understand how to raise awareness of ESD.

3. OPENING

Dr. Pruet Siribanpitak, Dean of Faculty of Education, Chulalongkorn University, warmly welcomed all participants to the ESD-Net training workshop.

Mr. Sheldon Shaeffer, Director of UNESCO Asia and Pacific Regional Bureau for Education (UNESCO Bangkok), greeted all participants and noted that this workshop was held as a follow-up to the ‘6th Asia-Pacific Experts Consultation: Reorienting Teacher Education to Address Sustainability’ held in Penang, Malaysia in 2006. He emphasized UNESCO’s leading role in implementing ESD as declared by the UN General Assembly for the UN Decade of Education for Sustainable Development (2005-2014). Along the same lines, he acknowledged that the workshop was not intended to be a one-off activity nor one of lip service and encouraged all participants to adapt and use what they learn through the workshop at their own institutions and continue to develop the Asia-Pacific ESD-NET.

Ms. Molly Lee, APEID Coordinator, outlined the workshop program and introduced the five resource persons who had been leading the behind-the-scenes development of the workshop. Ms. Lee explained this event evolved from the ‘UNESCO Expert meeting on ESD’ held on the 1-3 May, 2006 and the ‘6th Asia-Pacific Experts Consultation: Reorienting Teacher Education to Address Sustainability’ held on 22-25 August, 2006. Ms. Lee asked participants to keep in mind throughout the workshop what they can adapt and accomplish in their own institution in preparation for developing their action plan in the final session and revising it when they return home.
4. OVERVIEW OF KEY CONCEPTS (Session 1)  
facilitator: Ms. Chan Lean Heng

Summary
Session 1 consisted of two stages, a review of the key concepts of sustainable development through a hands-on exercise and sharing perceptions of ESD-related concepts. The exercise took place through a small group simulation in which participants were required to balance their collective resources in order to survive (see the activity, Experiencing Sustainable Development, described in Appendix II). This exercise provided a basis for developing a shared understanding of sustainability and sustainable development. Following the exercise, participants discussed in groups their own understandings of sustainability, sustainable development and ESD-related knowledge, values and skills.

Lessons Learned:
Participants shared the following ideas in a plenary:

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<th>What is your understanding of…</th>
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<td><strong>Sustainability</strong></td>
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<tr>
<td>- A continuous balancing process</td>
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<td>- Picking fruit without cutting down the tree</td>
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<td>- The ability to continue</td>
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<td>- Making the good things last longer</td>
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<td>- Enjoying the environment without destroying it</td>
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<th>What characteristic ______ do educators require to teach ESD?</th>
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<td><strong>Knowledge</strong></td>
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<td>- Environmental science</td>
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<td>- Indigenous practices</td>
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<td>- Globalization</td>
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<tr>
<td>- Concept of ESD</td>
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<td>- Complexity, interdependence</td>
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<td>- Humanities</td>
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<tr>
<td>- Biology</td>
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<tr>
<td>- Cultural diversity</td>
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<td>- Inter-relationship among sustainable development issues</td>
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<td>- Economic, political and social issues</td>
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<td>- Gender disparities and the benefits of equality</td>
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Session Resources

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<td>Handout</td>
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<td>Presentation</td>
<td>Understanding and exploring key concepts</td>
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5. SITUATIONAL ANALYSIS OF TEACHER EDUCATION CURRICULA Vis-à-vis ESD (Session 2)
facilitator: Prof. Elwyn Thomas

Summary
Prior to the workshop, participants were requested to carry out an analysis on the curricula of their teacher education programmes or courses. The purpose was to examine the extent to which the content, skills and values that are espoused under the rubric of ESD are covered in the existing teacher education curricula. The curriculum analysis was directed at both undergraduate and graduate programmes, specific courses in these programmes or specific subject areas, such as geography and science, as well as the pedagogy used in these subjects. To guide the analysis, participants were provided with a series of broad questions that could be adapted to the context of each TEI. Reports were submitted to UNESCO Bangkok prior to the workshop and can be found online at: http://www.unescobkk.org/index.php?id=6678.

Institutions who took part in the analysis represented fourteen TEIs from thirteen countries, of which, twelve institutions represented national teacher education training institutes. The remaining two institutions represented two SEAMEO regional bodies engaged in furthering teacher development, SEAMEO INNOTECH, sited in Manila, and SEAMEO RECSAM, based in Penang, Malaysia.

Session 2, provided TEIs with an opportunity to present their findings from their curriculum analysis through a verbal summary, including the strengths, areas for improvement and steps to better reorient curricula in line with sustainable development. The information presented in the summaries acted as a basis for further discussion throughout the duration of the workshop. Following presentations, participants were given a set of progress statements for which they ranked their perceived progress toward aspects of reorienting their TEI curricula for ESD (see Appendix III). Statements were based on institutional policies, research, professional support, content, pedagogy and assessment, expected outcomes and resources. The collective responses are depicted in the following graph:

Lessons Learned
On a collective basis, TEIs perceived current progress toward reorienting their teacher education programmes for sustainability to be approximately halfway towards ideal. As this workshop was the first ESD-NET event, this starting point offers a solid foundation from which to move forward. Institutions depicted relatively more progress (though the difference is small) in developing curriculum content for ESD, and noted that most need exists for developing and identifying useful resources. Though there is still much room for progress, much potential exists for sharing lessons learned as individual institutions show strengths in specific areas and have potential to share their experiences in areas which have relatively more capacity.
The following excerpts are based on the curriculum analysis report by Prof. Elwyn Thomas and provide an overview of the guiding questions and collective analysis of TEI curriculum reports.¹

Guiding Questions

Guiding questions for the curriculum analysis (see Appendix IV) were drawn up by two members from the Resource Team and the workshop coordinator, Ms. Molly Lee. The questions went through several revisions before a final copy was sent to participants. The main objective of the guiding questions was to establish the present status of ESD within the training curriculum of the TEIs and regional institutes. It also explored issues and problems related to the teaching and learning of ESD for staff and students in training. The Guiding Questions consisted of eight sections: (i) Introduction, (ii) Background Information about the researchers and institution together with their perception of ESD, (iii) Aims and Objectives, (iv) Approach, (v) Content, (vi) Pedagogy and Assessment, (vii) Resources, and (viii) Outcomes. All institutions submitted their responses to the questions prior to the workshop.

The Analysis

The account that follows is a ‘selective analysis’ of the more pressing and relevant issues surrounding the perceptions and concerns of the respondents:

Where respondents were asked to answer ‘yes’ or ‘no’ to questions, a % analysis was possible, (although the number of submissions by respondents is small at 14 institutions). Where questions required more detailed and qualitative attitudinal responses, simple rating scales were devised ranging from 1-3, 1-4 and 1-5. What follows is mainly a verbal analysis with some empirical data interpolated where necessary.

Understanding ESD

This question was answered by all respondents and varied from a few words to a paragraph on what ESD was all about. The role of education in taking action to make people aware of ‘climate change,’ ‘future of the planet,’ ‘conserving natural resources’ and ‘reducing pollution’ were the most quoted references to the meaning and urgency of ESD. Awareness followed by appropriate action was also expressed by a few institutions.

Policy/national and institutional programmes for ESD

Just over half of the respondents reported they had some form of ESD in their existing training curricula, but only one institution had a ‘stand alone’ course on ESD. Few respondents were aware of any national policy on ESD in their countries. Just over a quarter of respondents stated there were plans afoot for infusing ESD content into existing courses.

Aims and Objectives

Over half the respondents tended to give the aims and objectives of their training curriculum per se and ignore the ESD context in which the questions were phrased. However, those that did state the ESD related context to their aims emphasized the awareness and implementation of applying ESD ideas and practice into teacher training.

Approach

Few institutions were aware of what a ‘Whole School Approach’ was or, if they knew about it, did not use it. Over a quarter of respondents mentioned there was some form of extra school/college

¹Professor Elwyn Thomas was tasked with analyzing curriculum analysis reports prior to the ESD-NET Training Workshop. This summary report is intended for the workshop organizers and participants, held under the auspices of UNESCO-APEID and Chulalongkorn University, Bangkok, Thailand from 21-25 August 2007 and written by Prof. Elwyn Thomas, Institute of Education, University of London, 4th September, 2007.
liaison with community and parents, but in general this was not a feature of their institution’s mission. Most institutions have yet to have mission statements relating to ESD.

The opportunities for research and ESD related topics varied considerably from simple classroom ‘finding out’ exercises to more substantial inquiries as part of a final award in the form of a degree/Diploma, etc. Staff research into ESD was at a minimum.

Most institutions had opportunities for staff development as part of in service teacher education, the regional institutions were clearly mostly concerned with this area, but it seems ESD was not yet a priority for staff who were running current courses. In all, the picture is mixed with only a few institutions offering ESD as an infusion or none offering teacher educator training in ESD.

Content

There was only one institution that offered ESD as a ‘stand alone’ course as part of their teacher education curriculum. Other institutions offered a variety of options ranging from a few topics such as pollution, population, global issues and climate change; to integrated courses which had a loose form of integration, in which areas such as biodiversity, water usage, energy conservation and health (e.g. HIV/AIDS, nutrition, etc.) were included. Under a quarter of the institutions reported some form of deeper infused ESD into their training curricula.

Over half (58%) of the respondents reported that cross disciplinary approaches involving biological sciences, environmental science, geography, social sciences and physical sciences were in operation. However, the impression received was that this was not a normative situation, due to the difficulties arising from organizing such cross disciplinary teaching and organisational barriers, especially the predominance of a mono-disciplinary culture which is strongly rooted in most TEIs. The issue of lack of staff expertise in teaching, and even ‘know-how’ about ESD was also a factor that was mentioned under this section.

It appears that only science and some social science subjects taught at the various TEIs addressed ESD notions and practices. These are biology, forestry, geography, pollution studies, genetics, biotechnology, environmental science, history and philosophy of science, eco-philosophy and some education courses. There was clearly a yawning gap in the absence of ESD from the humanities and art/design courses.

Pedagogy and Assessment

The responses from the various TEIs and regional institutes fell into two categories: those which used between 1-5 different modes of delivery and those which employed more than five forms. The most widely used forms were lecture and lecture/discussion methods, but small group work, field studies, simulations, role plays and other more heuristic forms of teaching were also used in some institutions. The use of audio visual aids, tapes, computer assisted learning as well as, in some cases, the internet, were also mentioned.

The forms of assessment used also followed trends similar to that of pedagogy in that two institutional categories emerged. In the first category were institutions reporting that they used 1-5 forms of assessment. The second category of institutions employed over five forms, the maximum being eight. Most respondents reported the use of pencil-paper tests, final written examinations, some portfolio work, practical files and diaries, personal journals and class quizzes. In some instances, the course practicum also included classroom observations and discussion about ESD content which appeared in particular lessons. Most respondents (78%) reported they used a mix of assessments in the course of training vis-a-vis ESD and other subjects areas.

Resources

There appeared to be a wide array of resources used in the teaching of ESD, ranging from texts, posters, film, video and audio materials, models and home made kits (in a few instances). However, there was an overall demand for more access to better quality teaching and learning materials which addressed ESD topics. Few institutions seemed to actually develop their own
ESD resources and mentioned that resource development was also a need for the future. Presumably more in-country in-service workshops are required to meet such a need.

**Expected Outcomes**

Respondents reported a number of key outcomes and expectations from establishing ESD as part of a training curriculum. These included improving population education, linking Environmental Education more effectively with ESD, women’s empowerment, more ESD awareness followed by action, promoting better ESD-related values, more inclusion of ESD into the main training curriculum, better links with TE Institutions and NGOs, making teachers change agents vis-a-vis ESD, creating environmental societies and better cross-cultural understanding.

The principal barriers for introducing ESD into pre-service training curricula included the following: lack of staff expertise, no job opportunities for staff and maybe students, few ESD experts in the national context at present, lecturing staff still at the novice stage, threats to staff comfort zones, lack of funding, ESD not an examination subject at present, poor physical and human resources and, finally, tedious and inefficient institutional course validation procedures.

**Session Resources**

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<th>Handouts</th>
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<td>References and Figures</td>
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<td>Identifying Progress: A basis for learning</td>
<td>Mr. Joel Bacha</td>
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<td>Mr. Md. Hedayet Hossain and Mr. Md. Nur-E-Alam Siddiquee</td>
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<td>China - East China Normal University, Shanghai</td>
<td>Mr. Yu Guopei and Mr. Xun Yuan</td>
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<td>India - Regional Institute of Education, Mysore</td>
<td>Mr. G. V. Gopal and Mr. Vasant D. Bhat</td>
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<td>Indonesia - Universitas Pendidikan Indonesia</td>
<td>Mr. Asep Supriatna</td>
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<td>Korea - Ehwa Women's University, Seoul</td>
<td>Mr. Woun Sik Choi</td>
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<td>Macao - University of Macao</td>
<td>Mr. Kong Zhaowei and Ms. Vong Keangleng</td>
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<td>Malaysia - SEAMEO RECSAM, Penang</td>
<td>Ms. Sharifah Norhaidah Syed Idros and Ms. Rohizani Yaakub</td>
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<td>Malaysia - Universiti Sains Malaysia (USM), Penang</td>
<td>Ms. Lee Shok Me and Mr. Wahyudi Yososutikno</td>
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<td>Malaysia - Univ. Pendidikan Sultan Idris (UPSII), Tanjong Malim</td>
<td>Mr. Ong Eng Tek and Mr. Zahid Said</td>
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<td>Mongolia - Mongolia State University of Education, Ulaanbaatar</td>
<td>Ms. Z. Bayarchimeg</td>
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<td>Nepal - Tribhuvan University, Kathmandu</td>
<td>Ms. Leela Pradhan</td>
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<td>Philippines - Philippine Normal University (by SEAMEO INNOTECH)</td>
<td>Ms. Carolyn Rodriguez</td>
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<td>Sri Lanka - National Institute of Education, Maharagama</td>
<td>Mr. Nihal Wickramasinghe and Mr. Wilfred J.Perera</td>
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<td>Thailand - Chulalongkorn University</td>
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<td>Vietnam - Hanoi National University of Education</td>
<td>Mr. Tran Duc Tuan</td>
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<td>Institutional progress</td>
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6. RESEARCH ON ESD (Session 3)

facilitator: Ms. Molly Lee

Summary

Session 3 aimed to provide TEIs with background information on ESD-related research and to identify institutional needs for conducting research which contributes regularly to ESD knowledge and practice. Each institution began the session by examining their individual histogram depicting institutional progress in the area of research (developed in Session 2). The histogram provided a basis for discussing what ESD-related research is currently being carried out at the institutional level, in addition to the gaps in capacity for conducting research and areas for developing ESD knowledge and practice through research. TEIs identified the following possible areas for conducting research related to ESD:

- Researching indicators to assess ESD-related teaching and learning schools and universities
- Assessing how ESD is understood among different people
- Researching the challenges of ESD teaching and learning
- Learning how to link ESD with Lifelong Learning
- Conducting a social needs analysis
- Identifying perspectives for contributing to ESD
- Analysis on skills, competences and values

Following reflection on ESD-related research at the institutional level, a panel presented an overview on research fundamentals and forms of research related to ESD such as participatory action research and the use of indicators to guide studies. Participants had an opportunity to discuss ideas and questions related to short panel presentations, the key ideas of which are summarized below. Following the presentations, each institution had an opportunity to explore the ideas by designing their own ESD research project (two examples projects can be found in Appendix V).

Lessons Learned

**Fundamentals of Research Design – Mr. Renato Opertti**

Practical and fundamental steps of research design include conceptualizing what one wants to know; developing a good research question to guide a study; discussing research validity and reliability; developing coherent connections between the research question and variables for research, data collection and analysis; conducting research and collecting data; and analysis of data. The fundamental processes used for designing and conducting ESD-related studies are basically the same as those of any form of research, with differences occurring in data collection and analysis as ESD-research tends to focus on qualitative, rather than quantitative data and findings.

**Action Research - Mr. Jose Roberto Guevara**

Action research is a process of learning and improving through reflection on practice. This ongoing form of research involves a cycle of action, reflection, planning, action, reflection, etc., similar to experiential learning. For example, learning by experimenting with new forms of pedagogy, reflecting on ways and steps for improvement, then testing these steps in practice and continuing the cycle and reporting findings. Action research is driven by a desire to understand practice in order to improve and better respond to challenges. Learning is, therefore, inherent in action research.

**Participatory Action Research - Ms. Chan Lean Heng**

Participatory action research (PAR) enhances research for ESD in the same way action research does, but emphasizes a ‘people-centered’ approach to investigations. PAR entails involving stakeholders in research decision-making processes – the subjects of the research also become the researchers. PAR is carried out in the same manner as action research, however, subjects

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2 Presentations are available on the UNESCO Bangkok website (http://www.unescobkk.org/index.php?id=6678) and can also be accessed by clicking on the respective links.
are involved in various stages of the process, including formulation of the research and taking part in the investigation, data collection and/or analysis. PAR aims to empower all involved in the research through action, decision-making and becoming responsible for research outcomes.

ESD Indicators – Mr. Joel Bacha
Indicators in ESD-related research are not only used to measure progress, but also to guide learning processes. Where traditional indicators are often quantitative in nature and used to evaluate the positive and negative aspects of a program (e.g. No. of PhDs; % students graduating with degrees ecology), ESD indicators are both quantitative and qualitative and intend to measure and guide progress, change and learning (e.g. ESD-lesson plans are used effectively; lessons learned are incorporated into future activities). ESD indicators used in research should assist in answering the research question and can act as a basis for the design and validity of the research.

Session Resources

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<th>Handouts</th>
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<tr>
<td>Research on ESD: Review</td>
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<tr>
<td>Inputs for Research on ESD</td>
<td>Mr. Renato Opertti</td>
</tr>
<tr>
<td>Action Research: My Own Journey of Discovery</td>
<td>Mr. Jose Roberto Guevara</td>
</tr>
<tr>
<td>Action Research Example</td>
<td>Mr. Joel Bacha</td>
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<td>Group Research Activity</td>
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<td>Participatory Action Research</td>
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<td>Using ESD Indicators</td>
<td>Mr. Joel Bacha</td>
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7. ACCESSING AND USING ESD RESOURCES (Session 4)
facilitator: Mr. Jose Roberto Guevara

Summary
Session 4 aimed to introduce participants to several ESD resources that could be used to enhance teacher education programmes. The session consisted of two parts. The first part took place in the computer lab where participants had the opportunity to experiment with and critique the CD-ROM, “Teaching and Learning for a Sustainable Future” (TLSF). The second part of Session 4 introduced participants to several resources for incorporating ESD into teacher education through ICTs.

Lessons Learned
TLSF provides a self-study ESD resource for pre-service teachers, experienced teachers and other educators. The CD-ROM can be accessed online and can be used independently by individual teachers and as a resource for teacher education courses. TLSF aims to engage learners through an interactive and experiential approach to learning. It contains 25 four-hour modules on ESD and is organised into four themes to support the reorientation curricula and teaching and learning for sustainability. Participants acknowledged the following benefits of TLSF and areas which can be improved for future resources:

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<th>TLSF Benefits</th>
<th>Areas for improvement</th>
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<tr>
<td>- Effective tool for teaching and learning</td>
<td>- Some modules could be more interactive</td>
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<tr>
<td>- Learner friendly, easy to use</td>
<td>- More visuals could be incorporated</td>
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<td>- Ready to use</td>
<td>- Language could be less confusing in places</td>
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<td>- Knowledge friendly</td>
<td>- Make the target audience more explicit (i.e.</td>
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<tr>
<td>- Can be used at one’s own pace</td>
<td>who is this resource for?)</td>
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<td>- Easy to carry</td>
<td>- Some internet links need updating</td>
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The second part of Session 4 introduced several online ESD resources and publications. Mr. Bart Cornille provided a solid example of utilizing ICTs for ESD through his organization, VVOB, in Vietnam, in addition to several ICT resources for ESD. Ms. Joy de Leo provided several APNIEVE resources for ESD related to values education. Lastly, Ms. Molly Lee disseminated a list of electronic resources for ESD compiled by UNESCO Bangkok in addition to introducing several ESD-related resources published by UNESCO. Participants noted the usefulness of learning about these resources, however, many advised in future workshops to bring hard copies to work with and critique, similar to the activity conducted with the TLSF CD-ROM.

Session Resources

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<tr>
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<tr>
<td>Handouts</td>
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<td><em>Introducing Teaching and Learning for a Sustainable Future</em></td>
<td>Mr. Jose Roberto Guevara</td>
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<td><em>TLSF: UNESCO's New Multi-media Teacher Education Program</em></td>
<td>Mr. Jose Roberto Guevara</td>
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<td><em>TLSF: Dissemination and Training Toolbox: Exploring the programme</em></td>
<td>Mr. Jose Roberto Guevara</td>
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<td><em>TLSF: Dissemination and Training Toolbox: Reviewing a module</em></td>
<td>Mr. Jose Roberto Guevara</td>
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<tr>
<td><em>Values and Sustainability: Some Useful Resources</em></td>
<td>Ms. Joy de Leo</td>
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<tr>
<td><em>Electronic resources for ESD</em></td>
<td>Ms. Molly Lee</td>
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<tr>
<td><em>The Earth Charter</em></td>
<td>Ms. Chan Lean Heng</td>
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<td>Presentations</td>
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<td><em>Teaching and Learning for a Sustainable Future</em></td>
<td>Mr. Jose Roberto Guevara</td>
</tr>
<tr>
<td><em>APNIEVE Resources</em></td>
<td>Ms. Joy de Leo</td>
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<tr>
<td><em>ICT for ESD (VVOB)</em></td>
<td>Mr. Bart Cornille</td>
</tr>
</tbody>
</table>
8. TEACHING AND LEARNING STRATEGIES FOR ESD (Session 5)
facilitator: Resource persons

Summary
Session 5 focused on pedagogical approaches and instructional strategies for ESD teaching and learning in both formal and non-formal settings - in classrooms, schools and communities. The session began with each institution examining their individual histogram of institutional progress developed in Session 2 with respect to pedagogy and curriculum content. The histogram provided a basis for discussing the ESD-related pedagogy and content currently being utilized at the institutional level, in addition to the gaps, challenges and needs for reorienting teacher education course content and pedagogy for ESD.

Lessons Learned
TEIs expressed the following challenges and needs for reorienting curricula and pedagogy in their institutions:

Challenges
- Little coordination exists with experts, especially in environmental education
- Institutional capacity to develop ESD resources and publications is limited
- Assessing teachers is challenging due to their high level of autonomy
- Baseline components for ESD are still limited or unknown as are clear guidelines and benchmarks

Needs
- Building staff capacity to use technology
- Enhancing the practical skills of teachers
- Integrating new ESD concepts into curricula, in addition to curricula for lifelong learning
- Developing assessment tools for measuring progress
- Developing visual materials with examples from other countries

Following reflection on ESD-related curricula and pedagogy at the institutional level, the panel of resource persons presented four appropriate modes of learning: values-based learning, learning to transform, whole-school approach and community-based learning. Participants had an opportunity to discuss ideas and questions related to the panel, the key ideas of which are summarized below.

Values-based learning – Ms. Joy de Leo
Values-based learning aims to foster, through processes of self-reflection and critical inquiry, a capacity for thinking critically about one’s own values and the values of others. Through values-based learning, values are reflected in the formal curriculum, within curriculum and learning resources, and across subjects and teaching and learning process. Values are also reflected in school policies and the behaviours of teachers, students, staff and parents. Values-based learning introduces students to different points of view and helps them to understand their own values and the values of others. Some values-based activities include comparing and contrasting values, exploring feelings that motivate action, examining conflicting values, making choices and considering their implications on others.

Learning to Transform – Ms. Chan Lean Heng
Learning to transform advocates for establishing a shared vision for ESD teaching and learning, including a shared understanding of the knowledge, skills, values and perspectives associated with sustainability. To develop a vision for ESD and subsequent transformation of thinking for change, teaching and learning principles of ESD can be used, such as participative decision-making processes, experiential and reflective learning, values-based learning and systemic, critical and analytical thinking. Transforming for ESD will then involve the transformation of frames of reference (points of view, habits of mind, worldviews) and critical reflection on how we

3 Presentations are available on the UNESCO Bangkok website (http://www.unescobkk.org/index.php?id=6678) and can also be accessed by clicking on the respective links.
come to understand. Transformation will occur when people change their frames of reference by critically reflecting on their assumptions and beliefs and make conscious efforts to bring about new ways of learning, acting and relating to the world.

**Whole-school approach** – Ms. Joy de Leo

Through the whole-school approach, ESD values, principles and practices reflected in every aspect of the school’s activities, including the school’s mission, vision, policies and guidelines and behaviour of students, teachers, staff and parents. The whole-school approach in terms of ESD, aims to develop an entire school culture committed to ESD as opposed to focusing on ESD simply within the curricula. The whole-school approach integrates ESD into everyday actions and interactions among students, teachers and staff and fosters partnerships within the community. Through this approach, teachers and students work on real-life problems and outcomes; staff have opportunities of continued professional development; and the school becomes a model for sustainability within the local community.

**Community-based learning** – Mr. Jose Roberto Guevara

Through community-based learning, schools act as a social agent, both working as part of the community and inviting the community to be involved as a resource and in decision-making processes. When school-based learning is fully integrated into a community all groups within the community view the school as a learning centre. Such partnerships between the school and community are geared towards student well-being, learning and employment outcomes, in addition to strengthening of the community and circles for social capital.

**Session Resources**

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<tr>
<td>DESD Framework of Content Areas</td>
<td>Ms. Molly Lee</td>
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<td>The Valuing Process as a Holistic and Integrated Approach to Values Education: Model, Challenges and Implications</td>
<td>Ms. Joy de Leo</td>
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<td>APNIEVE Teaching/Learning Cycle-Sample Module</td>
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9. DESIGNING AND DEVELOPING ESD CURRICULA and COURSES (Session 6)
facilitator: Prof. Elwyn Thomas and Mr. Jose Roberto Guevara

Summary
Session 6 aimed to provide guidelines on how to infuse ESD into pre-service teacher education curricula and how to design ESD programmes/courses at the post-graduate level. The session consisted of presentations on the principles and orientation of curriculum design (by Mr. Renato Opertti), integrating ESD into teacher education curricula (by Ms. Joy de Leo) and service learning (by Ms. Chan Lean Heng), followed by a group discussion on service learning through themes of peace education, student-initiated projects and practical professional experience. Professors and students from Chulalongkorn University also participated in the service learning discussion. Following presentations, Mr. Elwyn Thomas presented a case study from the UK on integrating ESD into curricula. Participants were requested to conduct take home reading in preparation for a simulation exercise in which they outlined an ESD-integrated curriculum. (Curriculum outlines from the simulation exercise can be found in Appendix VI.)

Lessons Learned
Participants emphasized the following points regarding service learning:

- Students learn from the community, but the community also benefits.
- An appreciation for local culture
- Students learn outside of the classroom in the real-world context
- If service learning is to be successful, it is important that it be emphasized (e.g. accredited, etc.)

Participants noted these important considerations for integrating ESD into curricula:

- The holistic curriculum – To introduce the ESD concept to teachers, knowledge of society, economics and sciences will need to be infused into curricula examples. In addition, generic courses can be adapted to any school situation.
- Ethnographic networking – Ethnographic considerations are important. Understanding of ethnography will be enhanced if action research is conducted where researchers interact with the community, are a part of the community and learn together with the community.
- Classroom action research – Action research in the classroom can be enhanced by involving students in the process through participatory action research (PAR).
- Assessing attitude – Assessing attitude should entail measuring how far a student is inclined to tackle a certain situation rather than measuring their attitude toward sustainable development.
- E-portfolio – Students can login and use their portfolio online where portfolios are standardized.
- Web quest – Web quests are problem-based activities on the internet where students have to solve ESD problems by searching for information on the internet.
- ICT capacity – Try not to link poverty to teachers’ capacity to use ICTs as teachers who are involved in pre-service training do have access to computers and the internet. In order to introduce ICTs into a teacher education programme, however, teachers do require some basic ICT skills. If teachers have not developed these skills prior to the programme, courses should incorporate ICT capacity building into the curricula and have minimal ICT prerequisites.

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<td>Mr. Renato Opertti</td>
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<td>Designing and Developing ESD Curriculum and Courses: Case Studies and Research Findings</td>
<td>Mr. Elwyn Thomas</td>
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<td>Concepts and Inputs for Building up a Community of Practice on ESD</td>
<td>Mr. Renato Opertti</td>
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<tr>
<td>Curriculum Design: Principles and Orientation</td>
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<tr>
<td>ESD in TEIs: Alternative Ways of Integrating</td>
<td>Ms. Joy de Leo</td>
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<tr>
<td>Service Learning</td>
<td>Ms. Chan Lean Heng</td>
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10. REFLECTING ON LESSONS LEARNED: QUESTION CIRCLE (Session 7)  
facilitator: Ms. Molly Lee

Summary
Prior to the conclusion of the workshop, participants took time in groups to formulate questions regarding the infusion of ESD into education curricula. Groups identified their top questions in a plenary and the resource persons chose several to comment on. The following questions and responses were given:

Questions

ESD / Sustainable Development
- What are some concrete examples of (the implementation of) “Sustainable Development”?
- Is UNESCO’s concept of ESD perceived and accepted among other educators? What other paradigms of ESD are there?
- Can concepts of ESD that might not be responsive to the big theme of sustainable development as presented by UNESCO be developed at the local level?
- How does UNESCO promote ESD in teacher education aside from ESD-NET training workshops?

Stakeholders
- How can the impact of ESD be accelerated through partnerships and linkages with other stakeholders in the broader community? How can the ESD-NET contribute?
- What support can be given to countries in terms of research training on ESD from organizations in addition to support from UNESCO?
- What other roles can stakeholders such as businesses and governments play in promoting ESD (other than financial support)?
- What are countries outside the Asia-Pacific region doing with regard to ESD?
- What are policy makers in different countries doing about SD and ESD at this time?

Infusing ESD into TEIs
- How can (initial) resistance to consciously apply ESD in teacher training be addressed?
- What should be the basic themes of an ESD course?
- What are the different paradigms of sustainable development and ESD research?
- How does one go about designing simulations for ESD?
- How does one go about obtaining funding to organize a training/research workshop for ESD?

Assessment / Indicators
- How can values be assessed?
- Could UNESCO provide guidelines for assessing the improvement of ESD practice in each region?
- Is it possible to supply a list of ESD indicators in addition to a brief description on how to use them?
- How can indicators be used to conduct a curriculum analysis?

Workshop related
- How will TEIs be involved in the ESD workshop process, including feedback, proofing of the report and future input?
- How will the curriculum analyses be utilized following the workshop? Will the curriculum analyses be published?
- What will the ESD-Net do following the workshop?
Responses to Select Questions

ESD / Sustainable Development

- What are some concrete examples of sustainable development?
  
  *BRAC in Bangladesh is an excellent example of sustainable development in action. It is an agricultural center (an NGO) that aims to promote community development throughout the country. Through sustainable agriculture and its role in education and preserving the environment, BRAC promotes sustainable development and also disseminates information and learning among communities throughout the country.*

  *The Child to Child project gained the UNICEF prize in 1984 for developing a program where older children educate younger children. Particularly in Africa where whole families have died from HIV/AIDS and there is a generation of children with no parents, Child to Child is of extreme benefit and seems to be working.*

- How does UNESCO promote ESD in teacher education aside from ESD-NET training workshops?
  
  *Through UNESCO’s broader roles in standard setting, capacity building, information sharing (as a clearing house), acting as a laboratory of ideas, and international cooperation*

Stakeholders

- How can the impact of ESD be accelerated through partnerships and linkages with other stakeholders in the broader community? How can the ESD-NET contribute?
  
  *Involving communities and educators in the processes and principles of ESD in terms of participation and citizenship will benefit all in terms of knowledge and information sharing. To move ESD forward, we can also link our work with the work of other teacher education institutions and ongoing national and regional work in curriculum development.*

Assessment / Indicators

- Is it possible to supply a list of ESD indicators in addition to a brief description on how to use them?
  
  *National ESD indicators depend on national development priorities and needs. Currently capacities are being built at the national level to develop indicators in the Asia-Pacific. National ESD indicator sets are expected to begin appearing in 2008.*

- How can indicators be used to conduct a curriculum analysis?
  
  *Indicators are specific to each national context and it is important to take into account different types of indicators and, through action research, investigate how they can be incorporated into the curriculum analysis. We all need to learn more and continue to share information in this area.*
11. PLANS FOR ACTION: THE WAY FORWARD (Session 8)
facilitator: Ms. Molly Lee

Session 8 aimed to bring the components of the workshop together and focus on future action. Mr. Renato Opertti began the session by introducing the concept of an ESD community of practice. TEIs then discussed their plans for action and contributions to the ESD-NET upon their return home.

Institutional Action Plan Examples:

- **Institute of Education and Research (IER), University of Dhaka, Bangladesh**
  Will promote action research on the perceptions and understanding of ESD and, in curriculum design, organize training sessions on ESD to promote ideas for ESD teaching and learning among university faculty. Action research on ESD will be conducted and reviewed and lessons learned will be incorporated into additional research.

- **The Universitas Pendidikan Indonesia (UPI)**
  Acknowledges that stakeholder involvement in ESD will be key to moving forward and plans to conduct an ESD workshop involving students and teachers. At the regional level they also wish to be included in discussions on ESD-NET.

Contributions to the ESD-NET:

- **Bart Cornille (VVOB)**
  Will develop a blog or interactive website, depending on the availability of personal time and resources; can try to promote discussion and share a newsletter among a community of practice about once every two weeks, but ultimately the group should decide this together.

- **SEAMEO RECSAM**
  Will organize an interactive website in collaboration with VVOB

- **Ms. Chan Lean Heng**
  Will contribute material on Participatory Action Research

- **UNESCO Bangkok**
  Will upload workshop material onto the UNESCO website

- **SEAMEO INNOTECH**
  Will publish news items/articles in a special journal on ESD

- **University of Macau**
  Will disseminate information about University of Macau events to the group.

Session Resources

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<td>Presentations</td>
<td><strong>COP Example: Latin America and the Caribbean</strong></td>
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4 Updated TEI action plans can be accessed through the ESD-NET page on the UNESCO Bangkok website ([http://www.unescobkk.org/index.php?id=7033](http://www.unescobkk.org/index.php?id=7033))
APPENDIX I

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APPENDIX II
ACTIVITIES FOR ESD CAPACITY BUILDING WORKSHOPS

As ESD-related pedagogy promotes participation and interaction, ESD workshop activities should do the same. To share ideas for ESD-related activities which can be adapted and used in subsequent workshops and classrooms, a general description of some activities used in the Bangkok ESD-NET workshop is provided here. Teacher education institutions, and others, should feel free to adapt and use these activities for their own use.

Ice Breaker

Introducing Your New Colleague

*Purpose:* 1. To “break the ice” by giving participants an opportunity to introduce themselves in an interactive, informal manner
2. To identify participant expectations for the workshop

*Description:* Participants get into pairs and introduce themselves for approximately 10 minutes, including one’s name, where they are from, one thing they are wearing that expresses their personality, and one thing they wish to gain from the workshop. Each participant then takes one minute to introduce their partner to the entire group.

Experiencing Sustainable Development

Using Strings Wisely

*Purpose:* 1. To introduce the concept of sustainable development
2. To promote critical thinking and discussion among participants about sustainability

*Description:* In small groups of 5-8 sitting in a circle, participants pass a bag containing blue and red knotted raffia strings around the circle. Each time the bag passes, participants draw one or more strings from the bag. Each participant may take as many knotted strings as desired; however, one must draw at least one blue knotted raffia string per turn in order to survive. If a blue string is not drawn that participant is “out” and must observe for the remainder of the exercise. For each blue string drawn a certain amount of red strings is placed in the bag.* After the bag is passed around the circle each time, groups count how many blue raffia strings are in their bag and then add that many blue strings back into the bag.

* Passes 1 and 2: For each blue raffia string taken, one red raffia string is placed in the group’s bag.
* Passes 3 and 4: For each blue raffia string taken, two red raffia strings are placed in the group’s bag.
* Passes 5 and 6: For each blue raffia string taken, three red raffia strings are placed in the group’s bag.

A facilitator leads a discussion on the significance of the exercise, bringing the discussion around to the parallels between the activity and sustainable development. Some questions which might be touched on include: Who had the advantage? Why? During which round did the first person go out? How did the actions during the first pass impact subsequent passes? What happened when people took as many knotted strings as they wanted? What might such an action represent in the real world? What might the blue and red the strings represent? What insights were gained from the exercise that can be applied to the real world?
Identifying Progress: A basis for learning
Seven key areas have been identified from the Curriculum Analysis as key to moving ESD forward in Teacher Education institutions. These areas are:

1. Institutional Policy
2. Research
3. Professional support
4. Content
5. Pedagogy and Assessment
6. Expected Outcomes for SD
7. Resources

For the purpose of learning, it is important to think deeply about these areas; about where we are strong and where we can improve. Kindly take a moment to reflect on the progress of your own institution by following the instructions below. Your responses will act as a basis for focusing content during the remainder of the workshop.

Instructions:
1. Write the name of your institution in the space provided.
2. Next to each Area Statement below, mark the progress you feel your institution has achieved. Mark from 0 to 5 (where 0 = minimum; and 5 = maximum).
3. In Question 8a, identify one more area which you also feel is important for reorienting teacher education for ESD. In 8b, mark your institutions progress in this area.

<table>
<thead>
<tr>
<th>Name of your Institution:</th>
<th>Mark box from 0 to 5 (where 0 = Minimum; 5 = Maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area Statement</strong></td>
<td><strong>Progress</strong></td>
</tr>
<tr>
<td>1. Our institution has developed ideal policies to support ESD.</td>
<td></td>
</tr>
<tr>
<td>2. Our institution conducts research which contributes regularly to ESD knowledge and practice.</td>
<td></td>
</tr>
<tr>
<td>3. Our institution maintains ongoing professional support for teacher educators to work in ESD.</td>
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<tr>
<td>4. Our institution has incorporated ESD-related content into our curriculum which is relevant to sustainable development in our national context.</td>
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<tr>
<td>5. Our institution uses ESD-related pedagogy and assessment on a regular basis.</td>
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</tr>
<tr>
<td>6. Our curriculum contributes to the expected outcomes necessary to achieve sustainable development.</td>
<td></td>
</tr>
<tr>
<td>7. Our institution has developed quality resources to support ESD.</td>
<td></td>
</tr>
<tr>
<td>8a. What is one other area you feel is important for reorienting teacher education for sustainability?</td>
<td></td>
</tr>
<tr>
<td>8b. To what extent has your institution made progress in this area?</td>
<td></td>
</tr>
</tbody>
</table>
Guiding questions for Curriculum Analysis of Teacher Education Programmes/Courses on Education for Sustainable Development (ESD)

A Introduction

The curriculum analysis project is designed for all participants of the ESD-NET Training Workshop held on 21-24 Aug 2007 in Bangkok, Thailand. Before attending the workshop, participants from each participating teacher education institution (TEI) are asked to carry out an analysis of the curricula of their teacher education programmes or courses to examine the extent to which the content, skills and values that are espoused under the rubric of Education for Sustainable Development (ESD) are covered in the existing teacher education curricula. The curriculum analysis can be conducted on both undergraduate and graduate programmes, specific courses in these programmes or even specific subject areas such as geography, science, etc. and teaching methods of these subjects. The purpose of this exercise is to obtain a situational analysis of the teaching and learning of ESD in teacher education institutions in the Asia-Pacific region.

To standardize the curriculum analysis among all the participants, the following guidelines are provided in the form of questions to guide the analysis. Some questions are intended to be broad and general in an effort to be relevant to all participating institutions. The ideas presented in some questions also overlap among the various sections in order to ensure comprehensive coverage of the analysis. Kindly do your best to answer all the questions and provide as much details as you can.

B Background Information

Name of ‘researcher’
What is your understanding of ESD. ESD is …………………………………………
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Name of Country:
Name of institution:
Languages used in medium of instruction:
Is there a national curriculum on teacher training in your country?
Level of education that your institution trains teachers for
How many teachers training institutes does your country have?
Does your country have a national policy on sustainable development?
Does your country have a national policy on education for sustainable development?
Does your country have programs on education for sustainable development in its teacher education institution?
Does your country have programs on education for sustainable development in its schools?
Is ESD featured in your institute? Describe how your institute gives attention to ESD.
Has your institute attempted to consciously build in ESD (either in terms of its content, approach and pedagogy, or any one of them) in its curriculum? What are the difficulties and barriers encountered if there is such an attempt?
C AIMS & OBJECTIVES

1. What is the overall mission of your institution’s training curriculum?
2. What are its official explicit aims and objectives?
3. Do any of these objectives cover the concerns of SD/ESD?
   If yes, explain/clarify how these aims/objectives deal with SD/ESD
4. Are the ESD/SD related objectives implemented?
   Describe how these objectives are implemented?(e.g. as topics within existing courses, specific courses, separate training workshops etc)
   Assess the achievement of the SD/ESD related aims/objectives.

D APPROACH

1. How would you describe your institution’s approach to including ESD in its curriculum?
2. Is the ‘Whole School/Institution’ approach adopted?
   If yes, describe how your institution implements the ‘Whole School/Institution’ approach.
   Which are the various groups involved?
   How are they involved?
   Describe the work, roles and relationships of these various groups (school principal, teachers, students, parent-teacher association, community - e.g. immediate milieu, alumni)
   What are some of the insights and lessons arising from the implementation of this approach?
3. How far does the community, parents, religious and other social groups get involved in the work of your training institute vis-a-vis ESD? Elaborate briefly and comment on the relevance and effectiveness of such liaisons?
4. How does your institution involve/use the resources of related organizations (eg. environmental, consumer, human rights, women’s organizations in your educational/training activities?)
5. Are there opportunities for staff and students to engage in research during training.
   If so elaborate? E.g. kind of inquiry, focus and problem areas selected for research.
6. Does your institution continue to provide follow-up support or/and continuing professional development to teachers after graduation?
   If yes, elaborate on these programs/support.

E CONTENT

1. Does your institute’s training curriculum give any attention to ESD (directly or indirectly)? Elaborate on the ESD coverage and scope in the whole curriculum. (Please refer to Appendix I for the different perspectives of ESD).
2. Is your training curriculum-subject centred, or are there opportunities for cross disciplinarity?
3. Describe what is covered in the cross-disciplinary areas and its mode/mechanisms of delivery.
4. Do these cross-disciplinary opportunities include coverage of ESD? If so, elaborate on the rationale for its inclusion. List the main content/topics covered and skills taught in these ESD related areas. Describe in detail what students learn (do not limit this to content knowledge only if other aspects are achieved) from this part of the curriculum?
5. Name the disciplines and their respective subjects where concerns of ESD are addressed. What are the related topics/themes covered? Describe how ESD is addressed in these subjects, including the ways in which the related ESD content is being taught. (can be different in each subject/discipline – describe as many as you can).
6 Is ESD offered as a separate specialization? If so, explain why and how did this come about?
7 Does your institute’s curriculum address wider global issues e.g. international understanding, climatic changes, pollution, sustainability/sustainable development, peace, poverty, human rights, gender equality etc? Comment on the extent of its coverage and how these topics are being taught? What do students learn from this part (ESD related) of the curriculum?
8 Are local issues and concerns reflected in the teaching and learning? If so, what are the main local issues covered and elaborate where possible their relevance to pupils and teachers? Comment on the extent of its coverage and how these topics are being taught? What do students learn from this part (ESD related) of the curriculum?

F PEDAGOGY & ASSESSMENT
1 List and elaborate on the main types of teaching methodologies that your institute employs in presenting the curriculum to students.
2 To what extent do you employ mixed modes of delivery, and in what contexts and why? Describe the mixed modes of delivery adopted.
3 If ESD is included in the curriculum, what teaching and learning styles are being employed? Why are these styles of learning adopted? Describe each of them, emphasizing on the learning process and pedagogical principles. Are there some more effective than others and why? Which of these are more effective?
4 Elaborate on how teacher trainees are assessed and monitored during training both inside and outside the institution (ie during the practicum)?
5 To what extent is student self assessment practiced, specify where possible. Describe the self-assessment methods used.

G RESOURCES
1 List the resources/material that you/your institute have used and found useful in teaching ESD. Are there some more effective than others and why?
2 Has your institute/staff developed any material/resources that are useful/effective in the teaching and learning of ESD areas? Describe them. Appendage these material to your report.

H OUTCOMES
1 What outcome/s does your institute expect from the ESD related parts of the curriculum? Discuss to what extent these expected outcomes are or are not achieved
2 From your observation/assessment what capabilities and skills are fostered in the ESD part of the curriculum?
3 What are/would be the main barriers in developing ESD as (a) a separate discipline (b) as part of an interdisciplinary curriculum in your institute?
4 Describe the kind of sustainability literacy you think your institute is addressing in the current curriculum.
5 Would your institute be interested to incorporate ESD (more if there is already) into its present curriculum. What are some of the existing efforts/initiatives? How can these efforts be further consolidated/expanded?
6 What programs/action can be initiated to foster further interest in ESD in your institute?

APEID
May 2007
Area: Professional Development

1. What is the aim of your research in this area? (i.e. What is the expected outcome?)

   To gauge the perceptions of lecturers at the Faculty of Science and Technology (FST) UPSI with regard to their understanding of ESD

2. On what aspects of this area will your research focus?

   Lecturers’ understanding of ESD

3. State your research question (based on 1&2)

   What are the perceptions of lecturers as a whole, and by departments (i.e. Physics, Chemistry, Biology) within the Faculty of Science and Technology UPSI with regard to their understanding of ESD

4. What is one indicator you will use to answer this question?

   The level of ESD-related understanding

5. How will you formulate your research for this indicator? (i.e., describe how you will measure this indicator—the who, what, when, where, and how often of your action research.)

   2-phase Approach

   Phase 1: Generation and validation of ESD-Q (ESD Questionnaire)
   An ESD Questionnaire will be generated based on the elements and principles of ESD. Its psychometric properties will be gained due consideration.

   Phase 2: Survey Phase
   The ESD Questionnaire will be administered to all the lecturers (approx. 90) at FST. The data set will then be analyzed statistically (i.e. multivariate analysis of variance, on the assumption that ESD consists of 4 dimensions/factors)
Research Example B

Area: Curriculum development for in-service and pre-service training on ESD

1. What is the aim of your research in this area? (i.e. What is the expected outcome?)
   
   1. To develop a training curriculum for enhancing teacher capacities for integrating ESD into school subjects for in-service and pre-service teachers
   2. To evaluate ESD-related qualities of the training curriculum

2. On what aspects of this area will your research focus?
   
   1. Quality of training curriculum
   2. Capability of teacher students or in-service teachers to integrate ESD into school subjects

3. State your research question (based on 1&2)

What qualities in the teacher training curriculum are required to enhance teachers` capacity to integrate ESD into school subjects

4. What is one indicator you will use to answer this question?

   Quality of the training curriculum
   - relevance of content
   - reliability
   - posttest - pretest improvement
   - trainee capabilities reach benchmark standards
   - Task for integrating ESD into one criterion-subject successfully completed for each trainee

5. How will you formulate your research for this indicator? (i.e., describe how you will measure this indicator-the who, what, when, where, and how often of your action research.)

   1. Participatory qualitative analysis of the curriculum among faculty and selected students
   2. Measure capabilities of trainees in the following areas through observations, written reflections and a final portfolio task:
      - Trainee achievement on integrating ESD to subject areas
      - Trainee attitude toward ESD
      - Carry out one task of integrating ESD into one subject that trainees are responsible for, or interested in, including material, lesson planning and pedagogy.
Appendix VI

ESD INTEGRATED CURRICULA: EXAMPLE OUTLINES

GROUP A - CURRICULUM OUTLINE: INFUSING ESD INTO SECONDARY SCHOOL LANGUAGE TEACHING (6 WEEK 4 UNIT COURSE)

Aim
To introduce ESD idea in language teaching
To incorporate/infuse ESD issues in language teaching

Objectives
1. To define ESD concepts correctly
2. to illustrate the connection between ESD component accurately
3. to select and utilize the appropriate pedagogies when infusing ESD issues in language teaching.
4. to select appropriate teaching and learning materials from various sources (internet, printed texts, journal, etc.)
5. to create innovative strategies into their teaching.

Course Content
1. Introduction
2. The holistic curriculum
3. Education and sustainability
4. Environmental education in secondary school
5. Expressive arts and language
6. Innovative language teaching methods for ESD
7. Authentic assessment in language teaching

Methods for Delivery (pedagogy)
1. Lectures
2. Group discussion
3. Case study
4. Simulation (micro teaching)
5. learning outside the classroom (LOC)
6. Project-based learning

Course Materials and Resources
1. T & L for a Sustainable Future,
   refer session 4

Modes of Assessment
1. OBSERVATION
2. PORTFOLIO (Befriending A Tree)
3. Reflective journal (LOC)
4. Analysis of lesson plan
5. Final report

Opportunities for Action and Research
1. Case studies
2. Participatory action research

Provisions for Networking
1. UNESCO, BANGKOK
2. RCE

Placing of Teacher Development in the Curriculum
1. Appropriate as a continuous professional development program.
Aims and Objectives
To infuse ESD across the curriculum
To develop semester or month-long courses on ESD for teacher preparation
To develop ESD as a separate subject

Outline of Course Units (tentative)
- Values
- Skills related to ESD of WD 3
- Knowledge and understanding
  - Geography
  - History
  - ICTs and Mathematics
  - Religious education
  - Science

Themes
- Gender equality
- Health Promotion
- Environmental Protection
- Conservation
- Human Rights and Citizenship
- Sustainable Production and Consumption
- Cultural Diversity
- ICTs
- Community at lots / state / stakeholder
- Interdependence Citizenship
- Role of individual society
- Quality of life
- Equity
- Uncertainty and precaution

Strategies for ESD (snap shots of Curriculum Content)
This course will lay a foundation for principles and practices of ESD in a broad manner and train students to apply ESD concepts within the curriculum.
- Teaching students how to infuse ESD concepts into the curriculum
- Awareness of ESD concepts in curriculum in TE
- Identification of ESD concepts in TE curriculum
- Co-ordination of inputs about ESD activities across the syllabi for ESD
- Community participation to include ESD with emphasis
- Curriculum revision from ESD perspectives

Methods for delivery (pedagogy)
- Mainly by lecture, demonstration and participatory action research oriented methods

Course materials and resources
- Related to ESD references / books / ICT material and UNESCO material
- WD 5 (1), (2), (4), (3) & (5) or the essential components of the course material

Modes of assessment
- Performance-based evaluation
- Portfolio assessment
- Feedback from community
- Students attitude towards the work

Training strategies
- Thinking about the long-term benefits about ESD e.g., experiencing learning, students are motivated in a systematic way to tackle the problem of the community and making lessons that stimulate change of thinking. Create solutions for participatory action research

Opportunities for Action and Research
- Participatory action research and ESD Indicators

Provisions for Networking
- ICT / ethnographic / school based

Placing of Teacher Development in the Curriculum
- Linking existing pre-service training into in-service teaching as well.
Target group: Primary school (in service) Teachers  
Duration: 4 weeks (120 hours)  
Course title: ESD for Primary School (in Service) Teachers

Aim  
The aim of the course is to promote the concepts of sustainable development (SD) and education for sustainable development (ESD) among the primary school teachers.

Objectives  
By the end of the course, participants should be able to:
1. Comprehend the concept of sustainability and ESD;
2. Provide a range of practical skills to implement the concept
3. Inculcate the values of sustainable development through teaching and learning activities
4. Design and implement ESD-related lesson plans and activities

Course Units  
1. Introduction  
   1.1 The concept and significance of SD and ESD  
   1.2 The key concepts related to SD  
   1.3 The interdisciplinary approach as a means to implement ESD
2. Relationship between SD for individual and societal well-being
3. Core components  
   3.1 Interdependence and globalization of society, economy and natural environment from local to global  
   3.2 Citizenship and stewardship  
   3.3 Ecological system, Carrying capacity and biodiversity to satisfy the need and right of the present and future generation  
   3.4 Conservation of cultural, social diversities and sustaining economic growth  
   3.5 Health and environment  
   3.6 Exploring gaps between values and action  
   3.7 Quality of life, equity and justice
4. Theory into practice

Methods for delivery  
1. Lectures/group discussions  
2. Problem Based Learning  
3. Debates  
4. Field study

Course material and resources  
1. UNESCO websites and brochures

Modes of assessment  
1. Group project works  
2. Journals  
3. Reflections  
4. Portfolio

Training strategies  
1. Simulations  
2. Micro-teaching  
3. School try-outs

Opportunities for Action and Research  
1. Classroom action research  
2. Feedback

Networking  
1. Exchange of materials developed by teachers  
2. Collaborative research

Placing of Teacher Development in the Curriculum  
1. Follow up workshops  
2. Explore possible resources
Aim

To improve the quality of in-service training for upper secondary school teachers contributing to sustainable development education in Pan Sustainia.

To enhance knowledge and skills in integrating, imbedding and infusing ESD in the following groups of subject areas with ICT use as an underlying element:

- Group 1: Math and Science
- Group 2: English inc. Drama, Arts and Physical Education
- Group 3: Geography, History and Religious Education

Objectives

1. ESD concepts and competencies of in service teachers are understood and enhanced
2. ESD concepts are infused in specific groups of subjects of the upper secondary curriculum by the teachers
3. ICT competencies are used to learn ESD competencies in the upper secondary curriculum

Pre-requisites

1. Students already have some knowledge of ESD and may already be incorporating it in their subjects (consciously or unconsciously)
2. Students already have some basic computer skills
3. Students will do some pre-training research work (content analysis) on ESD in the materials/textbooks they are using
4. Students have some understanding of portfolio work

Common thematic areas

- Overcoming poverty
- Human rights and cultural diversity
- Intercultural understanding and peace

ESD Themes to be infused into subject areas.

Themes and Key ESD Elements by Subject Areas

Group 1: Math and Science
- Environmental protection and conservation (interdependence, future generations)
- Sustainable production and consumption (quality of life and equity)

Group 2: English inc. Drama, Arts and Physical Education
- Health promotion (diversity, interdependence)
- Gender equality (interdependence, future generations)

Group 3: Geography, History and Religious Education
- Rural transformation (development, carrying capacity and change, citizenship)
<table>
<thead>
<tr>
<th>Content</th>
<th>Resources</th>
<th>Strategies</th>
<th>Assessment</th>
</tr>
</thead>
</table>
| **Week 1 and 2**  
(40 hrs) | - History of ESD including economic, social, cultural and environmental perspectives  
- Theoretical framework and key concepts on ESD  
- What and where ESD components are in the curriculum | - Open learning materials, including UNESCO materials, the Earth Charter, etc. | - lectures  
- face-to-face discussions and reflections  
- research and content/curriculum analysis | - e-Portfolio |
| **Week 3 and 4**  
(actual classroom hrs) | Workplace applications and School-based practice:  
Group 1: Math and Science  
- Environmental protection and conservation  
- Sustainable production and consumption  
Group 2: English inc. Drama, Arts and Physical Education  
- Health promotion  
- Gender equality  
Group 3: Geography, History and Religious Education  
- Rural transformation | - Open learning materials  
- Lesson Plans | - Practicum  
- Classroom-based activities and interactions  
- Reflection | - e-Portfolio  
- Lesson Plans  
- Records of Observations |
| **Week 5 and 6**  
(40 hrs) | - Sharing experiences  
- Assessment techniques based on ESD indicators  
- Problem-based learning activities on ESD | - Open learning materials  
- Portfolio  
- Observation journals  
- Webquest | - Sharing and Discussions  
- Simulation  
- Self-directed learning | - Portfolio assessment  
- Webquest assessment |