

**A COMPILATION OF
ENVIRONMENTAL
EDUCATION
COURSES AND
RESOURCES
AVAILABLE AT
CANADIAN
INSTITUTIONS**

**A Summary Report
of a Survey Conducted by the
Special Initiatives Program
Corporate Affairs and Initiatives**

August, 1994

The International Development Research Centre
Le Centre de recherches pour le développement international
El Centro Internacional de Investigaciones para el Desarrollo

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INTRODUCTION

This document is a compilation of a variety of environmental education (EE) related materials from the academic, non-governmental and government sectors of Canada.

The impetus for this compilation came at the request of Mr. Kabiru Kinyanjui of the IDRC Regional Office for Eastern and Southern Africa who wanted it as a background document for a Regional EE workshop he is facilitating in Nairobi, Kenya in September, 1994.

While this is not an exhaustive compilation of EE activities in Canada, it shows the variety and breadth of EE initiatives in a variety of sectors of the country, and will hopefully provide useful input to the discussions at this workshop.

The information contained in this document was compiled using assorted library and directory searches at IDRC, and through an informal telephone survey of Canadians involved in the EE-field during June and July, 1994.

DEFINITIONS

As EE cuts across a variety of disciplinary boundaries incorporating both the natural and social sciences, as well as the humanities, a specific definition of EE that would place some parameters around this research, was somewhat illusive. However, the following general definition of EE was more-or-less maintained:

Informal or formal educational tools or training for teachers who want to increase peoples' respect, awareness and understanding of nature and natural processes and demonstrate how these can be influenced by human activities.

In addition, EE is often incorporated in various interdisciplinary education themes such as Global Education, Outdoor Education, Experiential Education, Adult Education, and Transformative Education. As a result some of the resources contained here are not the exclusive domain of EE, but include aspects of the five above themes as well.

LIMITATIONS

In the case of EE Courses at Academic Institutions (Section I), generally only Faculties of Education were contacted for information on academic courses offered in EE. Faculties of Environmental Sciences, Environmental Studies or Environmental Engineering, for example, were purposely not contacted to avoid this compilation becoming a synthesis of all educational opportunities in the environmental field.

While attempts have been undertaken (within the time and financial constraints of this research) project to make this compilation as thorough and complete as possible, two additional factors should be kept in mind:

1. This research was undertaken during the summer months when some individuals were on holidays and, thus, unable to respond to inquiries. This was particularly true for university lecturers/professors and government departments.
2. With one exception, this research only examined EE-related resources available in English-speaking Canada.

HOW TO USE THIS DOCUMENT

This document is divided into five main sections (see Table of Contents). Each section begins with an individual table listing the resources, projects, courses for that particular section.

While this document is a compilation of resources, it would be prohibitive to include copies of all the resources listed in each table. Thus, for each directory, project or resource listed, there is a corresponding short description and address and contact name for further information or ordering purposes.

In cases where the complete resource could not be included, in order to give readers a better idea of the contents of the particular item, a few key pages from the original project, course or resource are included following each table (see the specific pages numbers listed in the last column entry for each table).

While readers are encouraged to communicate directly with the contact person listed with each individual resource listed, the majority of these resources are available either through the IDRC Library in Ottawa, or from Mr. Chris Smart at the addresses below.

Trevor W. Wickham
Special Initiatives Program
August 1994

Reference Desk IDRC Library 9th Floor P.O. Box 8500 Ottawa, Ontario Canada K1G 3H9	Mr. Chris Smart Director Special Initiatives Division Corporate Affairs and Initiatives IDRC, 10th floor P.O. Box 8500 Ottawa, Ontario Canada K1G 3H9
Tel. 613-236-6163 x2571 Fax. 613-563-9463 E-mail: reference@idrc.ca	Tel. 613-236-6163 x2323 Fax. 613-563-0815 E-mail: csmart@idrc.ca

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SECTION I

**SELECTED ENVIRONMENTAL EDUCATION COURSES AVAILABLE AT CANADIAN
ACADEMIC INSTITUTIONS**

Institution	Course Name and Code	Contact Name and Address	Comments	Page(s)
University of Alberta	Environmental Studies in the Elementary School (ED EL 372)	Joe Kirman Frank Kozar Faculty of Education Department of Elementary Education University of Alberta Edmonton, AB T6G 2G5 T 403-492-3751 F 403-492-0236	■ 2 outlines for same course	1 - 6 7 - 13
Brandon University	Teacher Training in Environmental Education (Summer Program)	Murray Smith Faculty of Education Brandon University Brandon, MA R7A 6A9 T 204-727-7320	■ Week-long summer workshop on sustainable development at Riding Mountain for K-12 teachers	14 - 16
	Environmental Science Methods (03.455)	Murray Smith (as above)	■ For K-12 teachers	17 - 38
University of British Columbia	Outdoor Environmental Education Diploma Program	Anne Anthony University of British Columbia Faculty of Education 2125 Main Mall Vancouver, BC V6T 1Z4 T 604-822-4671 F 604-822-6501	■ 8-course diploma program designed for teachers with an interest in experiential outdoor learning	39 - 41
	Teaching Adventure Activities in the Outdoors	Anne Anthony (as above)	■ 3-week summer session course focussed on methodologies and program planning	42 - 44

Brock University	Primary/Junior Social and Environmental Studies (EDUC 8Y32)	Sharon Abbey Faculty of Education Brock University St. Catherines, ON L2S 3A1 T 905-688-5550 x3349 F 905-688-0544	■ For grades 1 - 6 teachers	45 - 52
	Environmental Science (EDUC 9F31,32,33)	Bert Murphy Pete Mernagh (as above)	■ 3 course package for Specialist Certificate in Environmental Science	53 - 59
	Research in Social and Environmental Studies (EDUC 5P07)	Wally Poole (as above)	■ Course on learning theories for social and environmental issues	60 - 67
University of Calgary	Environmental Studies in the School Curriculum (EDCI 568)	Bonnie Shapiro Department of Curriculum and Instruction Faculty of Education Education Tower, Room 702 2500 University Drive N.W. Calgary, AB T 403-220-5639 F 403-282-8479	■ Summer course	68 - 73
Memorial University	The Teaching of Environmental Science (ED 3277)	Frank Riggs Faculty of Education Graduate Programmes and Instructional Services Memorial University St. John's, NF A1B 3X8 T 709-737-8587 F 709-737-2001	■ For K-9 teachers	74
	Environmental Education Across the Curriculum (ED 4275)	Frank Riggs (as above)	■ No course outline available, description from calendar	75
	Global Education and the School Curriculum	Frank Riggs (as above)	■ Graduate Course	76 - 78

Ontario Institute for Studies in Education	Centre for Community and Global Transformative Learning	Bud Hall Ontario Institute for Studies in Education 252 Bloor Street West Toronto, ON M5S 1V6 T 416-923-6641 x2410 F 416-926-4725	<ul style="list-style-type: none"> ▪ MA/PhD Programme 	79 - 80
Universite du Quebec a Montreal	Éducation Relative a L'Environnement: Théories et Pratiques (EDU7110)	Lucie Sauvé Département des sciences de l'éducation Université du Québec a Montréal C.P. 8888 surc. A Montréal, PQ J3L 4A7 T 514-987-6992 F 514-987-4608	<ul style="list-style-type: none"> ▪ Course taught in French ▪ Course outline in French ▪ Also see EDAMAZ Project description in Section II below 	81 - 86
	Éducation Relative A L'Environnement: L'Intervention (EDU 7011)	Lucie Sauvé (as above)	<ul style="list-style-type: none"> ▪ Course taught in French ▪ No outline available 	N/A
Queens University	Co-op Program in Outdoor and Experiential Education (SPEC 217)	James Raffan Faculty of Education Queen's University Kingston, ON K7L 3N6 T 613-545-6209 F 613-545-6584	<ul style="list-style-type: none"> ▪ Integrated program combining study and supervised work 	87 - 89
	Social and Environmental Studies (CURR 373)	Diane Lawrence (as above)	<ul style="list-style-type: none"> ▪ For Primary/Junior level teachers ▪ No course outline available, calendar description only 	90
	Social and Environmental Studies (CURR 376)	Diane Lawrence (as above)	<ul style="list-style-type: none"> ▪ For Junior level teachers ▪ No course outline available, calendar description only 	90

University of Regina	Environmental Science Education (ESCI 302)	Warren Wessel Paul Hart Faculty of Education Department of Science University of Regina Regina, SN S4S 02A T 306-585-4519 F 306-585-4880		91 - 95
	Environmental Education (ESCI 302-020)	Tom Ash (address and fax as above) T 306-585-4555		96 - 101
University of Saskatchewan	International Education and Modernisation (EDFDT 851.3)	Howard Woodhouse Department of Educational Foundations College of Education University of Saskatchewan Saskatoon, SN S7N 0W0 T 306-966-7522 F 306-966-8719	■ Graduate Course	102 - 104
	Education for a Global Society (EDFDT 480.3 02)	Howard Woodhouse (as above)	■ Full semester course	105 - 111
	Education for a Global Society (EDFDT 480.3)	Martin Sterling (address and fax as above) T 306-966-7514	■ 8-day Residential Course	112
	Graduate Studies in Global and International Education	Graduate Co-ordinators The Departments of Curriculum Studies and Educational Foundations (address as above)	■ Master's Program to begin in the Fall 1994	113 - 114

Simon Fraser University	Summer Institute in Environmental Education	Milton McClaren Field Relations and Teacher In-Service Faculty of Education Simon Fraser University Burnaby, BC V5A 1S6 T 604-762-7600 F 604-861-4850	■ Interdisciplinary 4-week summer program for in-service and pre-service teachers interested in environmental education	115 - 119
University of Victoria	Introduction to Environmental Education (ED-E373)	Gloria Snively Faculty of Education Department of Social and Natural Sciences P.O. Box 3010 Victoria, BC V8W 3N4 T 604-721-7779 F 604-721-7767		120 - 125
	Advanced Methods in Environmental Education/or Environmental Issues Education (ED-E 473)	Gloria Snively (as above)		126 - 133
University of Western Ontario	Environmental Studies in the Intermediate-Senior Divisions (SCE32)	John Ogletree Faculty of Education Curriculum Division University of Western Ontario London, ON N6A 3K7 T 519-661-2083 F 519-661-3833		134 - 138
York University	Critical Education and Social Change (ES 6150)	Deborah Barndt Faculty of Environmental Studies York University 355 Lumbers Building 4700 Keele Street North York, ON M3J 1P3 T 416-736-5252 F 416-736-5679	Graduate course	139 - 148

Yukon College	Environmental Studies and Education (ENVS 222)	Bob Jickling Academic Studies Division Yukon College Box 2799 Whitehorse, YK Y1A 5K4 T 403-668-8778 F 403-668-8828	■ Summer course	149 - 167
University of Lethbridge	Summer Professional Development Workshop	Rick Morazik Faculty of Education University of Lethbridge 4401 University Drive Lethbridge, AB T1K 3M4 T 403-329-2254 F 403-329-2252	■ Summer course	

UNIVERSITY OF ALBERTA
Department of Elementary Education

ED EL 372

Environmental Studies In The Elementary School

Term I, 1993/94

Dr. Joe Kirman
248 Ed. South
492-5093

COURSE OUTLINE

Course Description

This course is designed to help you make decisions about teaching, drawing on contributing curricula such as science, health, and social studies, with a focus on environment as an integrating factor. You will be asked to decide:

- The kinds of growth in children that are most important, and how provincial subject area curricula contribute to that growth
- The kinds of knowledge children need and how they learn it
- The materials children can best use to construct that knowledge
- The kinds of approaches to teaching that best achieve your goals
- The forms of evaluation that are most desirable

Project 1 - Parts A and B

Part A deals with the social studies, science and health curriculums. The following six committees will be formed to teach about the following:

1. Social Studies Division 1
2. Social Studies Division 2
3. Science Division 1
4. Science Division 2
5. Health Division 1
6. Health Division 2

The presentation for Part A is concerned with the structure and content of the curriculum, materials to teach the unit, and suggestions for activities. The committees should briefly present the curriculums, and select one unit for in-depth demonstration.

Part B deals with integrating all subjects on each grade level. There will be six committees -- one for each grade level with at least one member from one of the three previous subject speciality committees. One unit from each science, social studies

and health will be used as the core to integrate the other two subjects and will be presented to the class. New committees will be formed for Part B.

Project 1 Parts A and B presentations are 25 minutes each. The presentations must be interactive and provide the class with hands-on information. The unauthorized duplication and distribution of copyright materials are prohibited.

Committees will provide the professor with a copy of their lesson plan and a list of the resources consulted.

Both parts of Project 1 will each be evaluated with the following criteria:

1. Thoroughness
2. Clarity of Expression
3. Time Constraints
4. Interactive Elements
5. Amount and Quality of Data Presented
6. Pace of Presentation

All members of a committee are expected to pull their own weight. Committee members experiencing difficulty with their own participation or the participation of others should see the professor promptly.

Project Rationale

The ability, individually or in committee, to research and disseminate information to colleagues is an important professional responsibility. This includes preparing, coordinating, and teaching training sessions for fellow teachers. Procedures in this project parallel those involved in preparing Alberta Teachers Association workshops, inservice sessions, and conference presentations.

Project 2 - Lesson Plan

Project 2 is an individual project. Select an environment topic and prepare a 10 period unit integrating all subject areas (not just science, social studies, and health) to teach about the topic. The elements of the unit are:

1. A cover sheet with the following placed in the center of the cover sheet:
 - a. Your name
 - b. Grade level and unit letter
 - c. ED EL 372 and your section number
 - d. Date
2. How the unit is integrated.
3. A list of the 10 daily plan aims with the objectives of each daily plan.
4. The first daily lesson plan (you are not required to do more than 1 plan).

5. An annotated resource section with a good balance between a.v. and written materials. There should be an a.v. and a written resource section. Each resource entry will be cited using Canadian Social Studies magazine reference style. Each resource citation will be followed by a paragraph briefly describing the resource and evaluating its worth. Resources must be consecutively numbered with the same numbering order for the entire annotated resource section.

The unit plan must be typed or computer printed and double spaced. An original copy will be given to the professor. Incomplete or faintly typed papers are unacceptable. Do not place the paper in any binder or envelope. Staple the paper in the upper left hand corner only.

Standards for evaluating the project include among others: curriculum requirements; standards for written work; clarity of expression; accuracy; quality of resources; amount and variety of resources; time efficiency; quality of annotations; quality and extent of documentation; originality; thoroughness, educational value.

Please note that meeting all the above criteria may merely ensure a minimum level for a passing grade. The above criteria are stated in quantitative form and may vary in qualitative relationship depending on the content of each paper.

The plan and resources will be evaluated on 70-30 basis for the project grade. A well written plan can usually expect a grade of approximately 70%. A well written resource section with 20 annotated resources with a good balance of a.v. and written materials can expect a grade of approximately 70%.

The Standards For Written Work attached to this course outline will be rigorously enforced. Please examine it carefully.

Project Rationale

The ability to plan a unit and prepare a set of daily lesson plans is a professional skill expected of a teacher.

Term Evaluation

Project 1		30%
Part A -	15%	
Part B -	15%	
Project 2		20%
Mid Term		20%
Final Exam		30%

Required Reading

Environmental Studies in the Elementary School: ED EL 372 Course Readings.
Edmonton: Department of Elementary Education, University of Alberta, 1992.

The following Alberta Education provincial curriculum guides available in the library:

Elementary Health: Teacher's Resource Manual, 1983.

Elementary Science Curriculum Guide, 1983.

Environmental Education Manual for Grades I to XII, 1983.

Social Studies Grades 1-6: Program of Studies, 1990.

ED EL 372 - Tentative Areas of Examination

Lesson Planning

Inquiry

Questioning

The Curriculums

Motivations

Integrating Subject Matter

Evaluation of Students and Self

Selecting and Evaluating Materials

Remote Sensing Images

Controversial Issues

Other Areas of Examination Depending on Available Time

Grading Criteria

Please note that students are graded according to set criteria and not in competition with one another. All grades are percentile raw scores and have no direct relation to the 9 point system used at this University. The professor reserves the right to increase student raw scores based on participation and attendance. Should the unlikely possibility arise of a raw score penalty, the person in question will be warned privately in writing beforehand.

Final grades for this course section are not subject to a curve evaluation or predetermined number of grades for each nine point interval. For this course section, a student with a raw score in the high nineties can usually expect a nine, and one with a raw score of less than 55 can usually expect a failing grade. This procedure is based on merit within class standing. It is theoretically possible, but highly unlikely, that all students can receive a 9, or all fail if their class performance merits that grade.

Derivation of Course Grade

The course grade for each student on the nine point scale is derived in this course by placing the class raw scores in descending order and determining break points according to merit. Please note that this procedure is in accordance with the University Calendar procedures for grading. Since each section of a course can have a different distribution of raw scores, the break points between different sections of the same course can differ. Raw scores of class sections taught by the same instructor may be combined to insure equal treatment in grading.

DEPARTMENT OF ELEMENTARY EDUCATION GRADING POLICY for UNDERGRADUATE COURSES

In accordance with university regulations, instructors in courses offered by the Department of Elementary Education may use either the absolute measures system or the distribution system for calculating final course grades on the nine-point scale. Under the absolute measures system the instructor will indicate at the beginning of the course the percentages required to obtain each of the grades on the nine-point scale. For example, in a particular course, scores falling between 65-70% may be required to achieve a grade of 6. Under the distribution system, or relative scoring system the final grade is determined by the distribution of scores achieved by all of the students in the class. It could be that under this arrangement a score of 65% may be a grade of 5 on the nine-point scale depending upon the score distribution of other students in the class.

In all instances, 55% is required for a passing grade of 4. As well, instructors are required to announce the manner in which grades are to be calculated at the beginning of the course and to provide the method by which scores were translated into grades on the nine-point scale.

- grade of: 9 - exceptional performance with respect to course learning objectives and normally would only be achieved by a very small percent of a class
- 8 - excellent performance with respect to course learning objectives and normally would be achieved by relatively few students but more than the number assigned a grade of 9
- 7 - above average achievement but within the normal expectation of course learning objectives for senior courses in the university
- 6 - average achievement within the normal range of expectation of course learning objectives for senior courses within the university
- 5 - acceptable achievement but within the normal expectation of course learning objectives for senior courses in the university
- 4 - minimal achievement with respect to course learning objectives but a passing performance for senior courses within the university
- 3 - unsatisfactory performance and considered a failing grade
- 2 - exceptionally poor performance and used only in unusual circumstances where reducing the student's GPA appears to be warranted

Normally, mean grades for courses will fall between the following ranges:

300 level courses = 6.1 to 6.7
400 level courses = 6.4 to 7.0

September, 1993

Standards for Written Work

1. All written work is expected to meet professional standards of spelling, grammar, punctuation, and neatness. Papers not meeting this standard will be returned ungraded, or reduced in grade (with a point deducted for each error) at the professor's option.
2. Correct footnote and bibliographic form must be used when required. Items for documentation should be current and reflect a variety of sources to demonstrate a knowledge of the subject. Papers not meeting professional standards for documentation will be returned ungraded or reduced in grade at the Professor's option.
3. Members of committees should be aware that they function in an editorial capacity regarding the work of their colleagues. Examine fellow committee member's work for errors.
4. What you mean to write and what you actually write may be two different items. Please exercise care in this matter. Proof your paper carefully.
5. Please be advised that there is a difference between effort and quality. Quality is the paramount factor in university standards.
6. In cases where plagiarism is proven, the student in question will be appropriately penalized.
7. Papers containing more than 20% direct quotations, including full page forms will be returned ungraded and not credited toward the project.
8. Papers will be reduced 10 points for each day late.
9. Projects are due in class on the due date. Papers received after class on the due date will be penalized proportionately.
10. Incomplete papers will not be accepted.
11. Students are fully responsible for typographic and third party typing errors.
12. All papers handed in must be original copies, typed or computer printed with a good ribbon. All papers having faint typing or printing in any section will be returned as unacceptable.
13. Word processor problems, equipment breakdowns and computer viruses are your responsibility and cannot be used as an excuse for lateness. This includes third parties who prepare your paper.
14. Failure to comply with project format requirements will result in a penalty.

UNIVERSITY OF ALBERTA

Department of Elementary Education

ED EL 372

Environmental Studies in the Elementary School

Winter Session
Term I, 1993-94Dr. Frank Kozar
352 Education South
492-5417

COURSE OUTLINE

The Interconnected Whole

The process of the full unfolding of the self can be summarized by the phrase, "No one is saved until we are all saved," where the phrase "one" includes not only one, an individual human, but all humans, grizzly bears, whales, whole rain forest ecosystems, the tiniest microbes in the soil, and so on.

Deull and Sessions
Deep Ecology

Purpose

This course is designed to help you make decisions about teaching, drawing on contributing curricula such as science, health, and social studies, with a focus on environment as an integrating factor. You will be asked to decide:

- What kinds of growth in children are most important, and how do provincial subject area curricula contribute to that growth?
- What kinds of knowledge do children need and how should they learn it?
- What materials can children best use to construct that knowledge?
- What kinds of approaches to teaching best achieve your goals? and
- What forms of evaluation are most desirable?

This course is designed to involve students in an examination of different teacher's conceptions of environmental studies goals--both explicit and hidden--and the development of a personal set of goals to give direction to their planning and teaching. The focus will be on what varying roles environmental studies teachers and students take, what content, materials and activities are used to achieve goals, and some of the issues and decisions environmental studies teachers face. By the end of the course, students should be able to state a personal set of environmental studies goals and some methods and roles needed to achieve their goals.

Texts

L. Brown. (1992). State of the World 1992.

Environmental Studies in the Elementary School (packet of Course Readings, Bookstore).

Reserve Room Readings for Environment

- Aitkenhead, G. (1985). *Collective decision making in the social context of science*. Argues for science education to focus on such issues as drug use, cruise missiles, and other socio-political-moral issues. Rejects "basic, rational knowledge" as possible or desirable.
- Alberta Education. (1983). *Science Curriculum*.
- Alberta Education. (1983). *Environmental Education Curriculum*.
- Alberta Education. (1989). *Health Program Rationale and Philosophy Grade level topics and subtopics, Gr. 1-6*.
- Alberta Education. (1991). *Social Studies Teachers Resource Manual, Grades 1-3 and Grades 4-6*.
- Brown, J. (1991). A Sustainable Development Curriculum. Chapter 9, action projects and resources.
- Bybee, R. (1987). *Science Education and the Science-Technology-Society (S-T-S) Theme*. Definitions, history, and rationales for science education goals.
- Devall, B., & Sessions, G. (1985). Deep Ecology: Living as if Nature Mattered. Chapter 5, 8 biocentric principles explained by Naess and Sessions; why material standard of living and quality of life are incompatible.
- Ellis, A., Fouts, J., & Glenn, A. (1991). Teaching and Learning Secondary Social Studies. Chapter 2 - Three teachers' goals and methods, illustrates citizenship transmission, learner centered, and social action approaches in practice.
- Greig, S., Pike, G., & Selby, D. (1987). Earthrights. GF26 G824. Rationale and activities for holistic education esp. pp 45-59.
- Hicks, D. (1988). Education for Peace. JX1904.5 E238. Rationale for holistic education.
- Hopkins, S., & Winters, J. (1990). Discover the World. Ways to help young children solve problems and conflicts.
- Hungerford, H. et al. (1988). Investigating and Evaluating Environmental Issues and Actions. Rationale and methods: Methods for environmental action.
- Lewis, B. (1991). A Kids Guide to Social Action. HN65 L665. Examples of young kids taking action on social and environmental issues; sources, activities, activity sheets.
- May, W. (1992). What are the Subjects of STS-Really? Conflicting goals and rationales for Science-Technology-Society programs, recognizing the moral and political roots of the debate.
- Pembina Institute. (1991). The Canadian Environmental Education Catalogue. (Only available at Information Desk, not Reserve). Comprehensive print and AV resources usefully annotated for grade level and topics.
- Pike & Selby. (1988). Global Teacher, Global Learner. LC 1090 P636. Rationale, sources of materials, activities for holistic education.

Ramsey, J. M. et al. (1989). A Science-Technology-Society Case Study: Municipal Solid Waste. One case of environmental action.

Sterling, S. (1990). Environment, Development, Education-Towards an Holistic View. Critique of academic, liberal, and utilitarian models of EE, advocacy of holistic EE.

Stevenson, R. (1987). Schooling and Environmental Education: Contradictions in Purpose and Practice. Comparison of the rationale and teacher ideology for teaching environmental knowledge using traditional pedagogy v. environmental action projects. Social and political roots of maintaining traditional teaching.

DEPARTMENT OF ELEMENTARY EDUCATION GRADING POLICY

In accordance with university regulations, instructors in courses offered by the Department of Elementary Education may use either the absolute measures system or the distribution system for calculating final course grades on the nine-point scale. Under the absolute measures system the instructor will indicate at the beginning of the course the percentages required to obtain each of the grades on the nine-point scale. For example, in a particular course, scores falling between 65-70% may be required to achieve a grade of 6. Under the distribution system, or relative scoring system the final grade is determined by the distribution of scores achieved by all of the students in the class. It could be that under this arrangement a score of 65% may be a grade of 5 on the nine-point scale depending upon the score distribution of other students in the class.

In all instances, 55% is required for a passing grade of 4. As well, instructors are required to announce the manner in which grades are to be calculated at the beginning of the course and to provide the method by which scores were translated into grades on the nine-point scale.

- grade of:
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 - 3 - unsatisfactory performance and considered a failing grade
 - 2 - exceptionally poor performance and used only in unusual circumstances where reducing the student's GPA appears to be warranted

Course Averages

300 level courses 6.1 to 6.7

400 level courses 6.4 to 7.0

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Environmental Education Ed E1 372

Section A Course Philosophy

Introduction

This course is designed to fulfill the purposes enumerated in the general departmental course outline. As stated in the departmental outline, the presentation will vary with the particular background and interests of the instructor. In my case, although I have a degrees in education and the social sciences, I have spent the major part of my career teaching (botany, cell biology, genetics, microbiology, plant physiology, etc.) and conducting research in these areas. The focus in this course will therefore be on basic principles of science. I will devote only a small portion of the course to educational theory. Emphasis will be on the application of teaching materials to the classroom.

In order to adequately address many of the environmental issues currently facing society, our students must, beginning in the elementary grades, develop an understanding of some the basic principles of science. The phenomenon of pollution, for example is an exceedingly complex one, requiring a grasp of many disciplines - chemistry, biology, geology, physics, geography, history, economics, etc. If we are to make intelligent decisions regarding various aspects of the phenomenon we must have at least a rudimentary understanding of the basic concepts in the disciplines just cited.

Basic concepts and values (i.e concern for others) must therefore be introduced early in the school system and be added to, and reinforced, as the child progresses through the system. Even at the grade two level the concept that certain diseases can be caused by germs, (hence the importance of washing our hands before eating and not sharing the same eating and drinking utensils), can be developed and stressed. The groundwork for accepting responsibility for one's own health, laid at this juncture and amplified in the subsequent school years, can be a major contributor to a healthy life style throughout the individual's life. Thus the savings to the nation's health system over the life of the individual is phenomenal. This would at the same time free both individuals as well as funds, for research into new diseases that crop up from time to time.

A basic knowledge of science is paramount in terms of caring for ourselves. The maintaining of a healthy body through a knowledge of good nutrition, good hygiene, proper exercise, access to preventive medical services, etc. is a fundamental responsibility of the Citizen of any civilized nation. The funds expended on caring for those who have needlessly

inflicted medical problems on themselves through neglect or abuse of their bodies is phenomenal i.e. substance abuse, obesity, smoking related problems, STD, etc. Funds allocated to the care of individuals suffering from these problems might well be spent in other areas.

Injury prevention is the number one health related issue that is still being neglected. More "potential life lost" occur as a result of injuries than as a result of cancer and heart disease combined. The cost to society is staggering, literally in the billions of dollars. Alberta leads the nation in accidents!!! It is the elementary school teacher, through good example and good teaching, who can set the groundwork for turning the situation around.

Regretfully, in order to build up a basic understanding of science requires effort. North Americans and this includes, Canadians, have fallen behind most of the industrialized nations in the areas of math and science. Our American values (work ethics) are vastly different from those of Asian countries (see Learning from Asian Schools in Dec. 1992, Scientific American). We are bombarded by the mass media 24 hours a day by ads which guarantee to make us prettier, more robust, more popular, slim, etc. instantly, with a minimum of effort. Our labour saving devices assure us that we do not have to expend physical efforts performing such tasks as shovelling snow, washing dishes, walking, etc. Time saved no doubt used by our society in watching TV (many American students spend more time watching TV than they spend in the classroom). It should come as no surprise that the physician condition of our school children, even at the elementary school level, is deplorable (see Dr. Fishbourne's report on the fitness of Alberta's elementary school children).

In a plea for more science at the elementary school level (see handout) I point out the inadequacy of facilities and time devoted to science at this important stage of a child's education. Also identified is the lack of preparation in this area provided by the institutions preparing the teachers for this important task. Zeal for science, so necessary for effective science teaching, is absolutely necessary if we are to sustain the zeal for science so very evident in young children. I hope, that in this course you will be able to develop and nurture this zeal as well as build up the confidence in science to effectively handle the thousand and one questions the zealous students will wish to have answered. Your efforts can make a difference! I hope that you will enjoy the course and at the same time build up your interest and background in science.

ED EL 372

Look and See

(The Ideas Reference Binder)

Use a 3-ring binder to organize a collection of "ideas", materials gathered from magazines, journals, newspapers, books, etc., that you will be able to use in your classroom. You may also choose to "create your own ideas."

The topics selected should be confined to three content areas: 1) Geology, 2) Ecology, and a third content area of your choice. Your "ideas" material should be supported by such appropriate level student handouts as: theory, diagrams, quizzes, puzzles, multiple choice questions, matching and color, cut and paste assignments, fill in the blank tests, independent and/or cooperative studies assignment, etc. Each of these should be developed to the stage where they could be duplicated at a moments notice.

The collection of material must be organized in such a way that it may be readily accessible to an outsider, for example, a substitute teacher.

You should bear in mind the following when selecting and organizing items for the collection:

1. Program rationale and philosophy.
2. Goals of basic education for Alberta.
3. Goals and objectives of the elementary science program.
4. Suitability as a core or elective component.
5. Program elements
 - (a) process skills
 - (b) psychomotor skills
 - (c) attitudes
 - (d) science concepts
 - (e) division specific objectives

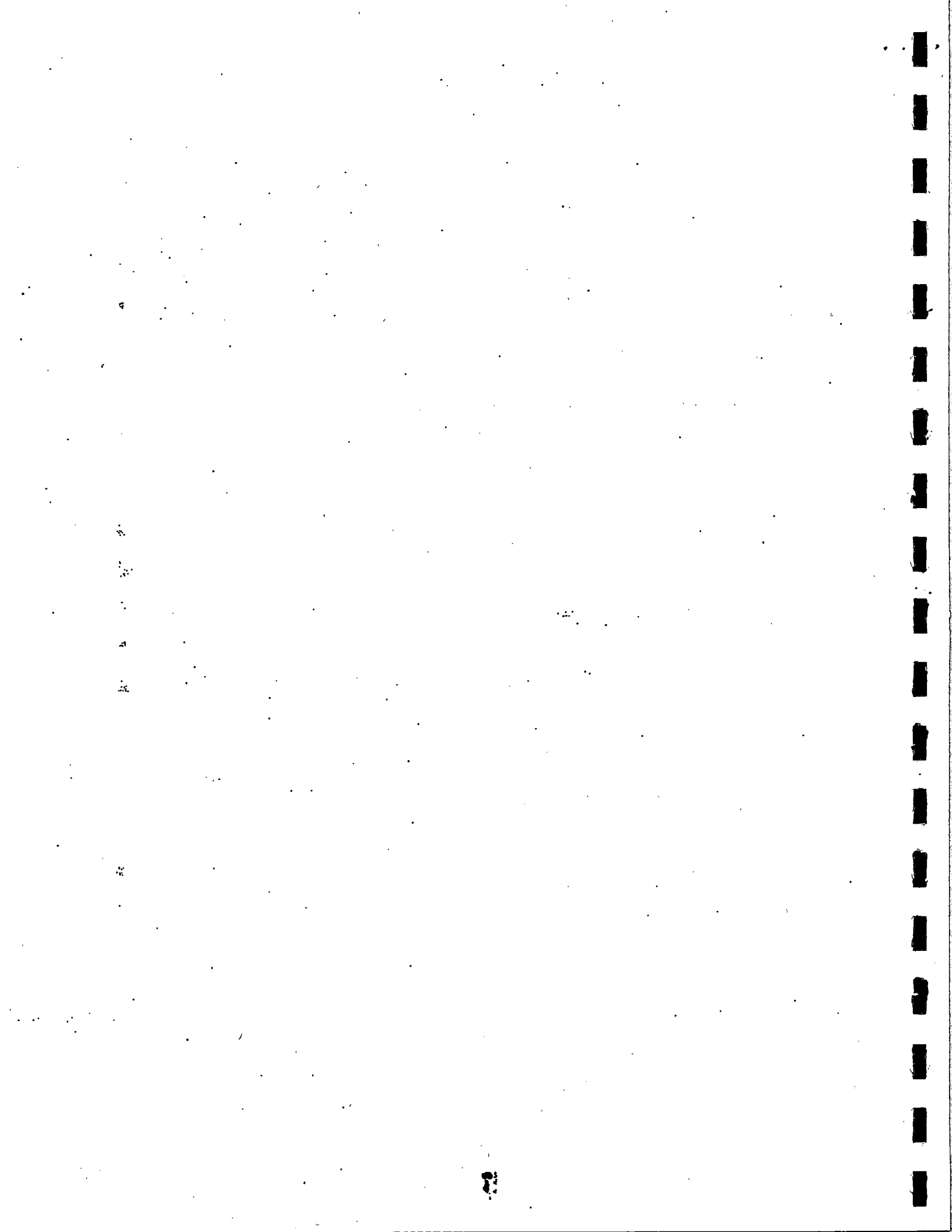
You may choose to concentrate on material suitable for (i) Division One only or (ii) Division Two only or (iii) Division One and Two combined.

Mark Distribution

1.	Participation - attendance	25
2.	Lesson Plan Due between _____	10
3.	Look and See Due between _____	25
4.	Final Exam Exam will cover the entire course	40

Note:

Department policy states that a pass mark for this course is 55



SUSTAINABLE DEVELOPMENT WORKSHOP HELD AT RIDING MOUNTAIN

Sandi Margetts

Murray Smith

Riding Mountain National Park was the site for the second annual Sustainable Development conference for teachers. Twenty-six teachers from across Canada spent from July 9th - July 16th at the community centre learning leadership skills on how to integrate sustainable development into the school curriculum.

The workshop organized by Sandi Margetts and supported by the SEEDS Foundation dealt with problem solving of environmental issues. Such issues as Cod fishing was deemed important by a teacher from Newfoundland attending the workshop. Soil erosion was another issue explored by Manitoba and Saskatchewan teachers. Both groups of teachers felt the workshop was the best they had attended as it provided them the opportunity to share concerns with other teachers from across Canada.

Last year the several workshops were held in Alberta, Manitoba, Ontario and New Brunswick. Although the funding was in place Manitoba was the only province to attract enough participants to have the workshop. Teacher frustration over loss of salary and professional development days was cited as the reason for the low enrolment this year.

However, teachers who paid the \$350.00 to attend the workshop were excited by the prospects of introducing sustainable development into the school curriculum. Jean Perras, Sustainable Development Co ordinator from Ottawa said that Canada is leading in

introducing the principles of sustainable development in business as well as into the school curriculum. Further, he made the point that humans have one last chance to undo damage to the environment caused by human ignorance over the last century. The planet has just about reached its capacity to support life considering the amount of toxins in the biosphere. He concluded that the goals of the Riding Mountain workshop should become the thrust of global education. On a local level the wolf population in Riding Mountain National Park is being threatened.

Celeste Devar, Director for Park Interpretation cited the wolf population problem stating that any habitat whose carnivore population is threatened is in danger of collapsing. The answer is as complex as the problem. He stated that problems of this magnitude must be solved through education, communication and conflict resolution. No longer can one organization such as a National Park solve this kind of problem. He called for negotiation between stakeholders with an interest in preserving the environment. The conference focused on one stakeholder, educators.

Educators bring professional knowledge of students, classrooms and curriculum to ensure the young people who will inherit these problems are provided with information, skills and values. During activities held during the week the participants at the conference discussed ways to involve their students in activities which would provide them with the skills they would need in the future. Skills of analysis, learning co operatively and resolving conflict were inherent in the many outdoor activities provided by more than a dozen presenters invited to speak at the conference.

Sandi Margetts is a free lance educator who has given many workshops throughout the province. She is a sessional lecturer at Brandon University while actively promoting sustainable development nationally.

Dr. Murray Smith is Assistant Professor of science education at Brandon University. During the past three years he has been involved in partnerships providing support in science to classroom teachers.



COURSE OUTLINE

January, 1994

03.455 ENVIRONMENTAL SCIENCE METHODS (3 CR HR)

Prerequisite: registered in or have taken 03.450/03.453

Text: None

Final Exam: None

Assignments: 4 (see below)

COURSE OVERVIEW

This course is meant to provide students with the background knowledge and skills to teach environmental education. Students will be involved in creative problem solving activities which demonstrate how environmental issues may be taught from K-12.

TEXTS

Manitoba Science Curricula

Various resource books which are currently being printed will also be used.

MAJOR OBJECTIVES

After successfully completing this course you should be able to:

- a) provide a rationale for present environmental programs being initiated within Manitoba
- b) describe the philosophy pertaining to science/technology/society and sustainable development.
- c) to engage students in environmental activities at your chosen grade level
- d) to engage students in inquiry methods to study living organisms.
- d) to create learning situations conducive to learning about the environment and current environmental problems.

TOPIC OUTLINE

Erosion

Oil Spills

Clear Cutting

Reclaiming Mine Sites

Recycling

ASSIGNMENTS

- | | | |
|--|-----|---------|
| 1. Write a STS lesson | 20% | Jan. 27 |
| 2. Create an environmental science unit plan | 25% | Feb. 10 |
| 3. Present a lesson | 20% | TBA |
| 4. Create a resource package | 25% | Feb. 24 |
| 5. Participation | 10% | |

All assignments will be assigned a mark from A to F

DESCRIPTION OF ASSIGNMENTS

1. STS Lesson

Choose a grade and a topic from either the science or social studies curriculum K - 12

Write a STS lesson which engages students in creative problem solving. Your lesson should provide positive and negative background information and positions from a science/technology/society perspective. The lesson should focus on environmental and economic considerations.

OR

1A. Frame 1 or 2 questions focusing on a broad environmental concern. In a statement rationalize your questions. Following your statement write 1 or 2 objectives for your following activities. These objectives could state attitudes, social participation and critical thinking outcomes. Your objectives should be outcomes derived from at least two activities under the headings 1) introductory activity, 2) developmental activity and 3) a concluding activity.

2. Environmental Unit Plan

Using the Manitoba Curricula and the headings objective, activity, materials and evaluation create a unit. Your unit should have a minimum of 15 lessons. Student materials and background information should accompany each lesson.

3. Presentation

You will be given 25 minutes to engage the class in an environmental activity. The focus of the lesson should endeavour to make students more cognizant and responsible for the environment. Materials which engage the entire class in your activity must be provided.

4. Resource package

Using 10 resources and the headings title, grade, objective, procedure, evaluation, source and comments collect 25 activities/ideas which would promote environmental education. Particular attention should be given to self guiding student assignments.

5. Participation

Most of the activities presented in class will require group participation. Part of your grade will depend on your contribution your group.

TABLE I

Standard	STS
Surveys major concepts found in standard textbooks	Identifies problems with local interest/impact
Uses labs and activities suggested in textbook and accompanying lab manual	Uses local resources (human and material) to resolve problems
Students passively assimilate information provided by teacher and textbook	Students actively seek information to use
Focuses on information proclaimed important for students to master	Focuses on personal impact, making use of students' own natural curiosity and concerns
Views science as the information in textbooks and teacher lectures	Views science content not as something that merely exists for student mastery because it is recorded in print
Students practice basic process skills - but don't apply them for evaluation purposes	De-emphasizes process skills which can be seen as the glamorized tools of practicing scientists
Pays little attention to career awareness, other than an occasional reference to a scientist (most of whom are dead) and his/her discoveries	Focuses on career awareness, emphasizing careers in science and technology that students might pursue, especially in areas other than scientific research, medicine, and engineering
Students concentrate on problems provided by teachers and text	Students become aware of their responsibilities as citizens as they attempt to resolve issues they have identified
Science occurs only in the science classroom as part of the school's science curriculum	Students learn what role science can play in a given institution and in a specific community
Science is a body of information that students are expected to acquire	Science is an experience students are encouraged to enjoy
Science class focuses on what is previously known	Science class focuses on what the future may be like

DIFFERENT TYPES OF PROBLEMS

	SCIENCE	TECHNOLOGY	SOCIETY
PROBLEM	<u>Why</u> does my coffee cool so quickly?	<u>How</u> can I make a container to keep my coffee hot?	<u>Should</u> we use styrofoam cups or ceramic cups for a meeting?
RESPONSE	Heat energy is transferred by conduction, convection, and radiation.	A styrofoam cup will keep liquids hot for a period of time.	Personal health, the environment, cost & availability must be considered along with science and technology information.
PROBLEMS ARISE FROM	curiosity about events and phenomena in the natural world.	copng with everyday life, practices, and human needs.	different views or perspectives based on different or the same information.
TYPES OF QUESTIONS	What do we know? How do we know?	How can we do it? Will it work?	What alternatives or consequences are there? Which choice is best at this time?
PROBLEM-SOLVING STRATEGY	Scientific Inquiry	Technological Problem Solving	Deliberation Consensus Building
SOLUTION RESULTS IN	knowledge about the events and phenomena in the natural world.	an effective and efficient way to accomplish a task.	a defensible decision in the particular circumstances.
PROBLEM TYPE	Theoretical	Practical	Issues

WHY?

HOW?

SHOULD?

OBJECTIVES: The students will be able to describe zero tillage.

The students will discuss and develop reports on the advantages and drawbacks of zero tillage.

MATERIALS: Informational handout on zero tillage
Character sketches for guest speakers

METHOD: The students will be divided into groups of four (group leader, recorder, reporter and monitor should be established).

Have the students brainstorm for 2 minutes listing the environmental problems farmers face today. Make a composite list on the board. Erosion or drought should appear.

Students will read an informational handout on zero tillage.

In their groups, the students will discuss the advantages and drawbacks of zero tillage. The monitor of the group will draw from a hat to find out what the group's character will be. This dictates the group's position on the topic. The group will prepare a written report which will later be given as an oral report. The reporter will share the report at a mock zero till convention.

The students will be encouraged to do research on their position. Interviewing appropriate people may be beneficial. Students may want to bring or wear items representing their position. (eg. the engineer from John Deere had better be wearing a green hat!) Students will be encouraged to ask questions of each other during the mock convention.

The teacher will decide how long the students will have to research their position by setting a date for the convention.

EVALUATION: The teacher will listen to and observe group discussions.

The teacher may observe the success of cooperative groups. (Did all the members contribute ideas? Were all ideas considered and discussed? etc.)

The written reports may be collected for evaluation.

- Did the group state its position?
- Did the group predict possible problems and offer solutions?
- Are their arguments valid?
- Has the group suggested ways other groups may help with their position?

ZERO TILLAGE

zero tillage (ze'ro til'ij) ZERO TILL or NO-TILL FARMING is an economically viable, erosion proof crop production system in which the crop is planted directly into the previous crop's stubble with minimum soil disturbance. Cultural controls such as crop competition and rotations as well as responsible use of herbicides are used to replace tillage. Under this system conservation of soil moisture is a special benefit.

Zero tillage crop production involves the planting of a crop into undisturbed stubble, with minimal soil disturbance, and chemical weed control. Any system causing more than 25 per cent soil disturbance is not considered zero tillage.

Advantages...

With any crop, the most limiting factor is usually water. Nutrients can be added and weeds, insects or diseases can be controlled but soil moisture is the key ingredient to start the crop and keep it growing. Zero till can have a positive effect upon the amount of moisture in the soil for germination and early crop growth.

Research has shown that soil moisture was increased by leaving stubble standing on a field. In years that are dry going into winter, this could really help next year's crop yields. Stubble full to the top with snow is a guaranteed source of readily available soil moisture for spring seeding. Stubble 8" - 10' high full of snow accounted for 1" - 2" of soil available water. Every extra inch of water can mean as much as five extra bushels of wheat.

Stubble not only traps snow but contributes in other ways to moisture retention:

- Standing stubble reduces the amount of water which runs off a field. Not only does this reduce erosion, but it also holds more water on their field to soak into the soil.
- Once the water has soaked into the soil, the mulch at the surface in zero till fields reduce water loss from evaporation.
- When tillage is not used, soil moisture loss is reduced. Cultivation dries the soil down to the depth of tillage.

It is easy to see that in a dry year a zero till farmer can expect better returns. On the average, yields are the same or higher with no-till than with conventional farming.

Zero tillage reduces the amount of time and labour required to get the crop in the ground by reducing the number of passes across the field. This means less time pressure during the busy seeding season. On the average, conventional methods will include about a half dozen passes over a field. Zero tillage uses only one or two. Some zero till farmers have boasted that their fuel bills were cut in half when they switched to zero till. Costs are reduced and there is a reduction in the use of one of our non-renewable resources. reduced operating hours will increase the life of farm equipment.

The major advantage of zero tillage involves erosion control. Soil erosion by wind and water is caused by lack of protection on the soil surface. Erosion negatively effects the long term value of a piece of land. Erosion can also produce problems presently for the farmer. Farmers may need to use higher fertilization rates and in some cases fields may have to be reseeded. One must also consider the costs of clearing soil from roadsides and waterways. Environmentalists will remind you of the impact of fertilizer and herbicides eroded off of fields. Zero tillage leaves stubble standing and spreads crop residue back on the field to reduce soil erosion.

The advantages of zero tillage are obvious: moisture conservation, improved yields, reduced labour, less fuel used, equipment savings and erosion control.

... and Drawbacks

You might wonder why all farmers have not accepted the zero tillage methods. There are a number of drawbacks to zero till that have convinced farmers to continue using conventional methods.

In zero till, herbicides replace tillage. Conventional farmers will use tillage as a means of weed control. Money spent on herbicides in the zero till program will be significantly higher. Zero tillage farmers must have a greater knowledge of weeds. They must be familiar with all varieties as well as the stages of their growth. It is vital to know how to herbicides effectively (ie. timely application, rates, etc.)

Zero tillage will effect the temperature of soils. Fields that are tilled in the conventional methods will be darker in color, therefore absorbing more heat--heat that is required for germination. Zero till fields retain less heat and so late spring frost may damage crop seedlings. Zero till farmers must use care in seed placement, It is important that the seed be close enough to the surface to receive and awed. The mulch cover on the zero till field has an insulating effect which keeps ground heat from radiating up at night to protect the crop from frost.

In a wet year, excess moisture could delay seeding. Later planting means a later harvest. In this case, extra moisture trapped by the stubble is an acute disadvantage.

Zero tillage is not suited to all soil types. Compaction due to lack of tillage may lead to hardpan (compacted clayey layer in soil that is impenetrable by roots). Land that is rocky would not allow zero tillage to be utilized. The use of conventional rock picking equipment would cause too much soil disturbance.

Proper spreading of straw and chaff takes knowledge and experience. Zero till farmers must be precise when swathing allowing for a proper stubble height. If the stubble is too high, the farmer may experience problems with seeding equipment. If the stubble is too low there is a loss of snow holding capability. Fields with standing stubble are more prone to disease and insects. Zero till farmers must become experts in crop rotation.

...Environmental concerns

Zero tillage relies heavily on the use of herbicides, pesticides, and fertilizers for weed control and crop nutrients. A quick glance at the material safety data sheet will demonstrate that the chemicals used in zero tillage farming are deadly toxicants. These toxicants are applied directly to the environment and therefore have an effect on the environment.

The increased use of chemicals increases contamination of fresh water. According to the National Research Council Nation Academy in Washington, up to \$16 billion worth of water is polluted by farm chemicals in the USA each year. In Canada it has been calculated that for each pound of phosphate or nitrates fertilizer that enters fresh water through run off or leaching, 700 pounds of algae is produced. The increased production of algae greatly alters life in fresh water. (Environment Canada 1976)

Farm chemicals also contribute to major environmental concerns such as global warming. Fertilizers such as nitrogen have emissions that are 250 times as efficient in causing the green house effect as carbon dioxide.

The costs of expensive government testing and the regulating and monitoring of chemical residues in the food supply; And the cost of disposal and clean up of hazardous waste generated by the manufacturing of farm chemicals are some of the hidden costs of chemical use that is relied upon by zero tillage farming. (Synergy, Fall. 1990:8.)

Guest Speaker #1:

You run the local bulk fuel and fertilizer dealership. You have received a letter inviting you to be a guest speaker at a convention about zero tillage. Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #2:

You run a mixed grain farm of about 900 acres. You are currently using zero tillage and have been since 1987. You have been asked to appear at a convention on zero till. You will be speaking to fellow farmers. Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #3:

You are an engineer for the company of John Deere. You are currently creating equipment designs for the zero tillage user. You have been invited to talk about the changes you intend at a zero tillage convention. Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #4:

You drive a delivery truck for McGavin's bread. At your first stop you take time to read your mail. You receive a letter of invitation to speak at a zero tillage convention. As you mentally plan your speech, you are disgusted as a gust of wind blows dust across your dash. Prepare a written report that can be presented at the convention. Consider

Guest speakers attending:

Farmer (using zero till)
Bulk fuel and fertilizer rep.
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Farmer (not using zero till)
Consumer of organic foods

Guest speakers attending

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
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Consumer of only organically
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Farmer (not using zero till)

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest Speaker #5:

You have agreed to speak at a convention on zero tillage. You are sending a letter of acceptance back to the organizers. You sign your name to the bottom of the letter--
Ray Redfern

Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #6:

You are a highly respected environmentalist. You have been asked to speak at a convention on zero tillage. Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #7:

You are the district agricultural representative. You have been invited to speak at a zero tillage convention. What will you tell farmers? Prepare a written report that can be presented at the convention. Consider the list of other guest speakers that will be at the convention as you prepare.

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
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Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
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Agricultural Representative
President of the Manitoba-
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Farmer (not using zero till)

Guest Speaker #8:

You are mailing a letter of acceptance to the organizers of a zero tillage convention. You will be a guest speaker. The letterhead on your paper reads: Manitoba-North Dakota Zero Tillage Farmer's Association, President. Prepare a report that can be presented at the convention. Consider the list of other guest speakers that will be at the convention when preparing.

Guest Speaker #9:

You are someone who has chosen a healthy lifestyle. You deal with stress effectively and you exercise regularly. You will only consume foods that have been organically grown. You have been asked to be a guest speaker at a zero tillage convention. Prepare a report that can be presented at the convention. Consider the list of other guest speakers that will be at the convention when preparing.

Guest Speaker #10:

You run a grain farm in Southern Manitoba. You have received a letter of invitation to be a guest speaker at a zero tillage convention. They want your opinion--well they'll get it! Your grandfather was a successful farmer without zero till and so was your father. You are determined to follow in their footsteps. Prepare a report that can be presented at the convention. Consider the list of other guest speakers that will be at the convention when

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
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Farmer (not using zero till)

Guest speakers attending:

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ENVIRONMENTAL SCIENCE METHODS
Classroom Presentation

February 1994
Faculty of Education - Brandon University

SUBJECT: Social Studies

LESSON TOPIC: "Urban Expansion"

OBJECTIVE:

Students will be able to discuss and debate a number of important issues pertaining to urban expansion through a role play activity.

MATERIALS USED:

- role play information sheets.
- a map of the imaginary city and proposed expansion into agricultural lands.. (option)

- PROCEDURE:**
- (1) The role playing activity will be introduced to the students.
 - (2) The students will be divided into five groups.
 - (3) Each group will be given an information sheet that informs the students as to role they will be playing. Some time should also be given to allow the students groups to prepare their statements.
 - (4) Debate and discussion will take place with the final decision to made by the teacher.

EVALUATION:

The students will be evaluated according to how well they discuss, debate, and participate in the role play activity. The students will also be evaluated as to how efficiently and effectively they work in their groups. If further evaluation is required then the students could answer two questions in paragraph form (minimum ten sentences):

- (1) *Why should we plan urban expansion carefully?
What sorts of environmental issues should we address when expanding and building cities or towns?*
- (2) *Why is it important that a number of people and different groups help make major decisions that effect agriculture our environment, and urban expansion and development?*

SOURCE:

Environmental Science Methods Class Presentation
- created and presented by David Kalinchuk.

COMMENTS:

URBAN EXPANSION ROLE PLAY

The City of Enterpriseberg - Urban Expansion

THE SENARIO:

The City of Enterpriseberg has been steadily growing over the past year. Many new families are moving to the city and finding good paying jobs. These same families can now afford to buy nice new homes in a more progressive and modern area of the city. Developers want to buy farmland and then build houses, a shopping mall, swimming pools, and a new business district just north of the City of Enterpriseberg.

There is beautiful farmland located just north of Enterpriseberg with some of the best quality soil in the country. There are also a number of natural, untouched ponds located in this area where a diverse variety of fish live and many migratory birds come to nest during the spring and summer. The developers want to use the fertile soils to landscape new homes and parks. They want to use the water from the ponds in factories, sewage plants, boulevard fountains, and swimming pools.

There are five groups that wish to express their views and discuss them to the point where a fair decision will be made in regards to the developers' urban expansion proposal:

GROUP ONE: The City Developers

The city developers want to expand and build a brand new, totally modern suburb. The profit potential for the developers is worth millions of dollars. However, the City of Enterpriseberg will also benefit. Millions of dollars to be generated in taxes and new business opportunities.

GROUP TWO: The Farmers

The farmers do not want to see the urban expansion proposal take place and consequently, do not want to sell their land. Many of the farm families have been in the area for over two hundred years. Several have argued that their crops will be necessary to feed the growing population of the City.

GROUP THREE: The Naturalists

The naturalists do not want to see the untouched ponds destroyed by the construction and then polluted by the factories and sewage plants. There are many species of fish, birds, and other wildlife that they feel should be protected. Rare and fragile plant and animal species may be located in the untouched pond areas. They feel that these rare species should be carefully studied. The habitat must remain natural and untouched.

GROUP FOUR: Business People

The business people want to see the area developed. The new prosperity and jobs that will be created will definitely help the City of Enterpriseberg to become the top business centre in the country. Many business people will become quite wealthy if the urban expansion is allowed to proceed.

GROUP FIVE: Unemployed City Workers

In past years, technology replaced a number of city workers, putting them out of work. These unemployed city workers (which include maintenance worker, engineers, office staff, parks crews, etc.) have all finished retraining and are anxious to find new jobs in the proposed new suburb. The increased tax revenue from the City will provide new services which will inturn, create more jobs for the unemployed civic workers.

THE TEACHER: The Government

The teacher will make a final decision after hearing each group's presentation and supporting arguments. All debates and questions will be monitored and controlled by the teacher as to ease the procedures and help come to a clear and fair conclusion.

*Anton, M. D. et al. (1993) Wild life and
Conservation Exercises, Dept. of Biology
York University.*

33

14. FOOD: THE EFFECT OF SUPPLY AND DEMAND

High school

Concepts:
carrying capacity
technology
cost
food types
history
supply

Timing: any time during the school year.

Introduction:

Everyone has to eat and there is lots of evidence that what we eat affects our physical and mental health. Technological innovations in agriculture have made it possible for humans to produce lots of food in places where little was available before. Transportation technology allows us to eat fresh food that comes from distant places.

Human populations often reach local levels well beyond the ability of the environment to sustain them (the carrying capacity). Could the people who live in Toronto, for example, survive on the food that could be grown within the city limits? Humans use technology to survive in places that could not otherwise feed us. Today, however, technology also provides foods that were luxuries 50 or even 10 years ago eg. tropical fruit, and fresh produce in winter.

These realities profoundly affect the environment in which we live on local, regional, continental and global scales. By examining what we eat, where the food comes from and the problems associated with our consuming it, students can see how the simple business of eating becomes complex both in terms of technology and conservation.

Objectives for students: The purpose of this exercise is to introduce students to some of the problems associated with feeding people. It will provide students with information about what they should eat and where their food comes from. The exercise can be extended to the problems associated with treating waste and fertilizing growing crops. This project can be done by individual students or by groups of students. In classes where the students come from different backgrounds, there should be interesting diversity in the kinds of food they eat. This, in turn, can be related to different designs for a balanced diet. In classes with students of different backgrounds, the historical perspective of food also will be interesting.

Vocabulary: Ecologists refer to carrying capacity to describe how an environment or habitat provides the necessities of life for the organisms that live there. Different food types, such as carbohydrates, and proteins will become part of the students' vocabulary in this project.

Materials: Students will need calculators to prepare compilations

of information about unit pricing. They will need paper and writing utensils to record information.

Activities:

1. Prepare a list of the foods considered essential for a healthy diet. Construct a table to present this information, illustrating not only food types but also specific examples of foods in these categories.
2. Visit two local food stores to find out where these foods come from and how much they cost. Visit a farmers' market. What produce is available there? How do the costs compare to those in the supermarket? Is there more local produce in the farmers' market than in the supermarket? Does this depend on the season eg. strawberries in December.
3. Now design a table to record the information, what is required, what is available, its cost and where it originates. You may have to revisit some stores to fill in blanks in your data.
4. What proportion of the essential foods come from within 50 km of where you live? From within your province? From within Canada? Are there essential foods that come from outside Canada that could be replaced with Canadian-grown produce? Are there locally (within 50 km) grown foods that could supply the essential requirements? Does this change with the time of year?
5. What does your family eat in a week? List the kinds and amounts of food. How much of it comes from Canada?
6. If you have a home garden, how much food does it produce? How does the cost of this food compare to the prices in the grocery stores or supermarkets? How much of your weekly food requirements are met by your garden?

Expansions:

1. How have our views of food changed in the last generation? Ask your parents what they ate to see if it differs from what you eat today.
2. Two hundred years ago, what were the foods of the native people that lived in your part of Canada? The foods of the settlers? You may be able to collect some of this information by visiting living museums such as Upper Canada Village or Pioneer Village.
3. Visit a farm to find out what food is available locally. Why do farmers grow the crops they do?
4. What kinds of wastes come from food and how are food wastes treated? Note the different kinds of waste, from those associated with growing the food, to those generated by marketing and preparing it. Then there are the many problems of dealing with sewage.
5. How does the food waste situation influence the problems of fertilizing crops? Consider composting.
6. Look at composting in your neighbourhood.
7. Visit fall fairs to see agricultural innovations from technology to animal and plant breeding.
8. What impact could biotechnology have on the business of feeding people?

Henton, M. B. et al. (1993) Wildlife and Conservation Exercises, Dept. of Biology, York University

15. IVORY TRADE: TWO SIDES TO EVERY STORY

High school

Concepts:

culling
wildlife management
ecotourism
carrying capacity

Timing: any time of year.

Introduction:

For some large game animals, such as African elephants, changes in habitat due to man's exploitation, combined with increased pressure from poaching has severely depleted their numbers in the wild. In an attempt to save the African elephant, IUCN (International Union for the Conservation of Nature) has banned the export or international sale of ivory. Advocates of this position believe an outright ban on ivory is the only option available to reverse the decline of the African elephant population. Other conservation biologists contend that limited sales of ivory and controlled hunting for this species may represent a viable alternative to an outright ban. They believe that if countries are allowed to gain a profit from the controlled hunting of African elephants and the sale of its ivory they may afford the species better protection from poaching in the future. In Canada and the United States, money generated from the sale of hunting permits is used to maintain or increase wildlife populations, maintain suitable habitat areas and fund the operation of agencies responsible for protecting wildlife.

Objectives:

In this activity students will examine the issues surrounding how best to protect the remaining herds of African elephants. They will research the politics and economics of the ivory trade, how poaching activities are carried out and come up with solutions to reduce poaching and increase protection for wildlife.

Vocabulary: culling, sustainable populations, carrying capacity, ecotourism, habitat, poaching.

Materials: library and imagination.

Activities:

1. **Library Look:** Divide the class into several groups and assign them to investigate one aspect surrounding the plight of the African elephant. These topics should include the population biology of the African elephant, positions of various groups advocating different approaches to protection, countries that purchase ivory, who carries out the poaching and how is it conducted, which animals in the herd are targeted, the economics of poaching and the economics of ecotourism. Once each group has researched their topic have the groups integrate their information on the board so the students can see the complexity of the problem and the potential solutions.

2. **Debating the issue:** Divide the class into various teams representing players in the elephant game. Each group can represent one of the following groups involved in the elephant business: park wardens, government officials in wildlife and tourism, European sportsmen, poachers, traders in ivory from the Far East, environmentalist, farms bordering the park and locals employed as

guides. Each side must prepare their own point of view and then all groups involved will meet in a roundtable discussion to work out a solution to the elephant crisis. This should include the drafting and signing of a document by all parties and a method of enforcement. Be sure to discuss the spiral effect of herbivory in a restricted area.

3. Designing a plan of action: Your class has been given the task of designing a plan to introduce a controlled elephant hunting program for a national park in Tanzania. Poaching over the past 10 years has reduced the elephant population by half, to 175 individuals. Biologists have calculated that the park is large enough to support a herd of over 325 individuals. The current population consists of 45 mature females, 35 bulls, 60 juvenile males and females and 35 calves. With this information design your elephant management plan making sure to include the following issues:

- a. Who will oversee the elephant management plan?
- b. How does the age structure and breeding cycle of the remaining elephants effect your management plan?
- c. How many and which elephants will be targeted for hunting?
- d. How will revenue generated by the regulated hunting program be used?
- e. How long do you estimate it will take to achieve a population of 325 elephants?
- f. How will the meat be used from each kill?
- g. What will become of the ivory from animals that die of natural causes?
- h. What role and input will local people living outside the park boundary have?
- i. What can be done to reduce the level of poaching in the park?
- j. How will the success of the program be determined?

Expansions:

1. Look at poaching vs. controlled hunting for species such as caribou, seals, whales, walruses and water fowl. Consider Ducks Unlimited. Invite a speaker from the Canadian Wildlife Service.
2. Look at the issue of ecotourism-does it represent a viable economic alternative? Investigate how much money your province brings in from tourism.
3. Research on DNA fingerprinting for the origin of the ivory.

References:

- Bethell, T. 1990. The giant rat of Kenya. *The American Spectator*, 23: 9-11.
- Caameron, S. 1993. *Natural enemies*. Turner Publishing Inc., Atlanta.
- Chadwick, D.H. 1991. Elephants: out of time, out of space. *National Geographic*. 139:2-38.
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- Douglas-Hamilton, I. & Douglas-Hamilton, O. 1992. *Battle for the Elephants*. Doubleday Press: London.
- Hanks, J. 1979. *A struggle for survival*. Country Life Books, London.
- Morell, V. 1990. Running for their lives. *International Wildlife*, 20:4-13.
- Perlez, J. 1990. Can he save the elephants? *NY Times Magazine*, 28-33.

TOPIC: Steroids in Cattle

GRADE: 5/6

OBJECTIVES:

Through reading an article on steroids in cattle, the students should become aware of the effect that the meat from the cattle has on humans.

The students should use critical thinking to discuss ways to solve this problem for both farmers and consumers.

The students should become observant as consumers that much of the meat we eat contains steroids.

MATERIALS:

1. Handout on the topic "Steroids in Cattle"
2. Worksheet to follow the handout

METHOD:

Discuss the various types of meat we eat. ie. beef, pork, chicken, turkey, etc.

Have students read the handout, "Steroids in Cattle", individually.

Divide the students into groups of three to discuss the article and answer the questions on the worksheet.

Discuss their answers to the worksheet as a class.

Have students voice any concerns or questions that may have arisen upon reading the article and discussing it with their group.

EVALUATION:

Observe students' reaction and discussion.

Assess students' answers to the worksheet.

Are they taking into consideration both the farmer and the consumer?

Do they show an understanding that science and its technology does affect our society?

STEROIDS IN CATTLE

Here is a chance for you to analyze a difficult situation that beef farmers face in making a living from their cattle.

Background Information

The price of beef rises and falls every year. On the average, a cow should be at least 1200-1300lbs.(545-590kg) before it is sold so that the farmer will make money off of the animal. Therefore, feeding a whole herd of cattle so that they are big enough to be sold would take a lot of money for the farmer. On top of feed, there are a number of other expenses the farmer faces in raising a herd of cattle:

1. Transporting the herd from pasture to shelter in fall, and vice versa in spring.
2. Cost of medication when vaccinating the herd from illnesses.
3. Cost of a veterinarian when a cow is sick.
4. Pasture fees, if the farmer has no land for the cattle to graze on.
5. Gas to haul water to the herd, if it has been a dry year. (Especially the past few years.)
6. Gas to travel and inspect the herd.
7. Transporting the cow to be sold.

With all of the expenses that a beef producer faces, it becomes very difficult to make ends meet when it comes time to sell the animal.

Science and Technology's New Solution

Technology has come up with a scientific way to solve the farmer's financial problem of raising beef. Steroids are put into the ears of all of the animals that will be sold as beef. These steroids are put into the cow's ear when it is still very young. The steroids increase the size of the cow and also increase the rate at which the cow gets bigger. Therefore, the weight of the cow goes up faster and it is cheaper and takes less time for the farmer to feed the cow. Within no time the cow has reached its ideal weight and is ready to be sold.

The Ill-Effect of Steroids in Cattle

Steroids increase the rate at which the cow gets bigger, much faster than normal. Steroids are hormones. When these hormones are inserted into the cow, they must have some effect on the body chemistry of the animal. Science has found that these steroids affect the cow's reproductive system. If the steroids are injected into the entire herd, there will be little chance of the cows to produce offspring in the following year.

It has been found that the bulls, the males that breed the herd, may become sterile with the steroid in their bodies. The cows, the females which bear the calves, may become infertile, may have a miscarriage if they do become pregnant, or the calf may die immediately after it is born. For these reasons, farmers will only put the steroid into a cow that will be used only for meat, not reproduction of the herd. But what happens to the meat of the cow that will be eaten?

Steroids in the Meat We Eat

Steroids change the body chemistry of the cow. A certain percentage of the steroid gets into the meat. What happens to us when we eat the meat of the cow? If you eat enough of the meat, it would be almost as if you were taking the steroid itself. The problems that occur with the cattle could happen to you. Not only does the steroid alter the reproductive system, but it also changes your physical features. Women develop more facial and body hair; men have been known to develop breasts. The steroid is not lost in the cow, it is passed on to the consumer.

Many farmers know the effects of steroids in cattle and choose not to use them. Others choose to use the steroids on the cattle they sell, but keep the steroid out of the cow that they and their family will eat. Raising cattle is a difficult business. It comes down to a moral question for the farmer: Do I risk the health of my cattle and the consumers so that I will be able to make ends meet financially?

Steroids are not just used in beef. They are used in all types of meat: pork, chicken, turkey, and so on. Remember...

STEROIDS IN CATTLE
WORKSHEET

1. What would you do if you were a beef producer facing hard times? Why?
2. As a consumer, what should you do about steroids in the meat we eat?
3. How can science, technology, or society help the farmer to make ends meet, without the use of steroids?
4. Discuss your point of view upon reading this article.
5. What did you, yourself, learn from the article?

DIPLOMA PROGRAM PROPOSAL

RATIONALE FOR OUTDOOR ENVIRONMENTAL EDUCATION

The main concept being emphasized in this Diploma Program proposal is to challenge teachers to look at the centre of an Outdoor Environmental Education continuum. At one end there are the outdoor pursuits (namely, canoeing, rock climbing, skiing, etc.) and at the other end, there are environmental issues (concerns such as pollution, deforestation and recycling, etc.) in relation to the natural world. However, when looking at the focal point, which brings together both ends of the continuum into a holistic experience for the learning, it is necessary to focus on the context for the activity in its broadest sense. In other words, where is this activity experienced, an outdoor environment.

A long standing definition of Outdoor Education is as follows:

"Outdoor Education is education in, about and for the outdoors" (Donaldson & Donaldson, 1958).

"IN" describes the setting or context where first-hand learning can be experienced, and in this case, it is an outdoor natural environment.

"ABOUT" describes the activity, curricula area or cultural aspect through which the interrelationship of humans and nature is constantly reinforced.

"FOR" describes the purpose of the activity that activates the cognitive psychomotor and affective domains and which also enhances understanding and stewardship of all natural resources.

The outdoor environment is the vital catalyst for integration in so many ways. There is no separation in the outdoors, nature is networking and human beings are integral part of the natural world. Likewise, curriculum areas that are taught in an outdoor environment are integrative and learning becomes a holistic experience. This concept of integration is certainly being reinforced in the Year 2000 document.

There is no one area of study that can claim priority of the outdoor environment. Each views the outdoors in all its diversity, from varying perspectives. Thus, there are several levels/layers of understanding about the environment:

1. Human beings as an integral part of the environment.
2. Relationships of curriculum areas and the environment in educational institutions.
3. National/international organizations use the environment from their educational perspective: Environmental Education, Outdoor Education, Recreation Education, Adventure Education, Conservation Education to name a few.

Awareness of environmental issues within society in general has been substantially

raised over the past decade, both locally and on a national/international scale, to "Earth Summit" in June, 1992. The general public are more opinionated and involved than ever before. However, this knowledge has to have some substantive base to support true understanding. Hence, future citizens of 2000 A.D. need to know and understand the many dimensions of outdoor environmental education. Students have an inherent right to be provided an opportunity to learn in school, initially, and then in post secondary institutions about Outdoor Environmental Education in a way that meets their needs, experience level and maturity. It follows that the students should be able to look to the university to provide leadership in this important aspect of education, which is sadly lacking on the UBC campus in any tangible way.

It is, therefore, proposed that an Outdoor Environmental Education diploma program be introduced in September 1994 by the Faculty of Education. There is popular support for such a program. The results of a recent study that surveyed Outdoor Educators, regardless of department affiliation in the secondary schools of B.C., appear to be a measure of the enthusiasm for this diverse yet integrative area of knowledge. Outdoor environmental education is being taught not only at the elementary level but, in some measure, in secondary schools throughout the province. However, there is a recognizable need to provide teachers with additional skills and educational opportunities to do more and at a higher level, to enhance their instructional capabilities in teaching in an outdoor environment.

Returning teachers taking summer session courses on campus (e.g., Education 380) have expressed interest in continuing to study in the area of Outdoor Environmental Education, if such a program was offered on this campus.

The proposed program will be an interdisciplinary integrated program of studies, which will bring together a wide range of courses from different departments across campus. The majority will be drawn from the Faculty of Education; however, course offerings will come from other faculties. The common theme/concept is the outdoor environment, used as an integral part of experiencing each course. It was on this basis that the courses selected themselves, as it were, for the program. Thus, the dimensions of the proposed program are broad, from NTTEP to children literature, from Landscape Architecture to Adapted Physical Education. This accompany the core courses in curriculum areas such as Outdoor Environmental Science, Forestry Education and Outdoor Education.

British Columbia has one of the finest outdoor education classrooms in Canada. The teachers in B.C. need to make greater use of these natural resources, to fulfill the vision of the Year 2000 document and to create meaningful outdoor learning opportunities for the students of this province.

November, 1993

Anne Anthony, Ph.D.
School of P.E. and Recreation

OUTDOOR ENVIRONMENTAL EDUCATION DIPLOMA PROGRAM

This program is designed for teachers who have a specific interest in a natural outdoor environment and recognize that here is a valid teaching context which provides integrated learning experiences for students of all ages in a wide range of curricula areas.

Core Courses:

EDUC 380 Teaching Adventure Activities in the Outdoors (3)

SCED 380 Environmental Science Education (3)

SCED 411 Forestry Education (3)

SCED 413 Cultural Conceptions of the Natural World:
Implications for Science Education (3)

(12)

Elective Courses: Select 4 out of 6:

ENED 340 Using Canadian Children's Literature in the Classroom (3)

EDUC 326 Elementary School Physical Education: Curriculum (3)

HKIN 367 Leisure and Disabled Persons (3)

GEOG 315 Environmental Inventory and Classification (3)

LARC 420 Theories in Experience and Place (3)

FRST 290 Recreation Resource Administration and Management (3)

(12)

Approved Courses in: Faculties of Art, Education, Science, Forestry and
Architecture

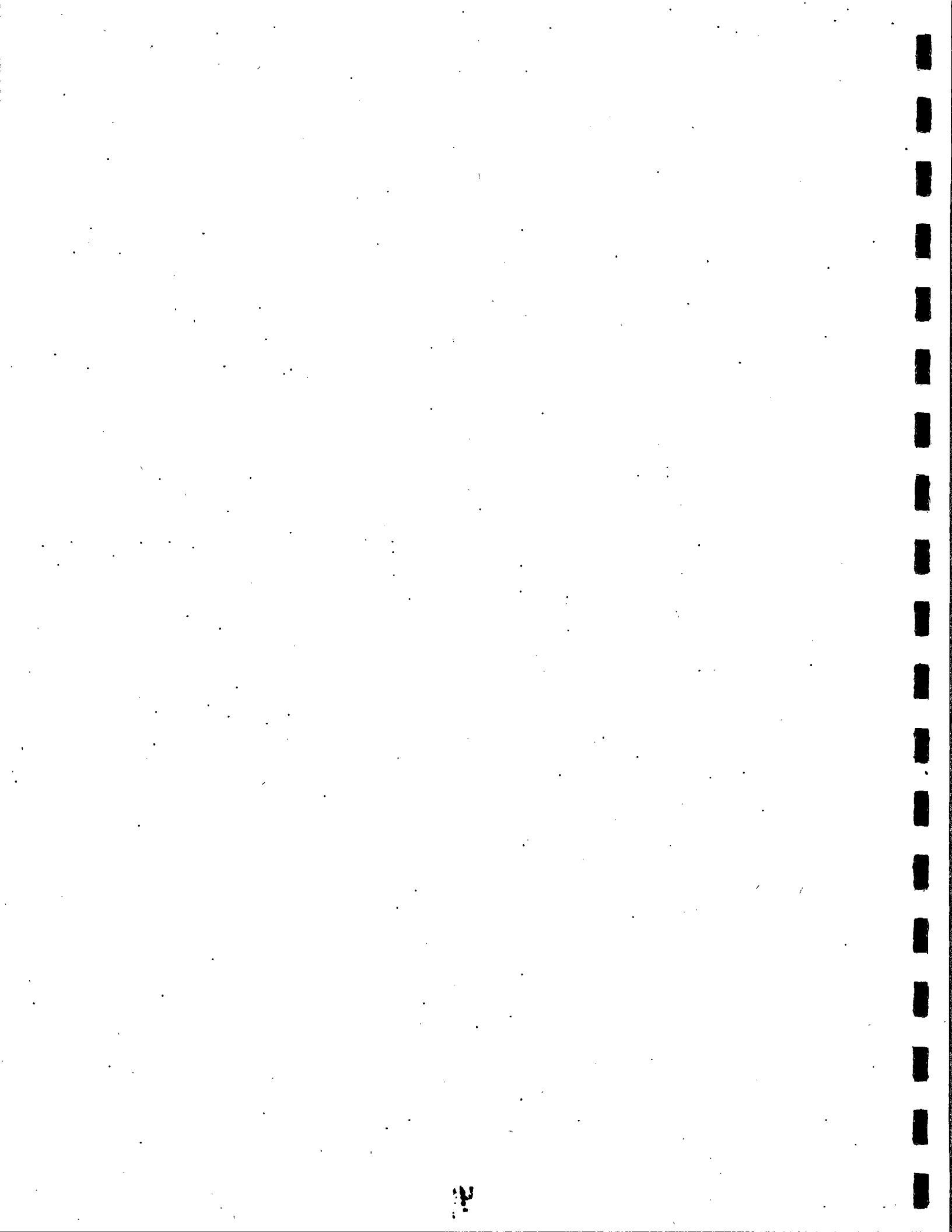
Please note: SSED 4XX Global Education: Historical and Geographic
Aspects (3) is a course that will become part of the
program at a later date.

(6)

Departmental Advisor:

Dr. Anne Anthony

Telephone: 822-4671
Messages: 822-2165
Office: Scarfe 2127



Faculty of Education, U.B.C.

SUMMER SESSION 1994 (TERM 2)

Education 380 - Option 1: Research/Teaching Paper (25)

Your evaluation has been based on the following criteria which were taken from the assignment sheet. For further clarification/information, do come to my office, Scarfe 2127.

A. Intent:

To design a program (unit/experience) that utilizes an integrative approach and reinforce the themes of adventure and environmental awareness through physical activity in the outdoors.

B. Presentation: (3) []

The format of the paper to include the following:

- (1) Typewritten
- (2) Minimum of 10 pages
- (3) Title page
- (4) Table of Contents
- (5) Bibliography
- (6) Appendix

C. Format:

- (1) Introduction (3) []
Overview of paper providing reasons, context, and support for your topic idea.
- (2) Literature Review (8) []
Research and review four (4) articles and compile a bibliography of both books and articles.
- (3) Program Experience (8) []
Design a four lesson unit outline for an integrated learning experience outdoors. Provide appropriate methodology/logistics to support your ideas for each experience.
- (4) Summary (3) []
Share personal reflections on this paper, and in relation to your understanding of Outdoor/Environmental Education.

Please attach this sheet to your paper to facilitate marking. Thanks.

University of British Columbia
Faculty of Education

SUMMER SESSION 1994 (Term 2)

1. Course: Education 380 (3 credits)
2. Title: Teaching Adventure Activities in the Outdoors
3. Description: An interdisciplinary focus will be used in methodology and program planning for teaching adventure activities in an outdoor environment.
4. Instructor: Dr. Anne Anthony, Scarfe 2127, Tel. 822-4671 (O), 879-5109 (H).
5. Dates, time and location: July 4 to July 22, 1994
8:00 am - 10:30 am
Scarfe 1003
6. Text: None. Journal articles are read as prescribed reference/resource material.
7. Rationale: Physical Education (with other curriculum areas) can provide opportunities for young people to experience adventure-type activities in outdoor settings. The quality of these learning experiences are the result of the teacher's knowledge, understanding of children and style of leadership that will be reflected in the type of program offered.
8. Objectives:
 - to present methodologies for outdoor teaching
 - to develop an interdisciplinary program of activities
 - to stimulate environmental awareness through experiential learning in the outdoor classroom
 - to experience a variety of integrative activities
9. Format: Course content will be divided up into mini-lectures, seminars, small group discussions and plenary sessions, practical outdoor experiences and in-class presentations.
10. Content: see Tentative Schedule (separate sheet)
11. Field Trip: see Information sheet (separate sheet)
12. Assignments: see Project Sheet (separate sheet)
13. Evaluation:

In-class presentation or major paper	25 marks
Overnight field trip	25 marks
Journal/Reflection papers	15 marks
Article review	5 marks
Resource file	5 marks
Final essay/in class exam (1 hour)	15 marks
Participation	10 marks
14. Course Fee: There will be an additional cost for handout materials and field trips.

University of British Columbia
Faculty of Education

SUMMER SESSION 1994 (TERM 1)

EDUCATION 380 - TENTATIVE SCHEDULE

WEEK 1 THEME: NAVIGATION

1. July 4
 - Introduction
 - Review Course Outline/Objective and Logistics
 - Way-finding Experience - Campus
2. July 5
 - Play/Adventure Experiences and story telling
 - Outdoor Environmental Education: Definitions/ Philosophy
3. *July 6
 - Environmental Experience - UEL/University Hill Secondary
4. July 7
 - Leadership/Styles of Teaching
 - Safety/Legal Liability
5. *July 8
 - Score 'O' Event - Queen Elizabeth Park

WEEK 2 THEME: "ADVENTURE"

6. July 11
 - Environmental Awareness/Concerns
 - Interpretation of Nature
7. *July 12
 - Challenge/Cooperative Activities - UEL
8. July 13
 - Adventure Education
 - Risk - Outdoor Pursuits
9. July 14
 - Trip Organization
10. * July 15/16
 - Overnight camping - Newcastle Island (see separate Sheet)

WEEK 3 THEME: "INTEGRATION"

11. July 18
 - Field Trip Review
 - *Program Planning*
12. *July 19
 - Bicycle Rodeo - Campus/UEL ~~integrated experiences~~
First Nations House of Learning, UBC.
13. July 20
 - Basic Wilderness Skills
 - Survival/Hypothermia
14. July 21
 - Curriculum Integration
 - Integrated Outdoor Programs
15. July 22
 - SCET Evaluation
 - Final Essay

*Field Trip



EDUCATION 8Y32 (1993-4)

Primary/Junior Social & Environmental Studies

Instructor: Sharon Abbey Course Location: Room 206

Time: Tues. (St. Cath.) 8:30-10:30; 10:30-12:30; or 12:30-2:30
Thur. (Dundas) 10:45-12:45

Office: PE 259 (Located in the Physical Education Building - exit by
doors beside the Student Lounge)
Dundas - TBA

Office Hours: Tues. (St. Cath.) 1:00 - 3:00 p.m.
Thur. (Dundas) 10:00 - 10:45 a.m. or after 3:00 p.m.
OR BY APPOINTMENT

Phone: St. Cath. office 688-5550 Ext. 3349; Dundas 628-5050; Home 984-5162

COURSE TEXTS AVAILABLE AT BROCK'S BOOK STORE

(Note: these books are recommended only)

Esler, W. & Esler, W. (1993). *Teaching elementary science, sixth edition.*
California: Wadsworth Publishers.

Frederick, A., Meinback, A., & Rothlein, L. (1993). *Thematic units: An
integrated approach to teaching science and social studies.* New York:
Harper Collins.

Frederick, A. & Cheesebrough, D. (1993). *Science for all children: Elementary
school methods.* New York: Harper Collins. (*Good sample units).

Kirman, J. (1991). *Elementary social studies.* Scarborough: Prentice-Hall. (*
Canadian perspective)

Schwartz, S. & Pollishuke, M. (1990). *Creating the child-centred classroom.*
Toronto: Irwin Publishers.

Sunal C. & Haas, M. (1993). *Social studies and the elementary/middle school
student.* Toronto: Harcourt Brace Jovanovich (* Excellent planning
model).

Wasserman, S. & Ivany, G. (1988). *Teaching elementary science: Who's afraid
of spiders?* N.Y.: Harper & Row, 1988. (* Play/Inquiry focus I will refer to
often).

EDUCATION 8Y32

Primary/Junior Social & Environmental Studies 1993/4
Instructor: Sharon Abbey**Rationale:**

This course consists of ten sessions (two hours each). You are expected to attend all sessions or notify the instructor if you are unable to attend. The intention of this course is to help the beginning teacher become more aware of the interrelationships in our environment both within and beyond the self as well as to explore methodologies and outcomes for applying these findings related to the new Ministry of Education "Common Curriculum" (emphasizing sections "Self and Society" and "Mathematics, Science, and Technology" for grades 1-6). We will discuss the creation of hands-on learning opportunities that focus on integration, cooperative learning, transactional participation, outdoor acclimatization, play as a learning mode, exploration and reflective inquiry. We will also examine current social and ecological issues, media influences and holistic perspectives.

Our central questions will remain: *What is the role of an effective and inspiring teacher in a "sciencing" classroom?*

A great deal of class time will involve interactive, hands-on experiences. By beginning with ourselves as reflective learners and understand our own knowledge and beliefs about teaching and learning, we can establish an emerging framework from which to set goals and directions for ourselves as educators and mentors of young children. I will try to encourage you to become aware of your own strengths, beliefs and biases, question existing procedures, explore new directions, initiate change, take risks, and grow professionally and personally. Be prepared to participate, reflect, collaborate, discover, and have fun!

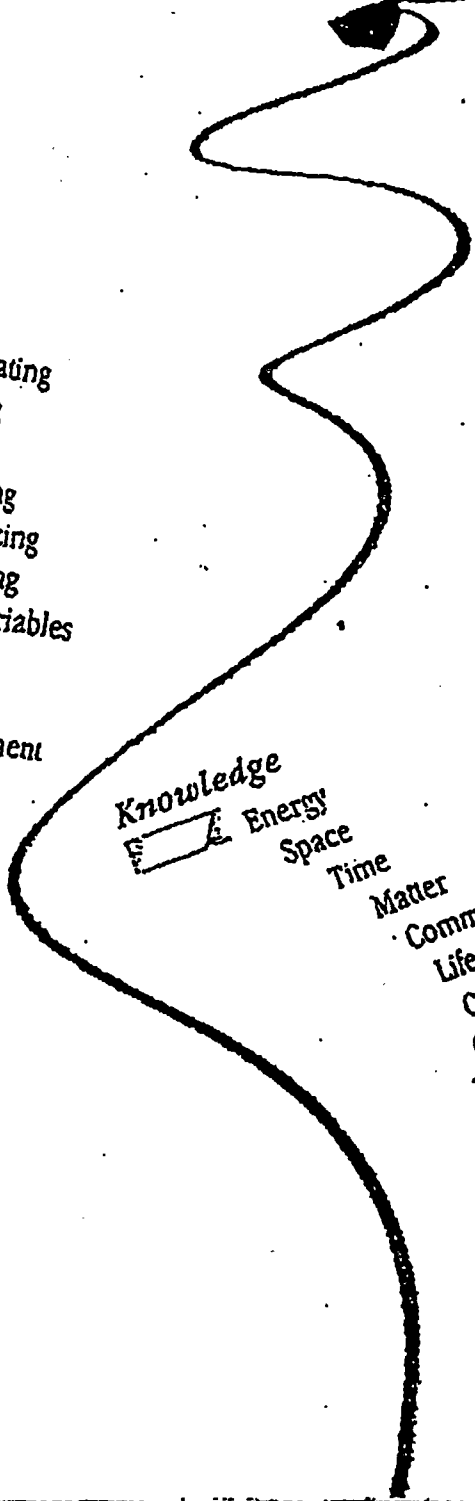
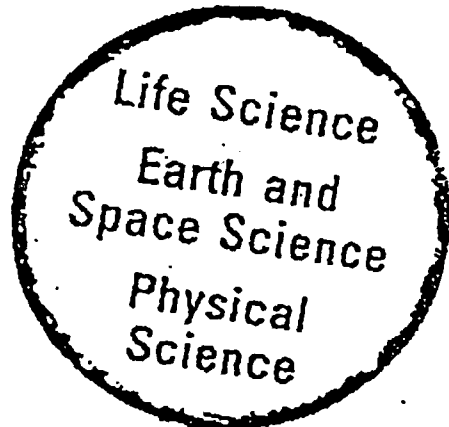
Course Objectives of the Instructor:

Upon completion of this course, the student will:

- 1) be able to understand the relationship between personal beliefs and professional practice (through the use of a reflection journal and group discussions in class, explore and reflect on one's own experiences and attitudes about teaching and learning).
- 2) be able to model and promote appropriate social, ethical and moral values.
- 3) be able to help children develop inquiry and critical thinking skills.

- 4) be able to help children acquire collaborative competencies and cooperative group interaction skills.
- 5) be able to stimulate children's curiosity, imagination, respect and sense of wonder about the world, self and others.
- 6) be able to motivate children to take responsibility for their own life-long learning, set realistic goals and attain a sense of accomplishment and self-worth.
- 7) have knowledge of current educational philosophy, theory and methodologies in the province of Ontario - related to ministry documents such as "Common Curriculum", "Science is Happening Here", "Shared Discovery" and "Partners in Action".
- 8) have knowledge of the broad conceptual framework related to social and environmental studies and how to address these concepts in long range, unit and daily educational plans (with respect to objectives, outcomes, evaluation, resources).
- 9) have knowledge of appropriate learning environments for young children which will stimulate and promote hands-on exploration, curiosity, individual planning and research both within the classroom and beyond (learning centres, field trips, resources, classroom management, evaluation and record-keeping).
- 10) be able to analyze a variety of approaches and activities available to encourage children to develop social awareness, sciencing abilities and environmental respect (during practice teaching blocks).
- 11) demonstrate professionalism, sensitivity to all learners' needs, and respect and acceptance of others.
- 12) recognize the connections between social and environmental science with other subject areas and with the world at large and be able to translate this meaningfully into classroom curriculum.
- 13) be able to plan, organize and facilitate a hands-on sciencing experience which encourages the active participation of learners.
- 14) become familiar with a variety of reference materials (journals, magazines, publications, agencies, government programs, community services, videos, kits, textbooks, equipment, tools, field centres, contact addresses, free materials and posters, children's literature, poetry, school-based programs etc.) and their related use in schools.

Learning Opportunities



Attitudes

- Concern and Care for the Environment
- Respect for Living Things
- Consideration for Others
- Open-Mindedness
- Objectivity
- Accuracy
- Thoroughness
- Perseverance
- Safety-Mindedness
- Curiosity
- Risk Taking

Skills

- Observing
- Classifying
- Serialing
- Communicating
- Measuring
- Inferring
- Predicting
- Hypothesizing
- Experimenting
- Controlling Variables
- Interpreting
- Making Models
- Manipulating Equipment and Materials

Knowledge

- Energy
- Space
- Time
- Matter
- Community
- Life
- Change
- Growth
- Interrelationships
- Technology
- Conservation

Summer 1993

ENVIRONMENTAL SCIENCE 9F31
COURSE OUTLINE

Course Director\$ Bert Murphy July 5-23inc. 8:30 - 2:30
: Pete Mernagh

Course Description

This is the first of a possible three course package leading to a specialist certificate in Environmental Science. "Part I should provide candidates with opportunities to acquire knowledge and develop skills that will enable them to become competent in developing courses of study and implementing learning experiences in environmental science appropriate for one division level of students whom they teach or administer." (Ministry of Education)

Successful candidates will:

1. Develop an understanding of present environmental concerns and their impact upon curriculum and pedagogy in the classroom;
2. Review Ministry of Education curriculum documents and directives as well as other government documents such as Canada's Green Plan;
3. Become knowledgeable of resources available to teachers from other government ministries (e.g. Ministry of the Environment) non-profit organizations (e.g. Recycling Council of Ontario), special interest groups (e.g. Federation of Ontario Naturalists) and individuals;
4. Become aware of and be able to use facilities within the local jurisdiction which could provide the teacher with resources to assist in the delivery of the "environmentally aware" curriculum;
5. Gain competence in the design and implementation of units of work based on environmental concepts;
6. Participate in field experiences using scientific equipment and methodology.

During the delivery of this course the participants will receive opportunities to investigate, react to, research and deal with a number of environmental seminars and

PARTICIPANT EVALUATION

Evaluation will be based on four components:

1. Participation and Attendance 30%
2. Project 30% Due July 23rd
3. Presentation of project 20% July 23rd
4. Preparation of an Abstract 20% Due July 12th

PARTICIPATION AND ATTENDANCE

Candidates are expected to be present for all course days. This course is a participatory type of course with many opportunities to become involved in various activities in and out of the classroom. The candidates and the course director will negotiate a mark for this evaluation component.

THE PROJECT

Each candidate will prepare a unit of study that addresses an environmental issue. This unit of study will be presented to the group in a presentation of 30 to 45 minutes. Presenters may wish to have the class try some of the activities.. Candidates will work independently to complete this unit of study.

The unit of study should address the "learning outcomes" both General and Specific, from the Common Curriculum. This unit of study can be an integrated unit that incorporates several traditional subject areas. A series of not less than five lessons should be developed on the topic. The unit should include teaching strategies, activities, resources and a student evaluation section.

PROJECT PRESENTATION

Each candidate will present a project to the class. The presentation should give an overall picture of the unit. One specific lesson should be presented in detail to the class.

The course director and the candidate will negotiate a mark for the presentation.

BIBLIOGRAPHY

Lewis, J.C. editor, (1991). Guide to the Natural History of the
Niagara Peninsula. Welland: Welland Printing

Grant, Tim. editor Green Teacher environmental magazine
Toronto

B. M. ...
9F.32
3/12 93/...

ENVIRONMENTAL SCIENCE PART II

COURSE DESCRIPTION

This is the second of three courses leading to a specialist certificate in Environmental Science. Participants will have already taken Environmental Science Part I in order to enroll in this course.

The course will encompass the following objectives:

-To further extend the study of how environmental science impacts upon and integrates within the overall school curriculum;

-To identify and articulate a personal code of environmental ethics;

-To further identify and interact with the environmental network which exists to assist teachers in the delivery of an environmental science curriculum;

-To develop and implement an integrated unit of work with an environmental focus;

-To develop appropriate evaluation strategies for measuring student achievement in environmental science.

During the delivery of this course the participants will develop personal skills in the delivery of topics related to environmental concerns. Emphasis will be placed upon the overall curriculum and the integration of environmental science through effective pedagogy. The participants will discover how their own environmental code or ethic impacts upon their interaction with the curriculum and students.

Course Assignments:

It is the intention of these assignments to develop both expertise and knowledge in the delivery of curriculum focused on environmental concerns.

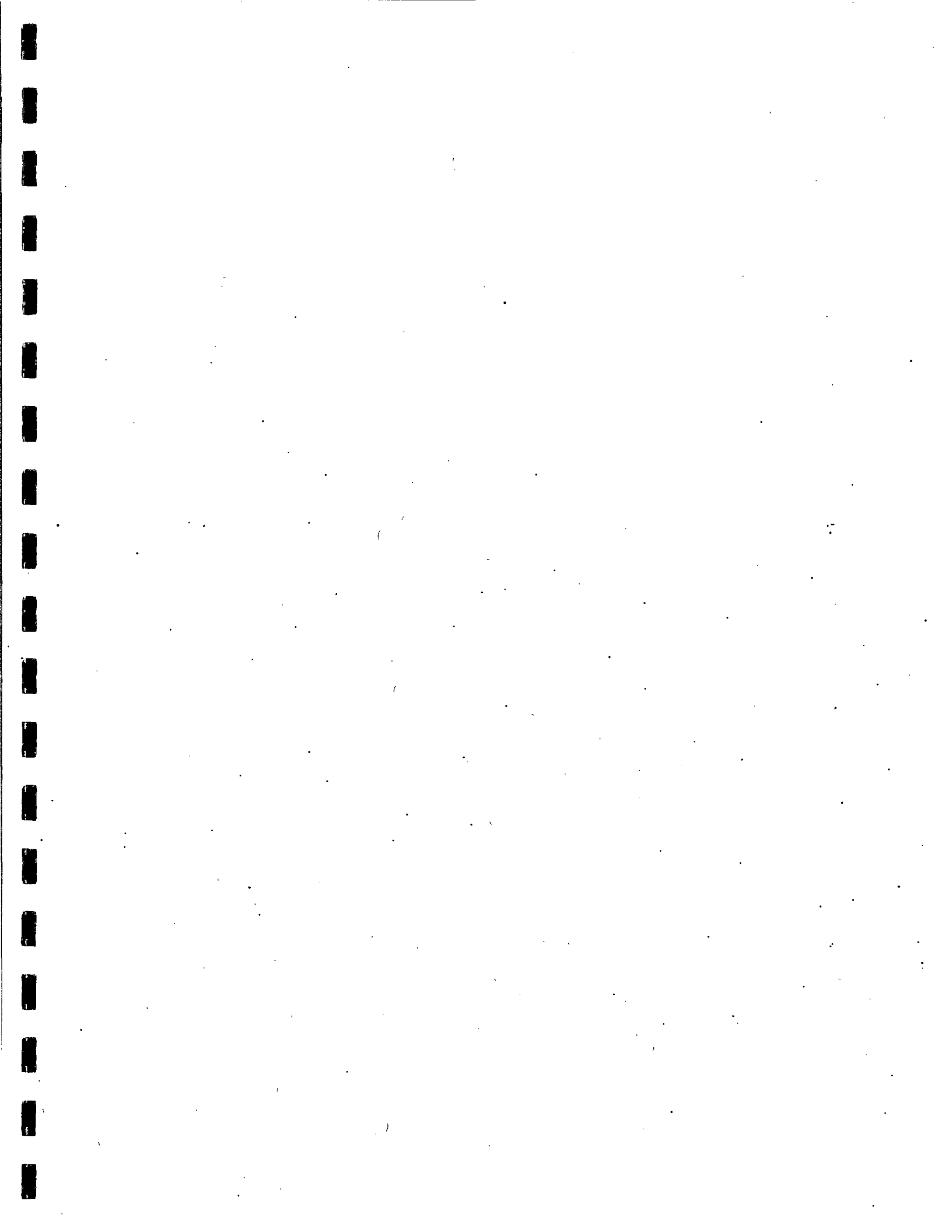
1. The participant will develop and articulate a personal code of environmental ethics. This will take the form of a ... which outlines the chronology of the participant's own

Environmental Science Part II
Fall-Winter Session 1993-94

Schedule of meetings (October - December) for the two independent study candidates:

Laura Yablo
September 22, 1993
October 20
November 2, 23
December 7

Joan Kott
September 29, 1993
October 18
November 15
December 6



*submitted by
W. Poole
March*

Education 5P07 - Research in Social and Environmental Studies

Calendar Description:

Theories of learning styles are researched for considered use in school programs which address current social and environmental issues. Planned field trips provide the means to assess the theory behind the practice.

Course Description:

Currently, the research component includes the investigation of learning styles theories, and their respective applications to curriculum planning, instructional decisions and evaluation. As a field based course, the candidates are required to explore, first hand, certain urban and natural environments. Close liaison occurs between the students and the educational staff at the Lee County Environmental Education Department in Florida.

Assignments

1. ALIC: Using it and evaluating its potential.

Consider the ALIC system to be a technique or strategy for teaching or for learning. Use it to get to know more about some natural things in Florida; birds, trees, flowers, shells, fish, stars, etc.

Using the Field Notes booklet, do enough to get to know the system and excite your curiosity. Then using the 4-MAT research paradigm (Chapter 4 of 4-MAT in Education) evaluate the potential of ALIC.

Include this evaluation (2-4 pages) with the Field Notes booklet as a submission

25%

2. OTHER PRACTICAL APPLICATIONS OF 4-MAT

This assignment represents a substantial written report on a selected application of 4-MAT. In the workbook, in seminars and in field experiences we will have focused on 4-MAT applications to all of the following:

Evans, Charles S. "Teaching a Global Perspective in Elementary Classrooms." The Elementary School Journal. 87, no. 5 (1987):545-555.

"Global Education: Larger Classroom, Smaller World" (1992) Issue of PRISM. St. John's, NF: Newfoundland Teachers' Association, 1 (2).

Howarth, M. (1986, June). Global education: A trend for the future. FWTAO Newsletter, pp. 1-9.

Kidron, M. and Segal R. (1991). The New State of the World Atlas. New York: Simon Schuster, Inc.

Kniep, Willard M. "Essentials for Global Education." The ATA Magazine, May-June 1989, 12-15.

Kobus, Doni Kwolek. "The Developing Field of Global Education: A Review of the Literature." Education research Quarterly 8, no. 1 (1983):21-28.

Lyons, T. G. (1989). Global perspective: A draft document for discussion purposes. Ontario: Global Education.

Meadows, D.H., Meadows, D.L., and Randers, Jorgen. (1992). Beyond the Limits. Post Mills, VT.: Chelsea Green Publishing Company.

Merryfield, M.M. (1991). Preparing american secondary social studies teachers to teach with global perspective: a status report. Journal of Teacher Education 42(1), 11-20.

Myers, N. (1993). Gais: An Atlas of Planet Management. London: Gaia Books.

Orr, D. (1992). Ecological Literacy: Education and the Transition to a Postmodern World. New York: SUNY Press.

Sitarz, D. (1993). Agenda 21: The Earth Summit Strategy to Save our Planet. Boulder, Colorado: Earthpress.

Smith, G. (1992). Education and the Environment: Learning to Live with Limits. New York: SUNY Press.

**A COMPILATION OF
ENVIRONMENTAL
EDUCATION
COURSES AND
RESOURCES
AVAILABLE AT
CANADIAN
INSTITUTIONS**

**A Summary Report
of a Survey Conducted by the
Special Initiatives Program
Corporate Affairs and Initiatives**

August, 1994

INTRODUCTION

This document is a compilation of a variety of environmental education (EE) related materials from the academic, non-governmental and government sectors of Canada.

The impetus for this compilation came at the request of Mr. Kabiru Kinyanjui of the IDRC Regional Office for Eastern and Southern Africa who wanted it as a background document for a Regional EE workshop he is facilitating in Nairobi, Kenya in September, 1994.

While this is not an exhaustive compilation of EE activities in Canada, it shows the variety and breadth of EE initiatives in a variety of sectors of the country, and will hopefully provide useful input to the discussions at this workshop.

The information contained in this document was compiled using assorted library and directory searches at IDRC, and through an informal telephone survey of Canadians involved in the EE-field during June and July, 1994.

DEFINITIONS

As EE cuts across a variety of disciplinary boundaries incorporating both the natural and social sciences, as well as the humanities, a specific definition of EE that would place some parameters around this research, was somewhat illusive. However, the following general definition of EE was more-or-less maintained:

Informal or formal educational tools or training for teachers who want to increase peoples' respect, awareness and understanding of nature and natural processes and demonstrate how these can be influenced by human activities.

In addition, EE is often incorporated in various interdisciplinary education themes such as Global Education, Outdoor Education, Experiential Education, Adult Education, and Transformative Education. As a result some of the resources contained here are not the exclusive domain of EE, but include aspects of the five above themes as well.

LIMITATIONS

In the case of EE Courses at Academic Institutions (Section I), generally only

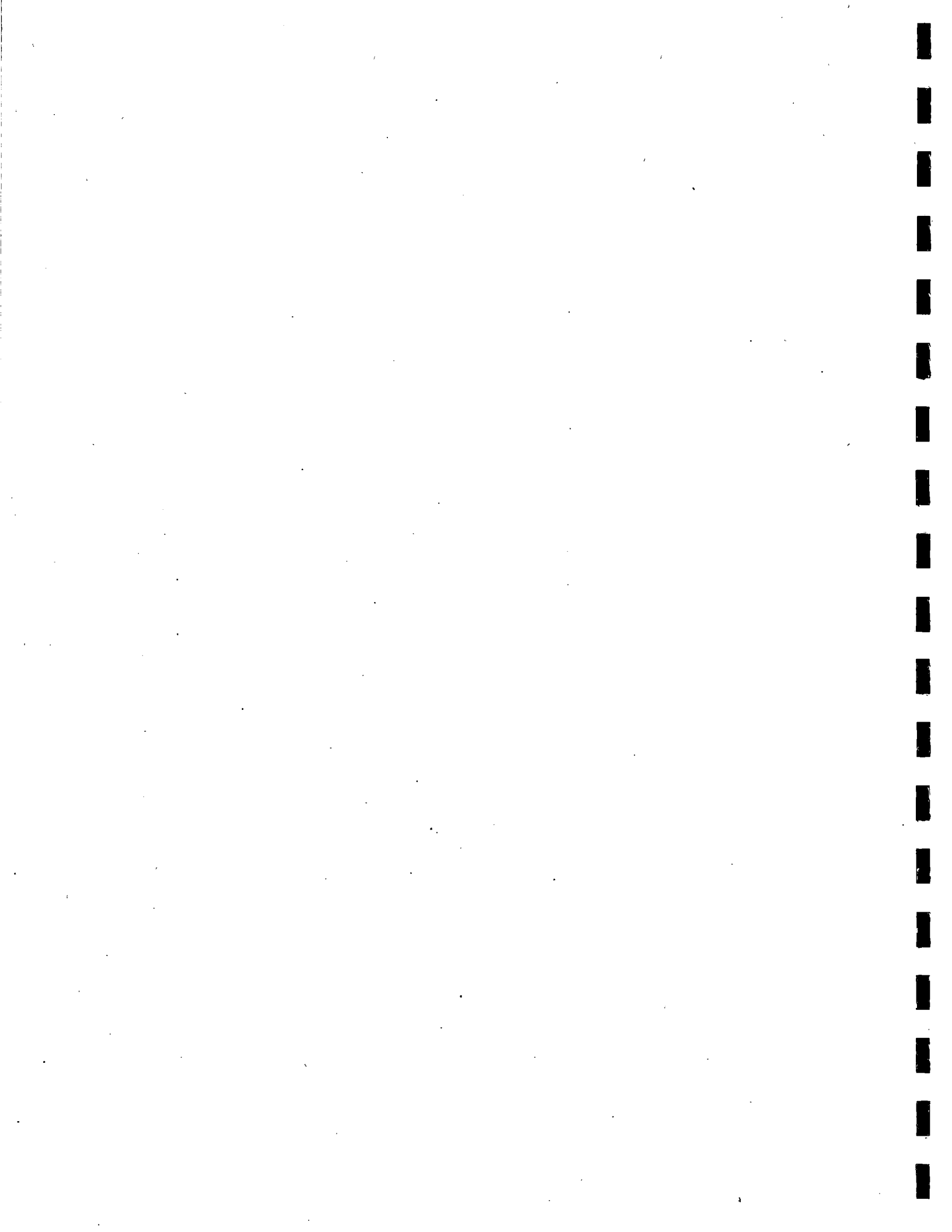


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SECTION I

**SELECTED ENVIRONMENTAL EDUCATION COURSES AVAILABLE AT CANADIAN
ACADEMIC INSTITUTIONS**

Institution	Course Name and Code	Contact Name and Address	Comments	Page(s)
University of Alberta	Environmental Studies in the Elementary School (ED EL 372)	Joe Kirman Frank Kozar Faculty of Education Department of Elementary Education University of Alberta Edmonton, AB T6G 2G5 T 403-492-3751 F 403-492-0236	■ 2 outlines for same course	1 - 6 7 - 13
Brandon University	Teacher Training in Environmental Education (Summer Program)	Murray Smith Faculty of Education Brandon University Brandon, MA R7A 6A9 T 204-727-7320	■ Week-long summer workshop on sustainable development at Riding Mountain for K-12 teachers	14 - 16
	Environmental Science Methods (03.455)	Murray Smith (as above)	■ For K-12 teachers	17 - 38
University of British Columbia	Outdoor Environmental Education Diploma Program	Anne Anthony University of British Columbia Faculty of Education 2125 Main Mall Vancouver, BC V6T 1Z4 T 604-822-4671 F 604-822-6501	■ 8-course diploma program designed for teachers with an interest in experiential outdoor learning	39 - 41
	Teaching Adventure Activities in the Outdoors	Anne Anthony (as above)	■ 3-week summer session course focussed on methodologies and program planning	42 - 44

Brock University	Primary/Junior Social and Environmental Studies (EDUC 8Y32)	Sharon Abbey Faculty of Education Brock University St. Catherines, ON L2S 3A1 T 905-688-5550 x3349 F 905-688-0544	▪ For grades 1 - 6 teachers	45 - 52
	Environmental Science (EDUC 9F31,32,33)	Bert Murphy Pete Mernagh (as above)	▪ 3 course package for Specialist Certificate in Environmental Science	53 - 59
	Research in Social and Environmental Studies (EDUC 5P07)	Wally Poole (as above)	▪ Course on learning theories for social and environmental issues	60 - 67
University of Calgary	Environmental Studies in the School Curriculum (EDCI 568)	Bonnie Shapiro Department of Curriculum and Instruction Faculty of Education Education Tower, Room 702 2500 University Drive N.W. Calgary, AB T 403-220-5639 F 403-282-8479	▪ Summer course	68 - 73
Memorial University	The Teaching of Environmental Science (ED 3277)	Frank Riggs Faculty of Education Graduate Programmes and Instructional Services Memorial University St. John's, NF A1B 3X8 T 709-737-8587 F 709-737-2001	▪ For K-9 teachers	74
	Environmental Education Across the Curriculum	Frank Riggs (as above)	▪ No course outline available, description from calendar	75

Ontario Institute for Studies in Education	Centre for Community and Global Transformative Learning	Bud Hall Ontario Institute for Studies in Education 252 Bloor Street West Toronto, ON M5S 1V6 T 416-923-6641 x2410 F 416-926-4725	<ul style="list-style-type: none"> ■ MA/PhD Programme 	79 - 80
Universite du Québec a Montreal	Éducation Relative a L'Environnement: Théories et Pratiques (EDU7110)	Lucie Sauvé Département des sciences de l'éducation Université du Québec a Montréal C.P. 8888 surc. A Montréal, PQ J3L 4A7 T 514-987-6992 F 514-987-4608	<ul style="list-style-type: none"> ■ Course taught in French ■ Course outline in French ■ Also see EDAMAZ Project description in Section II below 	81 - 86
	Éducation Relative A L'Environnement: L'Intervention (EDU 7011)	Lucie Sauvé (as above)	<ul style="list-style-type: none"> ■ Course taught in French ■ No outline available 	N/A
Queens University	Co-op Program in Outdoor and Experiential Education (SPEC 217)	James Raffan Faculty of Education Queen's University Kingston, ON K7L 3N6 T 613-545-6209 F 613-545-6584	<ul style="list-style-type: none"> ■ Integrated program combining study and supervised work 	87 - 89
	Social and Environmental Studies (CURR 373)	Diane Lawrence (as above)	<ul style="list-style-type: none"> ■ For Primary/Junior level teachers ■ No course outline available, calendar description only 	90
	Social and Environmental	Diane Lawrence (as above)	<ul style="list-style-type: none"> ■ For Junior level teachers 	90

University of Regina	Environmental Science Education (ESCI 302)	Warren Wessel Paul Hart Faculty of Education Department of Science University of Regina Regina, SN S4S 02A T 306-585-4519 F 306-585-4880		91 - 95
	Environmental Education (ESCI 302-020)	Tom Ash (address and fax as above) T 306-585-4555		96 - 101
University of Saskatchewan	International Education and Modernisation (EDFDT 851.3)	Howard Woodhouse Department of Educational Foundations College of Education University of Saskatchewan Saskatoon, SN S7N 0W0 T 306-966-7522 F 306-966-8719	■ Graduate Course	102 - 104
	Education for a Global Society (EDFDT 480.3 02)	Howard Woodhouse (as above)	■ Full semester course	105 - 111
	Education for a Global Society (EDFDT 480.3)	Martin Sterling (address and fax as above) T 306-966-7514	■ 8-day Residential Course	112
	Graduate Studies in Global and International Education	Graduate Co-ordinators The Departments of Curriculum Studies and Educational Foundations (address as above)	■ Master's Program to begin in the Fall 1994	113 - 114

Simon Fraser University	Summer Institute in Environmental Education	Milton McClaren Field Relations and Teacher In-Service Faculty of Education Simon Fraser University Burnaby, BC V5A 1S6 T 604-762-7600 F 604-861-4850	▪ Interdisciplinary 4-week summer program for in-service and pre-service teachers interested in environmental education	115 - 119
University of Victoria	Introduction to Environmental Education (ED-E373)	Gloria Snively Faculty of Education Department of Social and Natural Sciences P.O. Box 3010 Victoria, BC V8W 3N4 T 604-721-7779 F 604-721-7767		120 - 125
	Advanced Methods in Environmental Education/or Environmental Issues Education (ED-E 473)	Gloria Snively (as above)		126 - 133
University of Western Ontario	Environmental Studies in the Intermediate-Senior Divisions (SCE32)	John Ogletree Faculty of Education Curriculum Division University of Western Ontario London, ON N6A 3K7 T 519-661-2083 F 519-661-3833		134 - 138
York University	Critical Education and Social Change (ES 6150)	Deborah Barndt Faculty of Environmental Studies York University 355 Lumbers Building 4700 Keele Street North York, ON M3J 1P3	Graduate course	139 - 148

Standards for Written Work

1. All written work is expected to meet professional standards of spelling, grammar, punctuation, and neatness. Papers not meeting this standard will be returned ungraded, or reduced in grade (with a point deducted for each error) at the professor's option.
2. Correct footnote and bibliographic form must be used when required. Items for documentation should be current and reflect a variety of sources to demonstrate a knowledge of the subject. Papers not meeting professional standards for documentation will be returned ungraded or reduced in grade at the Professor's option.
3. Members of committees should be aware that they function in an editorial capacity regarding the work of their colleagues. Examine fellow committee member's work for errors.
4. What you mean to write and what you actually write may be two different items. Please exercise care in this matter. Proof your paper carefully.
5. Please be advised that there is a difference between effort and quality. Quality is the paramount factor in university standards.
6. In cases where plagiarism is proven, the student in question will be appropriately penalized.
7. Papers containing more than 20% direct quotations, including full page forms will be returned ungraded and not credited toward the project.
8. Papers will be reduced 10 points for each day late.
9. Projects are due in class on the due date. Papers received after class on the due date will be penalized proportionately.
10. Incomplete papers will not be accepted.
11. Students are fully responsible for typographic and third party typing errors.
12. All papers handed in must be original copies, typed or computer printed with a good ribbon. All papers having faint typing or printing in any section will be returned as unacceptable.
13. Word processor problems, equipment breakdowns and computer viruses are your responsibility and cannot be used as an excuse for lateness. This includes third parties who prepare your paper.
14. Failure to comply with project format requirements will result in a penalty.

UNIVERSITY OF ALBERTA
Department of Elementary Education
ED EL 372

Environmental Studies in the Elementary School

Winter Session
Term I, 1993-94

Dr. Frank Kozar
352 Education South
492-5417

COURSE OUTLINE

The Interconnected Whole

The process of the full unfolding of the self can be summarized by the phrase, "No one is saved until we are all saved," where the phrase "one" includes not only one, an individual human, but all humans, grizzly bears, whales, whole rain forest ecosystems, the tiniest microbes in the soil, and so on.

Deull and Sessions
Deep Ecology

Purpose

This course is designed to help you make decisions about teaching, drawing on contributing curricula such as science, health, and social studies, with a focus on environment as an integrating factor. You will be asked to decide:

- What kinds of growth in children are most important, and how do provincial subject area curricula contribute to that growth?
- What kinds of knowledge do children need and how should they learn it?
- What materials can children best use to construct that knowledge?
- What kinds of approaches to teaching best achieve your goals? and
- What forms of evaluation are most desirable?

This course is designed to involve students in an examination of different teacher's conceptions of environmental studies goals--both explicit and hidden--and the development of a personal set of goals to give direction to their planning and teaching. The focus will be on what varying roles environmental studies teachers and students take, what content, materials and activities are used to achieve goals, and some of the issues and decisions environmental studies teachers face. By

Reserve Room Readings for Environment

- Aitkenhead, G. (1985). Collective decision making in the social context of science. Argues for science education to focus on such issues as drug use, bruiser missiles, and other socio-political-moral issues. Rejects "basic, rational knowledge" as possible or desirable.
- Alberta Education. (1983). Science Curriculum.
- Alberta Education. (1983). Environmental Education Curriculum.
- Alberta Education. (1989). Health Program Rationale and Philosophy Grade level topics and subtopics, Gr. 1-6.
- Alberta Education. (1991). Social Studies Teachers Resource Manual, Grades 1-3 and Grades 4-6.
- Brown, J. (1991). A Sustainable Development Curriculum. Chapter 9, action projects and resources.
- Bybee, R. (1987). Science Education and the Science-Technology-Society (S-T-S) Theme. Definitions, history, and rationales for science education goals.
- Devall, B., & Sessions, G. (1985). Deep Ecology: Living as if Nature Mattered. Chapter 5, 8 biocentric principles explained by Naess and Sessions, why material standard of living and quality of life are incompatible.
- Ellis, A., Fouts, J., & Glenn, A. (1991). Teaching and Learning Secondary Social Studies. Chapter 2 - Three teachers' goals and methods, illustrates citizenship transmission, learner centered, and social action approaches in practice.
- Greig, S., Pike, G., & Selby, D. (1987). Earthrights. GF26 G824. Rationale and activities for holistic education esp. pp 45-59.
- Hicks, D. (1988). Education for Peace. JX1904.5 E238. Rationale for holistic education.
- Hopkins, S., & Winters, J. (1990). Discover the World. Ways to help young children solve problems and conflicts.
- Hungerford, H. et al. (1988). Investigating and Evaluating Environmental Issues and Actions. Rationale and methods: Methods for environmental action.
- Lewis, B. (1991). A Kids Guide to Social Action. HN65 L665. Examples of young kids taking action on social and environmental issues; sources, activities, activity sheets.
- May, W. (1992). What are the Subjects of STS-Really? Conflicting goals and rationales for Science-Technology-Society programs, recognizing the moral and political roots of the debate.

Ramsey, J. M. et al. (1989). A Science-Technology-Society Case Study: Municipal Solid Waste. One case of environmental action.

Sterling, S. (1990). Environment, Development, Education-Towards an Holistic View. Critique of academic, liberal, and utilitarian models of EE, advocacy of holistic EE.

Stevenson, R. (1987). Schooling and Environmental Education: Contradictions in Purpose and Practice. Comparison of the rationale and teacher ideology for teaching environmental knowledge using traditional pedagogy v. environmental action projects. Social and political roots of maintaining traditional teaching.

DEPARTMENT OF ELEMENTARY EDUCATION GRADING POLICY

In accordance with university regulations, instructors in courses offered by the Department of Elementary Education may use either the absolute measures system or the distribution system for calculating final course grades on the nine-point scale. Under the absolute measures system the instructor will indicate at the beginning of the course the percentages required to obtain each of the grades on the nine-point scale. For example, in a particular course, scores falling between 65-70% may be required to achieve a grade of 6. Under the distribution system, or relative scoring system the final grade is determined by the distribution of scores achieved by all of the students in the class. It could be that under this arrangement a score of 65% may be a grade of 5 on the nine-point scale depending upon the score distribution of other students in the class.

In all instances, 55% is required for a passing grade of 4. As well, instructors are required to announce the manner in which grades are to be calculated at the beginning of the course and to provide the method by which scores were translated into grades on the nine-point scale.

- grade of:
- 9 - exceptional performance with respect to course learning objectives and normally would only be achieved by a very small percent of a class
 - 8 - excellent performance with respect to course learning objectives and normally would be achieved by relatively few students but more than the number assigned a grade of 9
 - 7 - above average achievement but within the normal expectation of course learning objectives for senior courses in the university
 - 6 - average achievement within the normal range of expectation of course learning objectives for senior courses within the university
 - 5 - acceptable achievement but within the normal expectation of course learning objectives for senior courses in the university
 - 4 - minimal achievement with respect to course learning objectives but a passing performance for senior courses within the university

3 - failure and considered a failing grade

ED EL 372

Look and See

(The Ideas Reference Binder)

Use a 3-ring binder to organize a collection of "ideas", materials gathered from magazines, journals, newspapers, books, etc., that you will be able to use in your classroom. You may also choose to "create your own ideas."

The topics selected should be confined to three content areas: 1) Geology, 2) Ecology, and a third content area of your choice. Your "ideas" material should be supported by such appropriate level student handouts as: theory, diagrams, quizzes, puzzles, multiple choice questions, matching and color, cut and paste assignments, fill in the blank tests, independent and/or cooperative studies assignment, etc. Each of these should be developed to the stage where they could be duplicated at a moments notice.

The collection of material must be organized in such a way that it may be readily accessible to an outsider, for example, a substitute teacher.

You should bear in mind the following when selecting and organizing items for the collection:

1. Program rationale and philosophy.
2. Goals of basic education for Alberta.
3. Goals and objectives of the elementary science program.
4. Suitability as a core or elective component.
5. Program elements
 - (a) process skills
 - (b) psychomotor skills
 - (c) attitudes
 - (d) science concepts
 - (e) division specific objectives

... (i) Division One only or (ii)

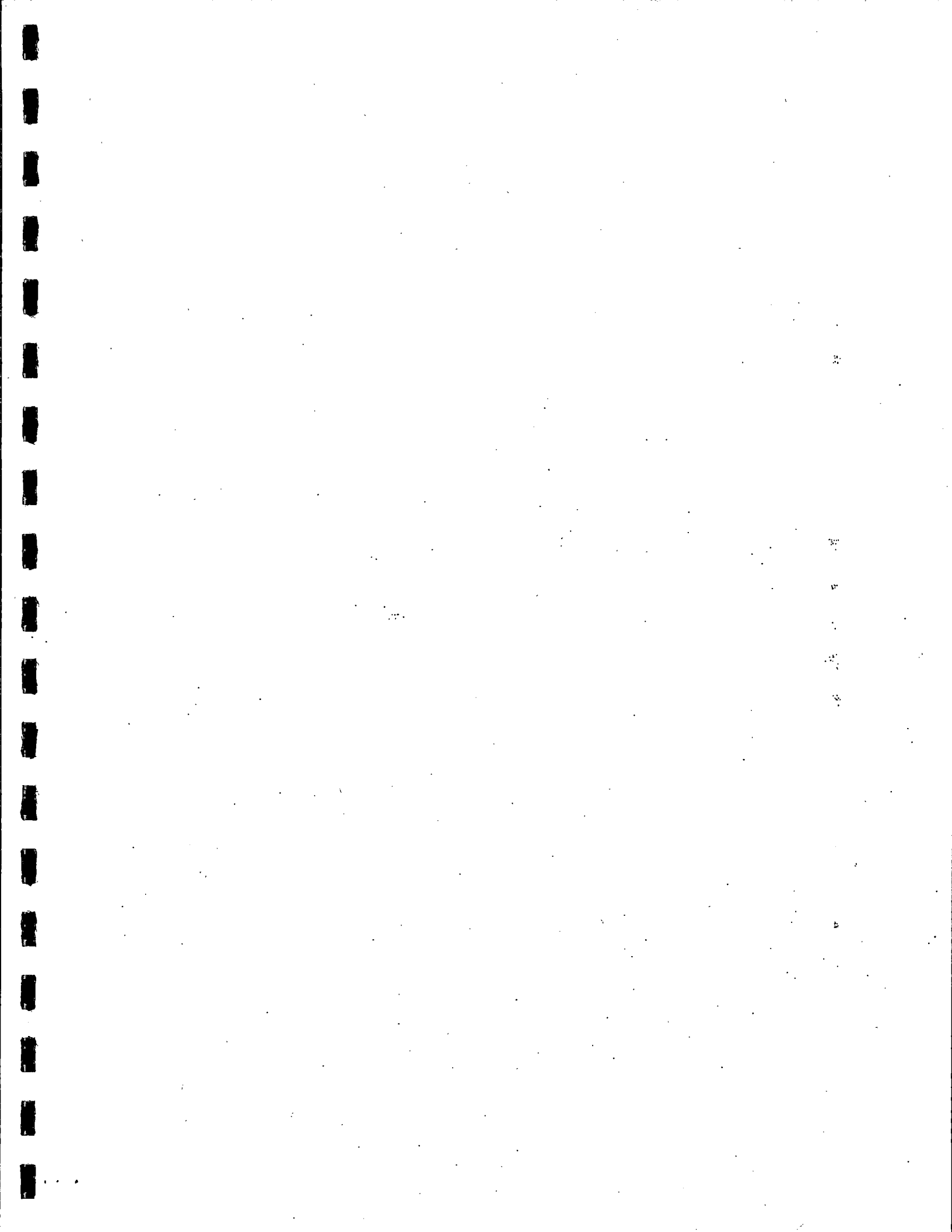
Mark Distribution

1.	Participation - attendance	25
2.	Lesson Plan Due between _____	10
3.	Look and See Due between _____	25
4.	Final Exam Exam will cover the entire course	40

Note:

Department policy states that a pass mark
for this course is

55



SUSTAINABLE DEVELOPMENT WORKSHOP HELD AT RIDING MOUNTAIN

Sandi Margetts

Murray Smith

Riding Mountain National Park was the site for the second annual Sustainable Development conference for teachers. Twenty-six teachers from across Canada spent from July 9th - July 16th at the community centre learning leadership skills on how to integrate sustainable development into the school curriculum.

The workshop organized by Sandi Margetts and supported by the SEEDS Foundation dealt with problem solving of environmental issues. Such issues as Cod fishing was deemed important by a teacher from Newfoundland attending the workshop. Soil erosion was another issue explored by Manitoba and Saskatchewan teachers. Both groups of teachers felt the workshop was the best they had attended as it provided them the opportunity to share concerns with other teachers from across Canada.

Last year the several workshops were held in Alberta, Manitoba, Ontario and New Brunswick. Although the funding was in place Manitoba was the only province to attract enough participants to have the workshop. Teacher frustration over loss of salary and professional development days was cited as the reason for the low enrolment this year.

However, teachers who paid the \$350.00 to attend the workshop were excited by the prospects of introducing sustainable development into the school curriculum. Jean Perras, Sustainable Development Co ordinator from Ottawa said that Canada is leading in

introducing the principles of sustainable development in business as well as into the school curriculum. Further, he made the point that humans have one last chance to undo damage to the environment caused by human ignorance over the last century. The planet has just about reached its capacity to support life considering the amount of toxins in the biosphere. He concluded that the goals of the Riding Mountain workshop should become the thrust of global education. On a local level the wolf population in Riding Mountain National Park is being threatened.

Celeste Devar, Director for Park Interpretation cited the wolf population problem stating that any habitat whose carnivore population is threatened is in danger of collapsing. The answer is as complex as the problem. He stated that problems of this magnitude must be solved through education, communication and conflict resolution. No longer can one organization such as a National Park solve this kind of problem. He called for negotiation between stakeholders with an interest in preserving the environment. The conference focused on one stakeholder, educators.

Educators bring professional knowledge of students, classrooms and curriculum to ensure the young people who will inherit these problems are provided with information, skills and values. During activities held during the week the participants at the conference discussed ways to involve their students in activities which would provide them with the skills they would need in the future. Skills of analysis, learning co operatively and resolving conflict were inherent in the many outdoor activities provided by more than a dozen presenters invited to speak at the conference.

Sandi Margetts is a free lance educator who has given many workshops throughout the province. She is a sessional lecturer at Brandon University while actively promoting sustainable development nationally.

Dr. Murray Smith is Assistant Professor of science education at Brandon University. During the past three years he has been involved in partnerships providing support in science to classroom teachers.



COURSE OUTLINE

January, 1994

03.455 ENVIRONMENTAL SCIENCE METHODS (3 CR HR)

Prerequisite: registered in or have taken 03.450/03.453
 Text: None
 Final Exam: None
 Assignments: 4 (see below)

COURSE OVERVIEW

This course is meant to provide students with the background knowledge and skills to teach environmental education. Students will be involved in creative problem solving activities which demonstrate how environmental issues may be taught from K-12.

TEXTS

Manitoba Science Curricula
 Various resource books which are currently being printed will also be used.

MAJOR OBJECTIVES

After successfully completing this course you should be able to:

- a) provide a rationale for present environmental programs being initiated within Manitoba
- b) describe the philosophy pertaining to science/technology/society and sustainable development.
- c) to engage students in environmental activities at your chosen grade level
- d) to engage students in inquiry methods to study living organisms.
- d) to create learning situations conducive to learning about the environment and current environmental problems.

TOPIC OUTLINE

Erosion
 Oil Spills
 Clear Cutting
 Reclaiming Mine Sites
 Recycling

ASSIGNMENTS

1. Write a STS lesson	20%	Jan. 27
2. Create an environmental science unit plan	25%	Feb. 10
3. Present a lesson	20%	TBA
4. Create a resource package	25%	Feb. 24
5. Participation	10%	

All assignments will be assigned a mark from A to F

DESCRIPTION OF ASSIGNMENTS

1. STS Lesson

Choose a grade and a topic from either the science or social studies curriculum K - 12

Write a STS lesson which engages students in creative problem solving. Your lesson should provide positive and negative background information and positions from a science/technology/society perspective. The lesson should focus on environmental and economic considerations.

OR

1A. Frame 1 or 2 questions focusing on a broad environmental concern. In a statement rationalize your questions. Following your statement write 1 or 2 objectives, for your following activities. These objectives could state attitudes, social participation and critical thinking outcomes. Your objectives should be outcomes derived from at least two activities under the headings 1) introductory activity, 2) developmental activity and 3) a concluding activity.

2. Environmental Unit Plan

Using the Manitoba Curricula and the headings objective, activity, materials and evaluation create a unit. Your unit should have a minimum of 15 lessons. Student materials and background information should accompany each lesson.

3. Presentation

You will be given 25 minutes to engage the class in an environmental activity. The focus of the lesson should endeavour to make students more cognizant and responsible for the environment. Materials which engage the entire class in your activity must be provided.

4. Resource package

Using 10 resources and the headings title, grade, objective, procedure, evaluation, source and comments collect 25 activities/ideas which would promote environmental education. Particular attention should be given to self guiding student assignments.

5. Participation

Most of the activities presented in class will require group participation. Part of your grade will depend on your contribution your group.

TABLE I

Standard	STS
Surveys major concepts found in standard textbooks	Identifies problems with local interest/impact
Uses labs and activities suggested in textbook and accompanying lab manual	Uses local resources (human and material) to resolve problems
Students passively assimilate information provided by teacher and textbook	Students actively seek information to use
Focuses on information proclaimed important for students to master	Focuses on personal impact, making use of students' own natural curiosity and concerns
Views science as the information in textbooks and teacher lectures	Views science content not as something that merely exists for student mastery because it is recorded in print
Students practice basic process skills - but don't apply them for evaluation purposes	De-emphasizes process skills which can be seen as the glamorized tools of practicing scientists
Pays little attention to career awareness, other than an occasional reference to a scientist (most of whom are dead) and his/her discoveries.	Focuses on career awareness, emphasizing careers in science and technology that students might pursue, especially in areas other than scientific research, medicine, and engineering
Students concentrate on problems provided by teachers and text	Students become aware of their responsibilities as citizens as they attempt to resolve issues they have identified
Science occurs only in the science classroom as part of the school's science curriculum	Students learn what role science can play in a given institution and in a specific community
Science is a body of information that students are expected to acquire	Science is an experience students are encouraged to enjoy
Science class focuses on what is previously known	Science class focuses on what the future may be like

DIFFERENT TYPES OF PROBLEMS

	SCIENCE	TECHNOLOGY	SOCIETY
PROBLEM	<u>Why</u> does my coffee cool so quickly?	<u>How</u> can I make a container to keep my coffee hot?	<u>Should</u> we use styrofoam cups or ceramic cups for a meeting?
RESPONSE	Heat energy is transferred by conduction, convection, and radiation.	A styrofoam cup will keep liquids hot for a period of time.	Personal health, the environment, cost & availability must be considered along with science and technology information.
PROBLEMS ARISE FROM	curiosity about events and phenomena in the natural world.	copng with everyday life, practices, and human needs.	different views or perspectives based on different or the same information.
TYPES OF QUESTIONS	What do we know? How do we know?	How can we do it? Will it work?	What alternatives or consequences are there? Which choice is best at this time?
PROBLEM-SOLVING STRATEGY	Scientific Inquiry	Technological Problem Solving	Deliberation Consensus Building
SOLUTION RESULTS IN	knowledge about the events and phenomena in the natural world.	an effective and efficient way to accomplish a task.	a defensible decision in the particular circumstances.
PROBLEM TYPE	Theoretical	Practical	Issues

WHY?

HOW?

SHOULD?

OBJECTIVES: The students will be able to describe zero tillage.

The students will discuss and develop reports on the advantages and drawbacks of zero tillage.

MATERIALS: Informational handout on zero tillage
Character sketches for guest speakers

METHOD: The students will be divided into groups of four (group leader, recorder, reporter and monitor should be established).

Have the students brainstorm for 2 minutes listing the environmental problems farmers face today. Make a composite list on the board. Erosion or drought should appear.

Students will read an informational handout on zero tillage.

In their groups, the students will discuss the advantages and drawbacks of zero tillage. The monitor of the group will draw from a hat to find out what the group's character will be. This dictates the group's position on the topic. The group will prepare a written report which will later be given as an oral report. The reporter will share the report at a mock zero till convention.

The students will be encouraged to do research on their position. Interviewing appropriate people may be beneficial. Students may want to bring or wear items representing their position. (eg. the engineer from John Deere had better be wearing a green hat!) Students will be encouraged to ask questions of each other during the mock convention.

The teacher will decide how long the students will have to research their position by setting a date for the convention.

EVALUATION: The teacher will listen to and observe group discussions.

The teacher may observe the success of cooperative groups. (Did all the members contribute ideas? Were all ideas considered and discussed? etc.)

The written reports may be collected for evaluation.

- Did the group state its position?
- Did the group predict possible problems and offer solutions?
- Are their arguments valid?
- Has the group suggested ways other groups may help with their position?

ZERO TILLAGE

zero tillage (ze'ro til'ij) ZERO TILL or NO-TILL FARMING is an economically viable, erosion proof crop production system in which the crop is planted directly into the previous crop's stubble with minimum soil disturbance. Cultural controls such as crop competition and rotations as well as responsible use of herbicides are used to replace tillage. Under this system conservation of soil moisture is a special benefit.

Zero tillage crop production involves the planting of a crop into undisturbed stubble, with minimal soil disturbance, and chemical weed control. Any system causing more than 25 per cent soil disturbance is not considered zero tillage.

Advantages...

With any crop, the most limiting factor is usually water. Nutrients can be added and weeds, insects or diseases can be controlled but soil moisture is the key ingredient to start the crop and keep it growing. Zero till can have a positive effect upon the amount of moisture in the soil for germination and early crop growth.

Research has shown that soil moisture was increased by leaving stubble standing on a field. In years that are dry going into winter, this could really help next year's crop yields. Stubble full to the top with snow is a guaranteed source of readily available soil moisture for spring seeding. Stubble 8" - 10' high full of snow accounted for 1" - 2" of soil available water. every extra inch of water can mean as much as five extra bushels of wheat.

Stubble not only traps snow but contributes in other ways to moisture retention:

- Standing stubble reduces the amount of water which runs off a field. Not only does this reduce erosion, but it also holds more water on their field to soak into the soil.
- Once the water has soaked into the soil, the mulch at the surface in zero till fields reduce water loss from evaporation.
- When tillage is not used, soil moisture loss is reduced. Cultivation dries the soil down to the depth of tillage.

It is easy to see that in a dry year a zero till farmer can expect better returns. On the average, yields are the same or higher with no-till than with conventional farming.

Zero tillage reduces the amount of time and labour required to get the crop in the ground by reducing the number of passes across the field. This means less time pressure during the busy seeding season. On the average, conventional methods will include about a half dozen passes over a field. Zero tillage uses only one or two. Some zero till farmers have boasted that their fuel bills were cut in half when they switched to zero till. Costs are reduced and there is a reduction in the use of one of our non-renewable resources. reduced operating hours will increase the life of farm equipment.

The major advantage of zero tillage involves erosion control. Soil erosion by wind and water is caused by lack of protection on the soil surface. Erosion negatively effects the long term value of a piece of land. Erosion can also produce problems presently for the farmer. Farmers may need to use higher fertilization rates and in some cases fields may have to be reseeded. One must also consider the costs of clearing soil from roadsides and waterways. Environmentalists will remind you of the impact of fertilizer and herbicides eroded off of fields. Zero tillage leaves stubble standing and spreads crop residue back on the field to reduce soil erosion.

The advantages of zero tillage are obvious: moisture conservation, improved yields, reduced labour, less fuel used, equipment savings and erosion control.

... and Drawbacks

You might wonder why all farmers have not accepted the zero tillage methods. There are a number of drawbacks to zero till that have convinced farmers to continue using conventional methods.

In zero till, herbicides replace tillage. Conventional farmers will use tillage as a means of weed control. Money spent on herbicides in the zero till program will be significantly higher. Zero tillage farmers must have a greater knowledge of weeds. They must be familiar with all varieties as well as the stages of their growth. It is vital to know how to herbicides effectively (ie. timely application, rates, etc.)

Zero tillage will effect the temperature of soils. Fields that are tilled in the conventional methods will be darker in color, therefore absorbing more heat--heat that is required for germination. Zero till fields retain less heat and so late spring frost may damage crop seedlings. Zero till farmers must use care in seed placement, It is important that the seed be close enough to the surface to receive and awed. The mulch cover on the zero till field has an insulating effect which keeps ground heat from radiating up at night to protect the crop from frost.

In a wet year, excess moisture could delay seeding. Later planting means a later harvest. In this case, extra moisture trapped by the stubble is an acute disadvantage.

Zero tillage is not suited to all soil types. Compaction due to lack of tillage may lead to hardpan (compacted clayey layer in soil that is impenetrable by roots). Land that is rocky would not allow zero tillage to be utilized. The use of conventional rock picking equipment would cause too much soil disturbance.

Proper spreading of straw and chaff takes knowledge and experience. Zero till farmers must be precise when swathing allowing for a proper stubble height. If the stubble is too high, the farmer may experience problems with seeding equipment. If the stubble is too low there is a loss of snow holding capability. Fields with standing stubble are more prone to disease and insects. Zero till farmers must become experts in crop rotation.

...Environmental concerns

Zero tillage relies heavily on the use of herbicides, pesticides, and fertilizers for weed control and crop nutrients. A quick glance at the material safety data sheet will demonstrate that the chemicals used in zero tillage farming are deadly toxicants. These toxicants are applied directly to the environment and therefore have an effect on the environment.

The increased use of chemicals increases contamination of fresh water. According to the National Research Council Nation Academy in Washington, up to \$16 billion worth of water is polluted by farm chemicals in the USA each year. In Canada it has been calculated that for each pound of phosphate or nitrates fertilizer that enters fresh water through run off or leaching, 700 pounds of algae is produced. The increased production of algae greatly alters life in fresh water. (Environment Canada 1976)

Farm chemicals also contribute to major environmental concerns such as global warming. Fertilizers such as nitrogen have emissions that are 250 times as efficient in causing the green house effect as carbon dioxide.

The costs of expensive government testing and the regulating and monitoring of chemical residues in the food supply; And the cost of disposal and clean up of hazardous waste generated by the manufacturing of farm chemicals are some of the hidden costs of chemical use that is relied upon by zero tillage farming. (Synergy, Fall. 1990:8.)

Guest Speaker #1:

You run the local bulk fuel and fertilizer dealership. You have received a letter inviting you to be a guest speaker at a convention about zero tillage. Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #2:

You run a mixed grain farm of about 900 acres. You are currently using zero tillage and have been since 1987. You have been asked to appear at a convention on zero till. You will be speaking to fellow farmers. Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #3:

You are an engineer for the company of John Deere. You are currently creating equipment designs for the zero tillage user. You have been invited to talk about the changes you intend at a zero tillage convention. Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #4:

You drive a delivery truck for McGavin's bread. At your first stop you take time to read your mail. You receive a letter of invitation to speak at a zero tillage convention. As you mentally plan your speech, you are disgusted as a gust of wind blows dust across your dash. Prepare a written report that can be presented at the convention. Consider

Guest speakers attending:

Farmer (using zero till)
Bulk fuel and fertilizer rep.
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Farmer (not using zero till)
Consumer of organic foods

Guest speakers attending

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest Speaker #5:

You have agreed to speak at a convention on zero tillage. You are sending a letter of acceptance back to the organizers. You sign your name to the bottom of the letter--

Ray Redfern

Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #6:

You are a highly respected environmentalist. You have been asked to speak at a convention on zero tillage. Prepare a written report that can be presented at the convention. Consider the list of guest speakers that will be at the convention as you prepare.

Guest Speaker #7:

You are the district agricultural representative. You have been invited to speak at a zero tillage convention. What will you tell farmers? Prepare a written report that can be presented at the convention. Consider the list of other guest speakers that will be at the convention as you prepare.

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest Speaker #8:

You are mailing a letter of acceptance to the organizers of a zero tillage convention. You will be a guest speaker. The letterhead on your paper reads: Manitoba-North Dakota Zero Tillage Farmer's Association, President. Prepare a report that can be presented at the convention. Consider the list of other guest speakers that will be at the convention when preparing.

Guest Speaker #9:

You are someone who has chosen a healthy lifestyle. You deal with stress effectively and you exercise regularly. You will only consume foods that have been organically grown. You have been asked to be a guest speaker at a zero tillage convention. Prepare a report that can be presented at the convention. Consider the list of other guest speakers that will be at the convention when preparing.

Guest Speaker #10:

You run a grain farm in Southern Manitoba. You have received a letter of invitation to be a guest speaker at a zero tillage convention. They want your opinion--well they'll get it! Your grandfather was a successful farmer without zero till and so was your father. You are determined to follow in their footsteps. Prepare a report that can be presented at the convention. Consider the list of other guest speakers that will be at the convention when

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
Environmentalist
Agricultural Representative
President of the Manitoba-
North Dakota Zero Till Ass.
Consumer of only organically
grown foods
Farmer (not using zero till)

Guest speakers attending:

Bulk fuel and fertilizer rep.
Farmer (using zero till)
Engineer from John Deere
Driver from McGavins
Ray Redfern
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Guest speakers attending:

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ENVIRONMENTAL SCIENCE METHODS
Classroom Presentation

February 1994
Faculty of Education - Brandon University

SUBJECT: Social Studies

LESSON TOPIC: "Urban Expansion"

OBJECTIVE:

Students will be able to discuss and debate a number of important issues pertaining to urban expansion through a role play activity.

MATERIALS USED:

- role play information sheets.
- a map of the imaginary city and proposed expansion into agricultural lands. (option)

PROCEDURE:

- (1) The role playing activity will be introduced to the students.
- (2) The students will be divided into five groups.
- (3) Each group will be given an information sheet that informs the students as to role they will be playing. Some time should also be given to allow the students groups to prepare their statements.
- (4) Debate and discussion will take place with the final decision to made by the teacher.

EVALUATION:

The students will be evaluated according to how well they discuss, debate, and participate in the role play activity. The students will also be evaluated as to how efficiently and effectively they work in their groups. If further evaluation is required then the students could answer two questions in paragraph form (minimum ten sentences):

- (1) *Why should we plan urban expansion carefully? What sorts of environmental issues should we address when expanding and building cities or towns?*
- (2) *Why is it important that a number of people and different groups help make major decisions that effect agriculture our environment, and urban expansion and development?*

SOURCE:

Environmental Science Methods Class Presentation
- created and presented by David Kalinchuk.

COMMENTS:

URBAN EXPANSION ROLE PLAY

The City of Enterpriseberg - Urban Expansion

THE SENARIO:

The City of Enterpriseberg has been steadily growing over the past year. Many new families are moving to the city and finding good paying jobs. These same families can now afford to buy nice new homes in a more progressive and modern area of the city. Developers want to buy farmland and then build houses, a shopping mall, swimming pools, and a new business district just north of the City of Enterpriseberg.

There is beautiful farmland located just north of Enterpriseberg with some of the best quality soil in the country. There are also a number of natural, untouched ponds located in this area where a diverse variety of fish live and many migratory birds come to nest during the spring and summer. The developers want to use the fertile soils to landscape new homes and parks. They want to use the water from the ponds in factories, sewage plants, boulevard fountains, and swimming pools.

There are five groups that wish to express their views and discuss them to the point where a fair decision will be made in regards to the developers' urban expansion proposal:

GROUP ONE: The City Developers

The city developers want to expand and build a brand new, totally modern suburb. The profit potential for the developers is worth millions of dollars. However, the City of Enterpriseberg will also benefit. Millions of dollars to be generated in taxes and new business opportunities.

GROUP TWO: The Farmers

The farmers do not want to see the urban expansion proposal take place and consequently, do not want to sell their land. Many of the farm families have been in the area for over two hundred years. Several have argued that their crops will be necessary to feed the growing population of the City.

GROUP THREE: The Naturalists

The naturalists do not want to see the untouched ponds destroyed by the construction and then polluted by the factories and sewage plants. There are many species of fish, birds, and other wildlife that they feel should be protected. Rare and fragile plant and animal species may be located in the untouched pond areas. They feel that these rare species should be carefully studied. The habitat must remain natural and untouched.

GROUP FOUR: Business People

The business people want to see the area developed. The new prosperity and jobs that will be created will definitely help the City of Enterpriseberg to become the top business centre in the country. Many business people will become quite wealthy if the urban expansion is allowed to proceed.

GROUP FIVE: Unemployed City Workers

In past years, technology replaced a number of city workers, putting them out of work. These unemployed city workers (which include maintenance worker, engineers, office staff, parks crews, etc.) have all finished retraining and are anxious to find new jobs in the proposed new suburb. The increased tax revenue from the City will provide new services which will inturn, create more jobs for the unemployed civic workers.

THE TEACHER: The Government

The teacher will make a final decision after hearing each group's presentation and supporting arguments. All debates and questions will be monitored and controlled by the teacher as to ease the procedures and help come to a clear and fair conclusion.

14. FOOD: THE EFFECT OF SUPPLY AND DEMAND

High school

Concepts:
carrying capacity
technology
cost
food types
history
supply

Timing: any time during the school year.

Introduction:

Everyone has to eat and there is lots of evidence that what we eat affects our physical and mental health. Technological innovations in agriculture have made it possible for humans to produce lots of food in places where little was available before. Transportation technology allows us to eat fresh food that comes from distant places.

Human populations often reach local levels well beyond the ability of the environment to sustain them (the carrying capacity). Could the people who live in Toronto, for example, survive on the food that could be grown within the city limits? Humans use technology to survive in places that could not otherwise feed us. Today, however, technology also provides foods that were luxuries 50 or even 10 years ago eg. tropical fruit, and fresh produce in winter.

These realities profoundly affect the environment in which we live on local, regional, continental and global scales. By examining what we eat, where the food comes from and the problems associated with our consuming it, students can see how the simple business of eating becomes complex both in terms of technology and conservation.

Objectives for students: The purpose of this exercise is to introduce students to some of the problems associated with feeding people. It will provide students with information about what they should eat and where their food comes from. The exercise can be extended to the problems associated with treating waste and fertilizing growing crops. This project can be done by individual students or by groups of students. In classes where the students come from different backgrounds, there should be interesting diversity in the kinds of food they eat. This, in turn, can be related to different designs for a balanced diet. In classes with students of different backgrounds, the historical perspective of food also will be interesting.

Vocabulary: Ecologists refer to carrying capacity to describe how an environment or habitat provides the necessities of life for the organisms that live there. Different food types, such as carbohydrates, and proteins will become part of the students' vocabulary in this project.

Materials: Students will need calculators to prepare compilations

of information about unit pricing. They will need paper and writing utensils to record information.

Activities:

1. Prepare a list of the foods considered essential for a healthy diet. Construct a table to present this information, illustrating not only food types but also specific examples of foods in these categories.

2. Visit two local food stores to find out where these foods come from and how much they cost. Visit a farmers' market. What produce is available there? How do the costs compare to those in the supermarket? Is there more local produce in the farmers' market than in the supermarket? Does this depend on the season eg. strawberries in December.

3. Now design a table to record the information, what is required, what is available, its cost and where it originates. You may have to revisit some stores to fill in blanks in your data.

4. What proportion of the essential foods come from within 50 km of where you live? From within your province? From within Canada? Are there essential foods that come from outside Canada that could be replaced with Canadian-grown produce? Are there locally (within 50 km) grown foods that could supply the essential requirements? Does this change with the time of year?

5. What does your family eat in a week? List the kinds and amounts of food. How much of it comes from Canada?

6. If you have a home garden, how much food does it produce? How does the cost of this food compare to the prices in the grocery stores or supermarkets? How much of your weekly food requirements are met by your garden?

Expansions:

1. How have our views of food changed in the last generation? Ask your parents what they ate to see if it differs from what you eat today.

2. Two hundred years ago, what were the foods of the native people that lived in your part of Canada? The foods of the settlers? You may be able to collect some of this information by visiting living museums such as Upper Canada Village or Pioneer Village.

3. Visit a farm to find out what food is available locally. Why do farmers grow the crops they do?

4. What kinds of wastes come from food and how are food wastes treated? Note the different kinds of waste, from those associated with growing the food, to those generated by marketing and preparing it. Then there are the many problems of dealing with sewage.

5. How does the food waste situation influence the problems of fertilizing crops? Consider composting.

6. Look at composting in your neighbourhood.

7. Visit fall fairs to see agricultural innovations from technology to animal and plant breeding.

8. What impact could biotechnology have on the business of feeding people?

Tenton, M. B. et al. (1993) Wildlife and Conservation Exercises, Dept. of Biology York University

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15. IVORY TRADE: TWO SIDES TO EVERY STORY

High school

Concepts:

culling
wildlife management
ecotourism
carrying capacity

Timing: any time of year.

Introduction:

For some large game animals, such as African elephants, changes in habitat due to man's exploitation, combined with increased pressure from poaching has severely depleted their numbers in the wild. In an attempt to save the African elephant, IUCN (International Union for the Conservation of Nature) has banned the export or international sale of ivory. Advocates of this position believe an outright ban on ivory is the only option available to reverse the decline of the African elephant population. Other conservation biologists contend that limited sales of ivory and controlled hunting for this species may represent a viable alternative to an outright ban. They believe that if countries are allowed to gain a profit from the controlled hunting of African elephants and the sale of its ivory they may afford the species better protection from poaching in the future. In Canada and the United States, money generated from the sale of hunting permits is used to maintain or increase wildlife populations, maintain suitable habitat areas and fund the operation of agencies responsible for protecting wildlife.

Objectives:

In this activity students will examine the issues surrounding how best to protect the remaining herds of African elephants. They will research the politics and economics of the ivory trade, how poaching activities are carried out and come up with solutions to reduce poaching and increase protection for wildlife.

Vocabulary: culling, sustainable populations, carrying capacity, ecotourism, habitat, poaching.

Materials: library and imagination.

Activities:

1. Library Look: Divide the class into several groups and assign them to investigate one aspect surrounding the plight of the African elephant. These topics should include the population biology of the African elephant, positions of various groups advocating different approaches to protection, countries that purchase ivory, who carries out the poaching and how is it conducted, which animals in the herd are targeted, the economics of poaching and the economics of ecotourism. Once each group has researched their topic have the groups integrate their information on the board so the students can see the complexity of the problem and the potential solutions.

2. Debating the issue: Divide the class into various teams representing players in the elephant game. Each group can represent one of the following groups involved in the elephant business: park wardens, government officials in wildlife and tourism, European sportsmen, poachers, traders in ivory from the Far East, environmentalist, farms bordering the park and locals employed as

guides. Each side must prepare their own point of view and then all groups involved will meet in a roundtable discussion to work out a solution to the elephant crisis. This should include the drafting and signing of a document by all parties and a method of enforcement. Be sure to discuss the spiral effect of herbivory in a restricted area.

3. Designing a plan of action: Your class has been given the task of designing a plan to introduce a controlled elephant hunting program for a national park in Tanzania. Poaching over the past 10 years has reduced the elephant population by half, to 175 individuals. Biologists have calculated that the park is large enough to support a herd of over 325 individuals. The current population consists of 45 mature females, 35 bulls, 60 juvenile males and females and 35 calves. With this information design your elephant management plan making sure to include the following issues:

- a. Who will oversee the elephant management plan?
- b. How does the age structure and breeding cycle of the remaining elephants effect your management plan?
- c. How many and which elephants will be targeted for hunting?
- d. How will revenue generated by the regulated hunting program be used?
- e. How long do you estimate it will take to achieve a population of 325 elephants?
- f. How will the meat be used from each kill?
- g. What will become of the ivory from animals that die of natural causes?
- h. What role and input will local people living outside the park boundary have?
- i. What can be done to reduce the level of poaching in the park?
- j. How will the success of the program be determined?

Expansions:

1. Look at poaching vs. controlled hunting for species such as caribou, seals, whales, walruses and water fowl. Consider Ducks Unlimited. Invite a speaker from the Canadian Wildlife Service.
2. Look at the issue of ecotourism-does it represent a viable economic alternative? Investigate how much money your province brings in from tourism.
3. Research on DNA fingerprinting for the origin of the ivory.

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TOPIC: Steroids in Cattle

GRADE: 5/6

OBJECTIVES:

Through reading an article on steroids in cattle, the students should become aware of the effect that the meat from the cattle has on humans.

The students should use critical thinking to discuss ways to solve this problem for both farmers and consumers.

The students should become observant as consumers that much of the meat we eat contains steroids.

MATERIALS:

1. Handout on the topic "Steroids in Cattle"
2. Worksheet to follow the handout

METHOD:

Discuss the various types of meat we eat. ie. beef, pork, chicken, turkey, etc.

Have students read the handout, "Steroids in Cattle", individually.

Divide the students into groups of three to discuss the article and answer the questions on the worksheet.

Discuss their answers to the worksheet as a class.

Have students voice any concerns or questions that may have arisen upon reading the article and discussing it with their group.

EVALUATION:

Observe students' reaction and discussion.

Assess students' answers to the worksheet.

Are they taking into consideration both the farmer and the consumer?

Do they show an understanding that science and its technology does affect our society?

STEROIDS IN CATTLE

Here is a chance for you to analyze a difficult situation that beef farmers face in making a living from their cattle.

Background Information

The price of beef rises and falls every year. On the average, a cow should be at least 1200-1300lbs.(545-590kg) before it is sold so that the farmer will make money off of the animal. Therefore, feeding a whole herd of cattle so that they are big enough to be sold would take a lot of money for the farmer. On top of feed, there are a number of other expenses the farmer faces in raising a herd of cattle:

1. Transporting the herd from pasture to shelter in fall, and vice versa in spring.
2. Cost of medication when vaccinating the herd from illnesses.
3. Cost of a veterinarian when a cow is sick.
4. Pasture fees, if the farmer has no land for the cattle to graze on.
5. Gas to haul water to the herd, if it has been a dry year. (Especially the past few years.)
6. Gas to travel and inspect the herd.
7. Transporting the cow to be sold.

With all of the expenses that a beef producer faces, it becomes very difficult to make ends meet when it comes time to sell the animal.

Science and Technology's New Solution

Technology has come up with a scientific way to solve the farmer's financial problem of raising beef. Steroids are put into the ears of all of the animals that will be sold as beef. These steroids are put into the cow's ear when it is still very young. The steroids increase the size of the cow and also increase the rate at which the cow gets bigger. Therefore, the weight of the cow goes up faster and it is cheaper and takes less time for the farmer to feed the cow. Within no time the cow has reached its ideal weight and is ready to be sold.

The Ill-Effect of Steroids in Cattle

Steroids increase the rate at which the cow gets bigger, much faster than normal. Steroids are hormones. When these hormones are inserted into the cow, they must have some effect on the body chemistry of the animal. Science has found that these steroids affect the cow's reproductive system. If the steroids are injected into the entire herd, there will be little chance of the cows to produce offspring in the following year.

It has been found that the bulls, the males that breed the herd, may become sterile with the steroid in their bodies. The cows, the females which bear the calves, may become infertile, may have a miscarriage if they do become pregnant, or the calf may die immediately after it is born. For these reasons, farmers will only put the steroid into a cow that will be used only for meat, not reproduction of the herd. But what happens to the meat of the cow that will be eaten?

Steroids in the Meat We Eat

Steroids change the body chemistry of the cow. A certain percentage of the steroid gets into the meat. What happens to us when we eat the meat of the cow? If you eat enough of the meat, it would be almost as if you were taking the steroid itself. The problems that occur with the cattle could happen to you. Not only does the steroid alter the reproductive system, but it also changes your physical features. Women develop more facial and body hair; men have been known to develop breasts. The steroid is not lost in the cow, it is passed on to the consumer.

Many farmers know the effects of steroids in cattle and choose not to use them. Others choose to use the steroids on the cattle they sell, but keep the steroid out of the cow that they and their family will eat. Raising cattle is a difficult business. It comes down to a moral question for the farmer: Do I risk the health of my cattle and the consumers so that I will be able to make ends meet financially?

Steroids are not just used in beef. They are used in all types of meat: pork, chicken, turkey, and so on. Remember...

STEROIDS IN CATTLE
WORKSHEET

1. What would you do if you were a beef producer facing hard times? Why?
2. As a consumer, what should you do about steroids in the meat we eat?
3. How can science, technology, or society help the farmer to make ends meet, without the use of steroids?
4. Discuss your point of view upon reading this article.
5. What did you, yourself, learn from the article?

DIPLOMA PROGRAM PROPOSAL

RATIONALE FOR OUTDOOR ENVIRONMENTAL EDUCATION

The main concept being emphasized in this Diploma Program proposal is to challenge teachers to look at the centre of an Outdoor Environmental Education continuum. At one end there are the outdoor pursuits (namely, canoeing, rock climbing, skiing, etc.) and at the other end, there are environmental issues (concerns such as pollution, deforestation and recycling, etc.) in relation to the natural world. However, when looking at the focal point, which brings together both ends of the continuum into a holistic experience for the learning, it is necessary to focus on the context for the activity in its broadest sense. In other words, where is this activity experienced, an outdoor environment.

A long standing definition of Outdoor Education is as follows:

"Outdoor Education is education in, about and for the outdoors" (Donaldson & Donaldson, 1958).

"IN" describes the setting or context where first-hand learning can be experienced, and in this case, it is an outdoor natural environment.

"ABOUT" describes the activity, curricula area or cultural aspect through which the interrelationship of humans and nature is constantly reinforced.

"FOR" describes the purpose of the activity that activates the cognitive psychomotor and affective domains and which also enhances understanding and stewardship of all natural resources.

The outdoor environment is the vital catalyst for integration in so many ways. There is no separation in the outdoors, nature is networking and human beings are integral part of the natural world. Likewise, curriculum areas that are taught in an outdoor environment are integrative and learning becomes a holistic experience. This concept of integration is certainly being reinforced in the Year 2000 document.

There is no one area of study that can claim priority of the outdoor environment. Each views the outdoors in all its diversity, from varying perspectives. Thus, there are several levels/layers of understanding about the environment:

1. Human beings as an integral part of the environment.
2. Relationships of curriculum areas and the environment in educational institutions.
3. National/international organizations use the environment from their educational perspective: Environmental Education, Outdoor Education, Recreation Education, Adventure Education, Conservation Education to name a few.

Awareness of environmental issues within society in general has been substantially

raised over the past decade, both locally and on a national/international scale, to "Earth Summit" in June, 1992. The general public are more opinionated and involved than ever before. However, this knowledge has to have some substantive base to support true understanding. Hence, future citizens of 2000 A.D. need to know and understand the many dimensions of outdoor environmental education. Students have an inherent right to be provided an opportunity to learn in school, initially, and then in post secondary institutions about Outdoor Environmental Education in a way that meets their needs, experience level and maturity. It follows that the students should be able to look to the university to provide leadership in this important aspect of education, which is sadly lacking on the UBC campus in any tangible way.

It is, therefore, proposed that an Outdoor Environmental Education diploma program be introduced in September 1994 by the Faculty of Education. There is popular support for such a program. The results of a recent study that surveyed Outdoor Educators, regardless of department affiliation in the secondary schools of B.C., appear to be a measure of the enthusiasm for this diverse yet integrative area of knowledge. Outdoor environmental education is being taught not only at the elementary level but, in some measure, in secondary schools throughout the province. However, there is a recognizable need to provide teachers with additional skills and educational opportunities to do more and at a higher level, to enhance their instructional capabilities in teaching in an outdoor environment.

Returning teachers taking summer session courses on campus (e.g., Education 380) have expressed interest in continuing to study in the area of Outdoor Environmental Education, if such a program was offered on this campus.

The proposed program will be an interdisciplinary integrated program of studies, which will bring together a wide range of courses from different departments across campus. The majority will be drawn from the Faculty of Education; however, course offerings will come from other faculties. The common theme/concept is the outdoor environment, used as an integral part of experiencing each course. It was on this basis that the courses selected themselves, as it were, for the program. Thus, the dimensions of the proposed program are broad, from NITEP to children literature, from Landscape Architecture to Adapted Physical Education. This accompany the core courses in curriculum areas such as Outdoor Environmental Science, Forestry Education and Outdoor Education.

British Columbia has one of the finest outdoor education classrooms in Canada. The teachers in B.C. need to make greater use of these natural resources, to fulfill the vision of the Year 2000 document and to create meaningful outdoor learning opportunities for the students of this province.

November, 1993

Anne Anthony, Ph.D.
School of P.E. and Recreation

OUTDOOR ENVIRONMENTAL EDUCATION DIPLOMA PROGRAM

This program is designed for teachers who have a specific interest in a natural outdoor environment and recognize that here is a valid teaching context which provides integrated learning experiences for students of all ages in a wide range of curricula areas.

Core Courses:

EDUC 380	Teaching Adventure Activities in the Outdoors (3)	
SCED 380	Environmental Science Education (3)	
SCED 411	Forestry Education (3)	
SCED 413	Cultural Conceptions of the Natural World: Implications for Science Education (3)	(12)

Elective Courses: Select 4 out of 6:

ENED 340	Using Canadian Children's Literature in the Classroom (3)	
EDUC 326	Elementary School Physical Education: Curriculum (3)	
HKIN 367	Leisure and Disabled Persons (3)	
GEOG 315	Environmental Inventory and Classification (3)	
LARC 420	Theories in Experience and Place (3)	
FRST 290	Recreation Resource Administration and Management (3)	(12)

Approved Courses in: Faculties of Art, Education, Science, Forestry and Architecture

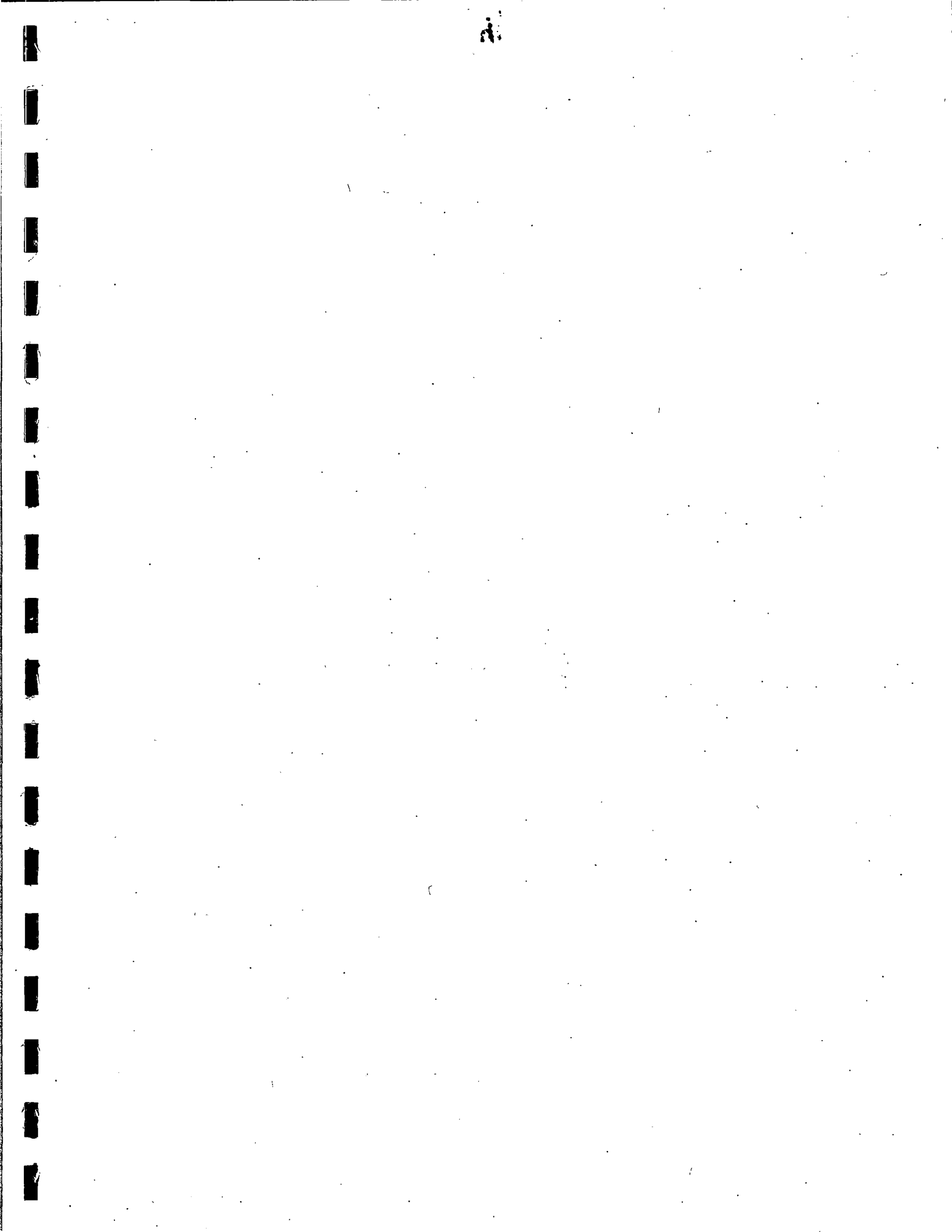
Please note: SSED 4XX Global Education: Historical and Geographic Aspects (3) is a course that will become part of the program at a later date.

(6)

Departmental Advisor:

Dr. Anne Anthony

Telephone: 822-4671
Messages: 822-2165
Office: Scarfe 2127



Faculty of Education, U.B.C.

SUMMER SESSION 1994 (TERM 2)

Education 380 - Option 1: Research/Teaching Paper (25)

Your evaluation has been based on the following criteria which were taken from the assignment sheet. For further clarification/information, do come to my office, Scarfe 2127.

A. Intent:

To design a program (unit/experience) that utilizes an integrative approach and reinforce the themes of adventure and environmental awareness through physical activity in the outdoors.

B. Presentation: (3) []

The format of the paper to include the following:

- (1) Typewritten
- (2) Minimum of 10 pages
- (3) Title page
- (4) Table of Contents
- (5) Bibliography
- (6) Appendix

C. Format:

- (1) Introduction (3) []
Overview of paper providing reasons, context, and support for your topic idea.
- (2) Literature Review (8) []
Research and review four (4) articles and compile a bibliography of both books and articles.
- (3) Program Experience (8) []
Design a four lesson unit outline for an integrated learning experience outdoors. Provide appropriate methodology/logistics to support your ideas for each experience.
- (4) Summary (3) []
Share personal reflections on this paper, and in relation to your understanding of Outdoor/Environmental Education.

Please attach this sheet to your paper to facilitate marking. Thanks.

University of British Columbia
Faculty of Education

SUMMER SESSION 1994 (Term 2)

1. Course: Education 380 (3 credits)
2. Title: Teaching Adventure Activities in the Outdoors
3. Description: An interdisciplinary focus will be used in methodology and program planning for teaching adventure activities in an outdoor environment.
4. Instructor: Dr. Anne Anthony, Scarfe 2127, Tel. 822-4671 (O), 879-5109 (H).
5. Dates, time and location: July 4 to July 22, 1994
8:00 am - 10:30 am
Scarfe 1003
6. Text: None. Journal articles are read as prescribed reference/resource material.
7. Rationale: Physical Education (with other curriculum areas) can provide opportunities for young people to experience adventure-type activities in outdoor settings. The quality of these learning experiences are the result of the teacher's knowledge, understanding of children and style of leadership that will be reflected in the type of program offered.
8. Objectives:
 - to present methodologies for outdoor teaching
 - to develop an interdisciplinary program of activities
 - to stimulate environmental awareness through experiential learning in the outdoor classroom
 - to experience a variety of integrative activities
9. Format: Course content will be divided up into mini-lectures, seminars, small group discussions and plenary sessions, practical outdoor experiences and in-class presentations.
10. Content: see Tentative Schedule (separate sheet)
11. Field Trip: see Information sheet (separate sheet)
12. Assignments: see Project Sheet (separate sheet)
13. Evaluation:

In-class presentation <u>or</u> major paper	25 marks
Overnight field trip	25 marks
Journal/Reflection papers	15 marks
Article review	5 marks
Resource file	5 marks
Final essay/in class exam (1 hour)	15 marks
Participation	10 marks
14. Course Fee: There will be an additional cost for handout materials and field trips.

University of British Columbia
Faculty of Education

SUMMER SESSION 1994 (TERM 1)

EDUCATION 380 - TENTATIVE SCHEDULE

WEEK 1 THEME: NAVIGATION

1. July 4 - Introduction
- Review Course Outline/Objective and Logistics
- Way-finding Experience - Campus
2. July 5 - Play/Adventure Experiences and story telling
- Outdoor Environmental Education: Definitions/ Philosophy
3. *July 6 - Environmental Experience - UEL/University Hill Secondary
4. July 7 - Leadership/Styles of Teaching
- Safety/Legal Liability
5. *July 8 - Score 'O' Event - Queen Elizabeth Park

WEEK 2 THEME: "ADVENTURE"

6. July 11 - Environmental Awareness/Concerns
- Interpretation of Nature
7. *July 12 - Challenge/Cooperative Activities - UEL
8. July 13 - Adventure Education
- Risk - Outdoor Pursuits
9. July 14 - Trip Organization
10. *July 15/16 - Overnight camping - Newcastle Island (see separate Sheet)

WEEK 3 THEME: "INTEGRATION"

11. July 18 - Field Trip Review
- Program Planning
12. *July 19 - Bicycle Rodeo - Campus/UEL - integrated experiences
- First Nations House of Learning, UBC.
13. July 20 - Basic Wilderness Skills
- Survival/Hypothermia
14. July 21 - Curriculum Integration
- Integrated Outdoor Programs
15. July 22 - SCET Evaluation
- Final Essay

*Field Trip



EDUCATION 8Y32 (1993-4)

Primary/Junior Social & Environmental Studies

Instructor: Sharon Abbey Course Location: Room 206

Time: Tues. (St. Cath.) 8:30-10:30; 10:30-12:30; or 12:30-2:30
Thur. (Dundas) 10:45-12:45

Office: PE 259 (Located in the Physical Education Building - exit by
doors beside the Student Lounge)
Dundas - TBA

Office Hours: Tues. (St. Cath.) 1:00 - 3:00 p.m.
Thur. (Dundas) 10:00 - 10:45 a.m. or after 3:00 p.m.
OR BY APPOINTMENT

Phone: St. Cath. office 688-5550 Ext. 3349; Dundas 628-5050; Home 984-5162

COURSE TEXTS AVAILABLE AT BROCK'S BOOK STORE

(Note: these books are recommended only)

- Esler, W. & Esler, W. (1993). *Teaching elementary science, sixth edition.* California: Wadsworth Publishers.
- Frederick, A., Meinback, A., & Rothlein, L. (1993). *Thematic units: An integrated approach to teaching science and social studies.* New York: Harper Collins.
- Frederick, A. & Cheesebrough, D. (1993). *Science for all children: Elementary school methods.* New York: Harper Collins. (*Good sample units).
- Kirman, J. (1991). *Elementary social studies.* Scarborough: Prentice-Hall. (*Canadian perspective)
- Schwartz, S. & Pollishuke, M. (1990). *Creating the child-centred classroom.* Toronto: Irwin Publishers.
- Sunal C. & Haas, M. (1993). *Social studies and the elementary/middle school student.* Toronto: Harcourt Brace Jovanovich (*Excellent planning model).
- Wasserman, S. & Ivany, G. (1988). *Teaching elementary science: Who's afraid of spiders?* N.Y.: Harper & Row, 1988. (*Play/Inquiry focus I will refer to often).

EDUCATION 8Y32

Primary/Junior Social & Environmental Studies 1993/4
Instructor: Sharon Abbey

Rationale:

This course consists of ten sessions (two hours each). You are expected to attend all sessions or notify the instructor if you are unable to attend. The intention of this course is to help the beginning teacher become more aware of the interrelationships in our environment both within and beyond the self as well as to explore methodologies and outcomes for applying these findings related to the new Ministry of Education "Common Curriculum" (emphasizing sections "Self and Society" and "Mathematics, Science, and Technology" for grades 1-6). We will discuss the creation of hands-on learning opportunities that focus on integration, cooperative learning, transactional participation, outdoor acclimatization, play as a learning mode, exploration and reflective inquiry. We will also examine current social and ecological issues, media influences and holistic perspectives.

Our central questions will remain: *What is the role of an effective and inspiring teacher in a "sciencing" classroom?*

A great deal of class time will involve interactive, hands-on experiences. By beginning with ourselves as reflective learners and understand our own knowledge and beliefs about teaching and learning, we can establish an emerging framework from which to set goals and directions for ourselves as educators and mentors of young children. I will try to encourage you to become aware of your own strengths, beliefs and biases, question existing procedures, explore new directions, initiate change, take risks, and grow professionally and personally. Be prepared to participate, reflect, collaborate, discover, and have fun!

Course Objectives of the Instructor:

Upon completion of this course, the student will:

- 1) be able to understand the relationship between personal beliefs and professional practice (through the use of a reflection journal and group discussions in class, explore and reflect on one's own experiences and attitudes about teaching and learning).
- 2) be able to model and promote appropriate social, ethical and moral values.
- 3) be able to help children develop inquiry and critical thinking skills.

- 4) be able to help children acquire collaborative competencies and cooperative group interaction skills.
- 5) be able to stimulate children's curiosity, imagination, respect and sense of wonder about the world, self and others.
- 6) be able to motivate children to take responsibility for their own life-long learning, set realistic goals and attain a sense of accomplishment and self-worth.
- 7) have knowledge of current educational philosophy, theory and methodologies in the province of Ontario - related to ministry documents such as "Common Curriculum", "Science is Happening Here", "Shared Discovery" and "Partners in Action".
- 8) have knowledge of the broad conceptual framework related to social and environmental studies and how to address these concepts in long range, unit and daily educational plans (with respect to objectives, outcomes, evaluation, resources).
- 9) have knowledge of appropriate learning environments for young children which will stimulate and promote hands-on exploration, curiosity, individual planning and research both within the classroom and beyond (learning centres, field trips, resources, classroom management, evaluation and record-keeping).
- 10) be able to analyze a variety of approaches and activities available to encourage children to develop social awareness, sciencing abilities and environmental respect (during practice teaching blocks).
- 11) demonstrate professionalism, sensitivity to all learners' needs, and respect and acceptance of others.
- 12) recognize the connections between social and environmental science with other subject areas and with the world at large and be able to translate this meaningfully into classroom curriculum.
- 13) be able to plan, organize and facilitate a hands-on sciencing experience which encourages the active participation of learners.
- 14) become familiar with a variety of reference materials (journals, magazines, publications, agencies, government programs, community services, videos, kits, textbooks, equipment, tools, field centres, contact addresses, free materials and posters, children's literature, poetry, school-based programs etc.) and their related use in schools.

EDUCATION 8Y32
PRIMARY/JUNIOR SOCIAL & ENVIRONMENTAL STUDIES 1993/4

EVALUATION

Successful completion of this course is based on:

1. Attendance: You are expected to attend all classes or notify the instructor if you must be absent. You are responsible for obtaining copies of all hand-outs and classroom assignments missed from a class-mate.

2. Participation: Please share your opinions, experiences and ideas in class. You are encouraged to ask questions and work cooperatively with others.

3. Quality of Assignments

A. Personal Course Objectives and Self-Evaluation : Prepare a list (2 copies) of personal objectives under the headings 'skills'(be able to), 'knowledges' (understand, describe, explain), and 'attitudes and beliefs' that you hope you will accomplish in this course. Keep one copy in your journal for reference at the end of the course to help you prepare a self-evaluation.

Due Date: Personal Objectives - class #2 Self-Evaluation - class #10
Evaluation 10%

B. Hands-on Discovery Activity: In small groups of two or three, you will lead the class through a simple experiment, game, or drama related to a relevant topic in the "Common Curriculum". You will prepare a display poster for the wall, a one-page hand-out for members of the class, a peer evaluation form for the class and bring all necessary materials to carry out the activity (approximately 15 minutes). Prepare a self-evaluation of the activity to hand in the following week.

Due Date: You will sign up for dates (class #3 - #9).
Evaluation 15%

C. Professional Reflection Journal: Once a week, reflect on the following:
(1) a personal memory or experience that has influenced your image of a (social/environmental) teacher.
(2) your personal growth or awareness related to changing concepts, concerns, new insights, fears, doubts, accomplishments etc. related to the program.
(3) a media issue related to a social or environmental concerns at a local or global level and appropriate classroom application.
(4) impressions on the previous class or analysis (a form will be distributed) of classroom activities (when practice teaching) related to social/environmental curriculum

(5) reaction to the hands-on sharing sessions in class.

Due Date: Weekly submissions except for teaching blocks.
Evaluation 35%

D. Curriculum Unit Plan: Select a theme or topic related to a social or environmental issue. Plan an integrated unit of study to include the following components: idea web, objectives (skills, knowledges, attitudes), teaching strategies, learning resources, children's literature, student activities, learning outcomes, evaluation procedures, and references. Make specific references to the relevant learning outcomes addressed in the "Common Curriculum". These units will be shared and discussed during the last class.

Due Date: Class #9 (Note: late submissions will be penalized unless prior arrangements are agreed upon).
Evaluation 40% (You will complete a self-evaluation which will be combined with the instructor's evaluation).

ASSIGNMENT CHECKLIST

1. Personal Course Objectives - class #2
2. Self-Evaluation - class #10
3. Hands-on Discovery Activity (poster, hand-out, peer evaluation form, materials, self-evaluation) - as scheduled
4. Professional Reflection Journal - weekly
5. Curriculum Unit Plan and self-evaluation form - class #9

8Y32 COURSE OUTLINE 1993/4**1. OVERVIEW AND INTRODUCTION:**

What is "sciencing"?

A focus on inquiry.

Play-debrief-replay model.

Science components: physical, earth, natural.

Social and Environmental Issues for the young child.

Ministry documents (Common Curriculum, Science is Happening Here, Shared Discovery, Partners in Action).

Product/Process learning; outcomes based learning.

Collaboration, cooperation and integration.

Assignments and course expectations.

IRC - resources related to social/environmental studies.

2. OUTDOOR ACCLIMATIZATION:

Dress for an outdoor experience on the escarpment.

Hands-on activities to encourage students to experience connections in nature, to utilize the senses, to become aware of patterns and alternate perspective.

Introducing the web of life and food-chain to young children.

The Great Lakes Ecosystem.

3. THE PROCESS OF SCIENCING AND TECHNOLOGY

Defining the terms.

Planning a unit: relation between objectives (SKA) and evaluation.

Inquiry model.

Group interactive skills.

4. SOCIAL/ENVIRONMENTAL THEMES IN CHILDRENS LITERATURE

Semantic webbing.

A book talk - sharing some of my favourites.

Multi-media presentations: video, drama, puppets, masks etc.

5. PLAY AS A LEARNING MODE

Structures and technology related to block play.

Observation and record keeping.

Mapping skills.

Science in a bag.

6. PLANNING THE INQUIRING CLASSROOM

Learning centres: rationale, resources, organization.

Water play.

Kinder-chemistry.

Exploring rocks.

Tools and resources and published references.

7. AGRICULTURE IN THE CLASSROOM

A presentation by the Ministry of Agriculture.

8. SOCIAL ISSUES AND GLOBAL AWARENESS

Beginning with self.

Making abstract concepts tangible.

A spiral curriculum plan.

Conflict resolution.

Human rights.

Conservation for a healthy planet.

Taking responsibility.

9. PLANNING A FIELD TRIP

Local opportunities (brainstorm).

Discussion and sharing unit plans (assignment D).

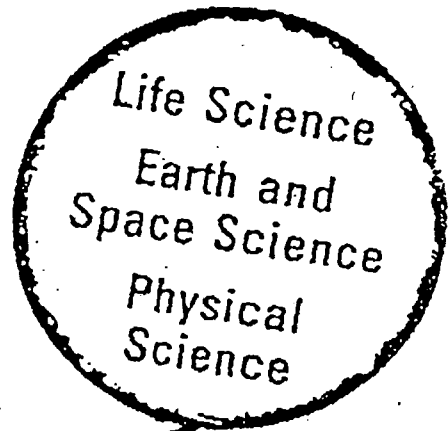
10. COURSE WRAP-UP

Feed-back on unit plan assignments.

Tips on "getting ready for September".

Course evaluation.

Learning Opportunities



Attitudes

- Concern and Care for the Environment
- Respect for Living Things
- Consideration for Others
- Open-Mindedness
- Objectivity
- Accuracy
- Thoroughness
- Perseverance
- Safety-Mindedness
- Curiosity
- Risk Taking

Skills

- Observing
- Classifying
- Serialing
- Communicating
- Measuring
- Inferring
- Predicting
- Hypothesizing
- Experimenting
- Controlling Variables
- Interpreting
- Making Models
- Manipulating Equipment and Materials

Knowledge

- Energy
- Space
- Time
- Matter
- Community
- Life
- Change
- Growth
- Interrelationships
- Technology
- Conservation

Summer 1993

ENVIRONMENTAL SCIENCE 9F31
COURSE OUTLINE

Course DirectorS Bert Murphy July 5-23inc. 8:30 - 2:30
: Pete Mernagh

Course Description

This is the first of a possible three course package leading to a specialist certificate in Environmental Science. "Part I should provide candidates with opportunities to acquire knowledge and develop skills that will enable them to become competent in developing courses of study and implementing learning experiences in environmental science appropriate for one division level of students whom they teach or administer." (Ministry of Education)

Successful candidates will:

1. Develop an understanding of present environmental concerns and their impact upon curriculum and pedagogy in the classroom;
2. Review Ministry of Education curriculum documents and directives as well as other government documents such as Canada's Green Plan;
3. Become knowledgeable of resources available to teachers from other government ministries (e.g. Ministry of the Environment) non-profit organizations (e.g. Recycling Council of Ontario), special interest groups (e.g. Federation of Ontario Naturalists) and individuals;
4. Become aware of and be able to use facilities within the local jurisdiction which could provide the teacher with resources to assist in the delivery of the "environmentally aware" curriculum;
5. Gain competence in the design and implementation of units of work based on environmental concepts;
6. Participate in field experiences using scientific equipment and methodology.

During the delivery of this course the participants will receive opportunities to investigate, react to, research and plan program delivery dealing with a number of environmental issues. Candidates will be encouraged through, seminars and peer teaching activities, to share their own expertise and research findings with others. Through demonstrations and hands-on experiences a number of scientific techniques in dealing with environmental issues would be experienced. Field trips will provide first hand exposure to both environmental problems and the processes by which these problems are being addressed.

PARTICIPANT EVALUATION

Evaluation will be based on four components:

1. Participation and Attendance 30%
2. Project 30% Due July 23rd
3. Presentation of project 20% July 23rd
4. Preparation of an Abstract 20% Due July 12th

PARTICIPATION AND ATTENDANCE

Candidates are expected to be present for all course days. This course is a participatory type of course with many opportunities to become involved in various activities in and out of the classroom. The candidates and the course director will negotiate a mark for this evaluation component.

THE PROJECT

Each candidate will prepare a unit of study that addresses an environmental issue. This unit of study will be presented to the group in a presentation of 30 to 45 minutes. Presenters may wish to have the class try some of the activities. Candidates will work independently to complete this unit of study.

The unit of study should address the "learning outcomes" both General and Specific, from the Common Curriculum. This unit of study can be an integrated unit that incorporates several traditional subject areas. A series of not less than five lessons should be developed on the topic. The unit should include teaching strategies, activities, resources and a student evaluation section.

PROJECT PRESENTATION

Each candidate will present a project to the class. The presentation should give an overall picture of the unit. One specific lesson should be presented in detail to the class.

The course director and the candidate will negotiate a mark for the presentation.

THE ABSTRACT

Each candidate will prepare an abstract of not more than two pages. The abstract will list ten sources of environmental information. A brief comment should be made for each source stated.

BIBLIOGRAPHY

Lewis, J.C. editor, (1991). Guide to the Natural History of the
Niagara Peninsula. Welland: Welland Printing

Grant, Tim. editor Green Teacher environmental magazine
Toronto

B. Murphy
9F32
3/12 13/9

ENVIRONMENTAL SCIENCE PART II

COURSE DESCRIPTION

This is the second of three courses leading to a specialist certificate in Environmental Science. Participants will have already taken Environmental Science Part I in order to enroll in this course.

The course will encompass the following objectives:

-To further extend the study of how environmental science impacts upon and integrates within the overall school curriculum;

-To identify and articulate a personal code of environmental ethics;

-To further identify and interact with the environmental network which exists to assist teachers in the delivery of an environmental science curriculum;

-To develop and implement an integrated unit of work with an environmental focus;

-To develop appropriate evaluation strategies for measuring student achievement in environmental science.

During the delivery of this course the participants will develop personal skills in the delivery of topics related to environmental concerns. Emphasis will be placed upon the overall curriculum and the integration of environmental science through effective pedagogy. The participants will discover how their own environmental code or ethic impacts upon their interaction with the curriculum and students.

Course Assignments:

It is the intention of these assignments to develop both expertise and knowledge in the delivery of curriculum focused on environmental concerns.

1. The participant will develop and articulate a personal code of environmental ethics. This will take the form of a paper which outlines the chronology of the participant's own "Journey to Environmental Awareness and Action".

2. The participant will develop and field test a new unit of work which covers an environmental theme. This unit will comprise at least two weeks of student participation. The participant will monitor the delivery of the unit by means of a personal journal.

Environmental Science Part II
Fall-Winter Session 1993-94

Schedule of meetings (October - December) for the two independent study candidates:

Laura Yablo
September 22, 1993
October 20
November 2, 23
December 7

Joan Kott
September 29, 1993
October 18
November 15
December 6

3. The participant will produce a reaction paper to two articles, news stories, or reports on a current environmental issue. This reaction paper will also outline how this issue could best be dealt with in the classroom.

Course Evaluation

Because this course is being delivered as an independent study the evaluation will encompass:

1. Written assignments (identified as 1 and 3 above) to be completed by the participants according to an agreed upon timetable. (50%)
2. The completion of a journal (identified as 2 above) which will chronicle the participants' perceptions of the success of a new unit of work. (30%)
3. Regular meetings between the participants and the course instructor to review progress. (20%)

ENVIRONMENTAL SCIENCE PART III
1994 SUMMER SESSION

Introduction

There are two candidates enrolled for this specialist course. In order to apply the knowledge, skills and attitudes learned in Parts I and II of this course the 1994 Summer Session will emphasize a project with a real life application. The candidates will interact with the St. Johns Outdoor Studies Centre (Niagara South Board of Education) to develop an environmental program for primary students using the resource of the Short Hills Provincial Park.

Scheduling

Preliminary sessions with the course instructor will take place on two Saturdays in June. An outline of the expectations will be developed. Participants will be expected to visit three other facilities which emphasize outdoor and environmental education. A brief report will be submitted on each facility.

The week of July 18 - 22 has been identified as the on-site time at the St. Johns Outdoor Studies Centre. It is expected that a minimum of 30 hours will be devoted to work on the program. In addition another 20 hours of independent study will be devoted to this project.

Breakdown of hours

Preliminary Sessions	12 hours
St. Johns O. S. C.	30 hours
Independent Study	20 hours
Site visitations and report writing	18 hours
<u>TOTAL</u>	<u>80 hours</u>



*submitted by
W. Poole
March '9*

Education 5P07 - Research in Social and Environmental Studies

Calendar Description:

Theories of learning styles are researched for considered use in school programs which address current social and environmental issues. Planned field trips provide the means to assess the theory behind the practice.

Course Description:

Currently, the research component includes the investigation of learning styles theories, and their respective applications to curriculum planning, instructional decisions and evaluation. As a field based course, the candidates are required to explore, first hand, certain urban and natural environments. Close liaison occurs between the students and the educational staff at the Lee County Environmental Education Department in Florida.

Assignments

1. ALIC: Using it and evaluating its potential.

Consider the ALIC system to be a technique or strategy for teaching or for learning. Use it to get to know more about some natural things in Florida; birds, trees, flowers, shells, fish, stars, etc.

Using the Field Notes booklet, do enough to get to know the system and excite your curiosity. Then using the 4-MAT research paradigm (Chapter 4 of 4-MAT in Education) evaluate the potential of ALIC.

Include this evaluation (2-4 pages) with the Field Notes booklet as a submission

25%

2. OTHER PRACTICAL APPLICATIONS OF 4-MAT

This assignment represents a substantial written report on a selected application of 4-MAT. In the workbook, in seminars and in field experiences we will have focused on 4-MAT applications to all of the following:

- (a) teaching/learning
- (b) evaluation
- (c) curriculum development
- (d) research
- (e) administration

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Select one of the above as the topic for a paper. The paper is designed to illustrate the practical use of 4-MAT in that area. Your paper on teaching might use 4-MAT to rationalize a set of instructional strategies. That on curriculum development might actually use 4-MAT in a deliberate way to develop a unit outline in a discipline. The use of 4-MAT in research might develop problem solving strategies for use by students or yourself, or you might use the model to work through an administrative problem, or to evaluate a procedure or the like.

After further discussion in the pre-sessions about this assignment, we will meet a, b, c, d and e groups respectively (see above) in pre-session two to share ideas on the topic and to offer further advice on the assignment.

25%

3. WRITE A DIARY

The scope of the diary/journal includes the three pre-sessions and the Saturday to Wednesday time in Florida. Our expectations for the content includes:

- (a) a description of the events
- (b) how 4-MAT connects to/with the events
- (c) your reaction to these events in terms of personal worth, et al.

We encourage use of your preferred learning style and mode to "do" the diary/journal.

25%

Course Texts

Poole, W. (1989). 4-MAT in education: An interactive experience, Poole/Gram Publishing.

Poole, W. (1989). Field notes: The ALIC system, Poole/Gram Publishing.

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Books

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Periodicals

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- Dunn, R.S. and Dunn, K.J. (1984, November/December). Ten ways to make the classroom a better place to learn. Instructor, pp. 84-88, 139.
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- Gregorc, A.F. (1984). Style as a symptom: A phenomenological perspective. Theory into Practice, 23, (1), 51-55.
- Kolb, D. (1983). Experiential Learning: Experience as a Source of Learning and Development. Englewood Cliffs, N.J: Prentice Hall.
- Kohn, A. (1987, October). It's hard to get left out of a pair. Psychology Today, pp. 53-57.
- Leflar, S.M. (1983). The 4-MAT system: An interview with Bernice McCarthy. Journal of Developmental and Remedial Education, 6, (2), 14-18, 29.

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- McCarthy, B. (1982). Improving staff development through CBAM and 4-MAT. Educational Leadership, 40, (1), 20-25.
- McCarthy, B. (1985). What 4-MAT training teaches us about staff development. Educational Leadership, 42, (7), 61-68.
- Samples, B. (1984). Reflections on curriculum teachers and teaching. Educational Leadership, 41, (7), 64-67.
- Samples, B., Hammond B. (1985). Holistic learning. The Science Teacher, 52, (8), 40-43.
- Webb, G.M. (1983, April). Left/Right brains, teammates in learning. Exceptional Children, pp. 508-515.

Other Sources

- Ault, K. (1986, February). Improving college teaching through adapting learning styles into practice. Paper presented at the annual meeting of the midwest regional conference on English in the two-year college. St. Louis.
- Benallick, L., McCallum, M., & McEachern, B. (July, 1988). Three on the 4-MAT. Unpublished master's thesis, Brock University, St. Catharines, Ontario.
- Hilgersom-Volk, K. (1987). Celebrating student's diversity through learning styles. (Report No. EA 019 436). Eugene, OR.: Oregon School Study Council. (ERIC Document Reproduction Service No. Ed 284 321).
- Lacey, V. (1986, April). The role of in-school administrators in bringing about curricular change: the principal's perspective. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Lynch, M.E. (1985). Right brain activities to improve analytical thinking. Paper presented at the annual meeting of the International Reading Association, New Orleans.
- Partridge, S. (1983). Left/Right brain functioning: implications for teachers. (Report No. PS 014 485). (ERIC Document Reproduction Service No. ED 247 018).
- Stephenson, S., Krouse, K., Smith, G., (1986). Teaching and learning styles. Celebrating Differences O.S.S.T.F., Toronto.

5P07 '91 Summer

*W. Poole*

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February 15, 1991

Greetings from Brock!

'Personal Firsts, Ed 5P07, Port Maitland, NIMBI, and you??'

We are pleased to share some details concerning 'Research in Social and Environmental Studies', and its premiere as a field based course in the summer. Ed 5P07 has taken people to the environs of Florida, and now a home-based version will feature the Great Lakes.

About the course:

Education 5P07 - Research in Social and Environmental Studies

Calendar Description:

Theories of learning styles are researched for considered use in school programs which address current social and environmental issues. Planned field trips provide the means to assess the theory behind the practice.

Course Description:

Currently, the research component includes the investigation of learning styles theories, and their respective applications to curriculum planning, instructional decisions and evaluation. As a field based course, the candidates are required to explore, first hand, certain urban and natural environments.

Beginning with the NIMBI (Now I Must Become Involved) tugboat adventure and the help of the Potters from Port Maitland, the course will provide a holistic experience based on a variety of perspectives such as historical, environmental, geological, economic and political.

Assignments:

1. ALICE: Using it and evaluating its potential.

Consider the ALICE system to be a technique or strategy for teaching or for learning. Use it to get to know more about some things in the environment, birds, trees, flowers, shells, fish, stars, erosion, etc.

Using a 'field notes' format, do enough to get to know the system and excite your curiosity. Then using the research paradigm (to be provided at the pre-sessions) evaluate the potential of ALICE.

Include this evaluation (2-4 pages) with your Field Notes booklet as a submission.

25%

2. OTHER PRACTICAL APPLICATIONS OF LEARNING STYLES MODEL

This assignment represents a substantial written report on a selected application of the model. In the textbooks, in seminars and in field experiences we will have focused on applications to the following:

- (a) teaching/learning
- (b) evaluation
- (c) curriculum development
- (d) research
- (e) administration

Select one of the above as the topic for a paper. The paper is designed to illustrate the practical use of the model in that area. Your paper on teaching might use it to rationalize a set of instructional strategies. That on curriculum development might actually use it in a deliberate way to develop a unit outline in a discipline. The use of it in research might develop problem solving strategies for use by students or yourself, or you might use the model to work through an administrative problem, or to evaluate a procedure or the like.

No doubt the topic of the Great Lakes will be incorporated into your applications.

50%

3. WRITE A DIARY

The scope of the diary/journal includes the pre-sessions and the Monday to Friday time in Port Maitland. Our expectations for the content includes:

- (a) a description of the events
- (b) how the learning styles model connects to/with the events
- (c) your reaction to these events in terms of personal worth through personal firsts

We encourage use of your preferred learning style and mode to "do" the diary/journal.

25%

Course Events:

The course experience will include two Saturday pre-sessions (May 4 and June 1 at 10:00 am-3:00 pm), location TBA, plus Monday, July 15 to Friday, July 19, inclusive. The location is the Dunnville/Port Maitland area, with accommodations at the Riverview Motel.

As a field based course, we plan to maximize the opportunities for involvement through awareness, knowledge and action plan activities.

During the pre-sessions and the time between, we expect to uncover answers to the why? what? how? and what if? of learning styles in SES and the other components of the course.

Tag-a-longs:

Unlike the Florida course, the Lake Erie experience will not have tags.

Follow-up:

If you plan to do Ed 5P07 this summer, please complete and return the attached portion to me (W. Poole) by April 5 so that a special group can be assembled for this personal first experience. A limit of 25 is imposed.

Upon instructor approval, you will be able to register through BIRT later in April.

Course Instructors:

The topic of learning styles and the application to decision-making within various contexts continues to excite Wally Poole, as does the environment and our place in it.

Patricia Mackie, a teacher/V.P. in Etobicoke, with an M.Ed. from Brock will assist in all the sessions. Her enthusiasm for sharing educational experience is always evident.

We both look forward to sharing "personal firsts" with you in this course.

All the Best,

Wally Poole, Ed.D.
Associate Professor
Faculty of Education
Brock University

Please complete the appropriate sections and return to Wally Poole
by April 5, 1991.

Name: _____

Address: _____
 street city postal code

Home Phone: () _____

Business: () _____

I further advise you that: _____

I will enrol in Educ 5P07 for July, 1991 - Yes No

Personal Stuff:

Present and recent positions in education: _____

Interest/experiences with learning styles research: _____

I believe the environment _____

and further I expect to _____

1991 SUMMER SESSION PROGRAM
Faculty of Continuing Education
The University of Calgary

COURSE: EDCI 568, Environmental Studies in the School Curriculum (F 2-2), (Section 50), July 02 - July 23, 1991

INSTRUCTORS: Professor John Marean and Judy Archer

TEXTBOOKS: Extensive reading is required to grasp the scope of environmental matters and their teaching implications which can be related to school study. No single text provides this balanced background. Reading from a number of books on the accompanying list is required.

Many of the books listed are in paperback format and are available in prominent book stores. They have not been specifically ordered for stocking at the University Book Store but it is not unlikely that copies of many may be obtained from that source.

RESERVE BOOKS: No books have been placed on reserve in the University library but a large collection related to our subject is shelved. No shortages of appropriate titles are anticipated.

NOTE: The pre-session reading and the required report will be taken into account in the final grade of the course. The grade in pre-session work will comprise 25% of the final grade. The report should be received by June 21, 1991. The mailing address is: Professor J. Marean, Room 702 Education Tower, The University of Calgary, 2500 University Drive N.W. Calgary, AB T2N 1N4.

A laboratory fee of \$30.00 will be assessed for special equipment and other expenses associated with field work in this course. Since the class will be off campus in field study for extended periods, registrants will not be permitted to enrol in any other course during the first summer session. This may include some weekend time, for which consideration will be given in other scheduling.

EDCI 568 - Summer, 1991

PRE-SESSION STUDY

The primary objective of this course is to help teachers develop skills of information gathering and processing in the natural and the man-modified environment and to interpret this into instructional materials in their teaching situations. A second objective is to allow these teachers to inform themselves on environmental matters and to examine their individual environmental views and practices relating to environmental quality and the use of resources. The pre-session assignments are designed to serve the second objective. Our time together in the course should promote the first. Suggested reading is designed to provide background. A report to be submitted prior to the session is offered to encourage an in-depth study of some topic of interest and to provide experience in gathering and displaying the information which will be useful in decision-making.

You will be expected to read at least two books from the attached list or ones of a similar nature. Also, you will be expected to prepare a report prior to the beginning of the summer session. In order to complete the report you may need to do some additional reading and you will need to gather and process certain information.

In preparation for our work together during the session you should become oriented to the large concerns of our interaction with our fellow creatures and the natural and man-modified environment. Our intense period together is hardly sufficient to gain this orientation and successfully build on it toward environmental teaching. Thus, for your benefit as well as to contribute most effectively to our common gain, you must have read some of the classics in the field. You will be asked to share some of your knowledge and thoughts derived from this reading.

The other part of the pre-session requirement, the report, may be of either of two types. It may be a growth study of some system which is relatively available and familiar to you. Or it may be the start of an impact study of a type in which students could participate. To make the choice intelligently, you will need to know a little about these types of study. Growth studies require that you gather data about some element in the selected system over an extended period of time. These data are to be analyzed to determine the nature of the growth. This should allow you to make some predictions into the future even though we know the weaknesses of predicting. In an environmental impact study the purpose is to try to assess, in advance, the consequences of some course of action. This is even more future-oriented than a growth study and can be conducted on almost any scale.

Growth studies provide us with some insight into trends and, when the results of a number of studies are combined, may give some guidance for planning. Impact studies are intended to provide a quantitative, although subjective, measure of the relative effect of alternative solutions of some problems or approaches to a project beyond the purely economic considerations. Some suggestions are included in this paper to guide you in your choice of a topic and the preparation of the report. Both types of study

introduce some of the techniques ordinarily associated with scientific approaches to solving problems with strong social significance.

A growth study will follow the type of work done and reported in *LIMITS TO GROWTH*. It will not require an analysis by computer. Instead, some calculations, the graphing of data and the analysis of graphs to determine the nature of the change represented will provide the insight needed. Recent changes imposed by energy limitations make some of these studies most significant, especially if current data are available. Whichever project you choose to report you are encouraged to read the Meadows' book so that you will better understand some of the discussions in which we will engage.

An impact study calls for gathering and correlating information from field study as well as from records. It is not necessary to contemplate anything so vast as an oil pipeline or a dam on a major river. The project may be as commonplace as the consideration of the alternative ways of coping with the snow on school walks or the disposal of waste paper and garbage from your school.

The report is to be submitted no later than June 21 to allow us to explore your grasp of environmental problems generally and of approaches toward instruction regarding the environment. The evaluation of this report will constitute the majority of the pre-session component of your total evaluation. The report will be returned to you during the session in order that you may use it in your teaching. You will be encouraged to refine it into a teaching unit or aid for use in your own classwork.

GROWTH STUDIES

Environmental problems arise as a result of change. Changes in a single system seldom bring about grave problems with which we are presently concerned. Most of our major problems are related to the growth, at accelerating rates, of some elements normally alien to that part of the environment in which they occur. An awareness of some of these growth patterns will be paramount in the decision-making that will take place in the next quarter to half century.

A growth study for our course in Environmental Studies will be based upon the type of study done in *LIMITS TO GROWTH*. The following steps are suggested in preparing and reporting such a study.

1. Identify the system whose growth you will study.
2. Gather statistical data for the feature studied. Note that the suggestions made below are ones for which information can probably be gathered by contacting a single agency. We do not wish to make this part of the assignment unduly difficult but we are anxious that you have some experience in gathering statistical information. See how much information there is available through the phone book.

3. Organize the data in a meaningful way. It should be recorded in a table in a sequential order.
4. Prepare a graph which will show the variation of the element being studied over the time considered. We most commonly find such graphic representations are in the form of a bar graph or histogram. For the purposes of analysis it is easier to work from a line graph for it shows trends in a more meaningful way. Such a line can be drawn connecting the top points of the bars. This serves to average out short term variations, but cannot be used for interpolation to find a value part way through the time interval shown.
5. Prepare an analysis of the growth of the element studied by studying the data and the graph(s). Try to relate the changes which are observed in terms of the forces which led to such a change. In addition to short-term fluctuations, look for trends of change which represent the growth of that element. To determine if such change is exponential you may divide the change by the initial value for that time interval. In exponential change, this quotient should be approximately constant.
6. Extrapolate on the graph and attempt to predict the value of that element will have at some time in the future. Qualify your projection in terms of factors which you believe will influence the rate of change.

You may find the following list of suggested systems helpful in identifying an appropriate system for your study. It should be a sufficiently local system so that you can gather the data conveniently. An example of one such growth study is also included for your assistance.

1. Population of one of our large urban centres.
2. Use of fertilizer for certain crops.
3. Total horsepower of new agricultural equipment.
4. Commercial airlines passenger miles.
5. Automobiles licensed in the province.
6. Tourists in one of our National Parks.
7. Numbers of computers of one model sold.
8. Prescriptions for birth control pills.
9. Kilometres of paved roads in the province.
10. Connected electrical load of street lights in an urban area.

Some of these topics may show a decline (negative growth) during certain periods. This suggests a challenging analysis.

EDCI 568: PRE-SESSION READING

Each of the following books is felt to offer valuable insight into the nature of some environmental problems and is worth reading. It is recognized that LIMITS TO GROWTH is worthy because of the approach which it suggests in analyzing trends as well as thought-provoking conclusions. It is highly recommended for those who chose to conduct a growth study. It is one of a number of books with publication dates during the previous period of environmental concern. To have a proper view of the entire environmental movement, one should look at this much of history and one of the reading choices might well come from some of these older writings.

Books dealing with such specific problems as acid precipitation or global warming are common among the more recent publications. Scientific journals and periodicals also contain much useful information and an equivalent amount of reading from such sources would be considered acceptable. The "how to" books which are also plentiful now are useful, but not to promote your environmental literacy. You will want to know much of this material but more appropriately when you are designing environmental projects for your teaching. For the present, try to build a broad background. At least two books, either from this list, or of a similar type that you may have encountered elsewhere, should have been read prior to the opening of the summer session.

1. Bird and Rapport, State of the Environment -- Report for Canada, Supply and Services, Ottawa, 1986
2. Brown, Lester, State of the World 1990, World Watch Institute, W.W. Norton and Company, New York (This is one of a series published annually. Each is worthy of exploring.)
3. Carson, Rachel, Silent Spring, Houghton Mifflin Co. 1962
As the first book that really started the Western World into seriously considering some of the consequences of biocides and other invasions into natural systems, it is the classic of the field.
4. Commoner, Barry, The Closing Circle: Nature, Man and Technology, Alfred A. Knopf, 1971
5. Daly, Herman, For the Common Good, 1989
6. Daly, Herman, Steady State Economics, W.H. Freeman and Co., San Francisco, 1977
7. Ehrlich, Paul R. and Anne H., The Population Explosion, Simon and Schuster, New York, 1990
8. Ehrlich, Paul R. and Anne H., Ecoscience: Population, Resources, Environment, W.H. Freeman and Co., San Francisco, 1977
9. Ellis, D. Environments at Risk: Case Histories of Impact Assessment, 1989

10. IUCN, World Conservation Strategy, IUCN, WWF, UNEP, Gland, Switzerland, 1980
11. Lovelock, J.E. GAIA, Oxford University Press, 1987
12. Lovins, Amory, Soft Energy Paths: Toward an Enduring Peace, Friends of the Earth, 1977
13. Maddox, John, The Doomsday Syndrome, McGraw-Hill, New York, 1972
14. Meadows, Donella H., et al., Limits to Growth, Universe Books, New York, 1972
15. Mesarovic, M. and Pestel, E., Mankind at the Turning Point, E.P. Dutton and Co., Readers Digest Press, New York, 1974
16. Mungall and McLaren, Planet Under Stress, Oxford University Press, 1990
17. Ophuls, William, Ecology and the Politics of Scarcity, W.H. Freeman and Co., San Francisco, 1977
18. Pirages, Dennis C. and Paul Ehrlich, Ark II, W.H. Freeman and Co., San Francisco, 1974
19. Schumacher, E.F., Small is Beautiful, Harper and Row, New York, 1973
20. Stavrianos, L.S., The Promise of the Coming Dark Age, W.H. Freeman and Co., San Francisco, 1976
21. Troyer, W., Preserving Our World, Webrom Ltd., Toronto, 1990
22. World Commission on Environment and Development, Our Common Future, 1976
23. World Resources Institute, The Greenhouse Trap, Beacon Press, Boston, 1990

THE TEACHING OF ENVIRONMENTAL SCIENCE ED 3277

This new course for practising teachers (K-6) and Junior High School (7-9) will include an introduction to environmental science education and practice in developing and presenting activities related to the curriculum.

Critical features of this course are the integration of classroom and outdoor learning. The mix of regular classroom sessions and times spent in the field will provide ample opportunity for teachers to develop and practice the necessary skills to teach environmental science in their own schools.

The focus is on developing awareness and knowledge about living and non-living resources of the environment and our cultural uses of these resources. Regular outdoor field activities to sites such as Rennie's Mill River, Oxen Pond, Salmonier Nature Park, Brother Brennan Environmental Education Centre and Cape St. Mary's will be part of the course.

Proposed outline of this course.

Teachers will have opportunity to:

- 1) study the history and philosophy of environmental science education,
- 2) focus on the ecological concepts as presented in the current Newfoundland and Labrador school science program at different levels,
- 3) examine and experience a range of activities suitable for students in grades K-9,
- 4) learn and practice teaching strategies appropriate to environmental science,
- 5) plan environmental science activities which will be useful in their own school situations,
- 6) develop methods for evaluating student learning in environmental science,
- 7) participate in regular field trips to a variety of outdoor sites representative of the provincial environment.

Newfoundland and Labrador provides a wonderful situation for students to have outdoor learning experiences because no school is far from a natural setting suitable for environmental science.

This environmental science course will serve a need for the teachers of the province and, as planned, will provide valuable skills and knowledge for teachers involved in these activities as part of their prescribed provincial science programs.

4261. Human Learning Theories and Their Application to the Instructional Process. This course explores the application of learning theory to the instructional process. Topics include an historical review of learning theory and its application to education, an analysis of contemporary models and research on how young adults learn, and an examination of the factors that shape the translation of research findings into instructional applications.

4270. The Teaching of Biology in the Secondary School (H). This laboratory course applies the principles of effective teaching to the teaching and learning of Biology. Topics include place and purpose of Biology in secondary schools, examination of Biology curricula and planning, development, evaluation and the teaching of Biology. Prerequisites: Education 3170 and 3171 (former Education 217A/2170 and 217B/2171), and at least four courses in Biology, or permission of the instructor.

Note: Normally, only those students who have been admitted to the particular teachable area will be permitted to enrol in this course. Students who have been admitted to other teachable areas who wish to enrol in this course must obtain permission from the Office of Student Services.

4271. The Teaching of Earth Science in the Secondary School (H). This laboratory course applies the principles of effective teaching to the teaching and learning of Earth Science. Topics include place and purpose of Earth Science in secondary schools, examination of Earth Science curricula and planning, development, evaluation and the teaching of Earth Science.

Prerequisites: Education 3170 and 3171 (former Education 217A/2170 and 217B/2171), and at least four courses in Earth Sciences and/or Physical Geography, or permission of the instructor.

Note: Normally, only those students who have been admitted to the particular teachable area will be permitted to enrol in this course. Students who have been admitted to other teachable areas who wish to enrol in this course must obtain permission from the Office of Student Services.

4274. Practical Ecology in Education (H). This will be an international field expedition for students enrolled in the secondary school science teacher preparation programme. It is designed to develop in students a global perspective for ecological education in local communities. Students will develop skills in field pedagogy and cooperative inquiry as well as learn to utilize scientific monitoring equipment. The course participants will gather and analyze ecological data related to human disturbance on the landscape and develop strategies for working with high school-aged students on field projects. In addition course participants will visit outstanding science education centres to observe progressive and innovative methods in ecological education for school-aged students and the general public. Field sites will alternate each year between selected urban and rural locations in Canada, member countries of the Commonwealth of Independent States and the United States, with an emphasis on investigating ecological interactions in and around wilderness reserves. Enrolment is limited. Permission of the instructor is required.

Prerequisite: Education 4270.
Recommended: Russian 1000, 1001.

4275. Environmental Education Across the Curriculum. This course examines various international and Canadian initiatives, models, curricula, and programmes in environmental education and explores effective methods of developing environmental awareness through the various content areas of elementary and secondary education.

4330. Curriculum and Instruction in Native and Northern Schools I (T) (P,E,H). Principles of and techniques for curriculum development will be reviewed. Adaptation or reformulation of these will be made in the light of the needs and desires of native peoples. Critical analysis will be made of curriculum resources presently in use. Instructional materials will be prepared and produced with emphasis on printed materials relevant to the experiential background of the Indian and Inuit child.

4331. Curriculum and Instruction in Native and Northern Schools II (P,E,H). An in-depth examination of innovations in curriculum and instruction in native communities within Canada. Emphasis will be placed on projects in curriculum planning and the development of instructional material, to be conducted in conjunction with school personnel already in the field. This course would serve as a valuable resource to school systems involved in curriculum planning and instructional development.

4340. Literature for Young Adults. This course is designed to explore literature for young adults and its integration into the content areas. Topics include an examination of the nature of literature for young adults, the literary genres, research on the reading interests of young adults, issues treated in young adult literature, and an historical overview of available young adult literature.

4350. Reading in the Content Areas. This course examines the nature of reading in subject-specific areas such as history, biology, and mathematics. Topics include the role of the teacher in the teaching of content in different areas, evaluating vocabulary, grammar, usage and text structure for instruction, and analyzing the variety of strategies for reading, writing and studying.

4352. Language Across the Curriculum. This course analyzes the relationship between language and thought. Topics include the forms and uses of language, unique subject-area demands upon language, the complementary nature of oracy and literacy, and evaluation.

4354. Writing in the Secondary School. This course analyzes the relationship between writing and learning. Topics include an examination of the variety of approaches to the teaching of writing, the role of the teacher in the teaching of writing, the composing process, and the evaluation of writing.

4356. Learning Through Drama. This course introduces drama as a valuable teaching and learning strategy. Topics include an examination of the foundations, values, and assumptions of drama as an effective means of curriculum implementation in subjects such as English, Social Studies, and Science.

4360. Sociology of Education (P,E,H). A study of sociological theories and sociological research bearing on education, involving an analysis of social structures and social pressures relating to education.

4361. Teaching and the Contemporary Classroom. This course is an introduction to the institutional and social context of teaching. Topics include the role of school in society, the organization and administration of schools, the dynamics of classroom culture, and school observation.

4370. History of Education (P,E,H). An examination of the main themes and movements in the history of education as well as the ideas of significant education theorists. Significance of the above for current educational theory and practice.

4380. Philosophy of Education (P,E,H). A study of the philosophical bases of education, selected philosophical theories of education, and philosophical issues and concepts in education practice.

4381. Perspectives on Schooling. This course examines educational theory and practice within the context of sociological, historical, and philosophical perspectives on schooling. Topics include the purpose of education, the formation of knowledge, and an analysis of issues such as equality of opportunity, and educational reform and change.

4382. Critical Thinking and Knowledge in Education. This course examines various conceptions of the nature of critical thinking and its role in the acquisition, justification, and production of disciplinary knowledge. Topics include the nature of critical thinking, the uses of language in reasoning and communication, criteria and principles of reasoning within the various disciplines, methods and strategies of problem-solving, negotiation, and decision-making, and the teaching and assessment of critical thinking.

4420. Legal and Moral Issues in Education. This course examines educational law and sources of conventional morality for the purpose of clarifying individual stances on legal and moral issues. Topics include the nature and theoretical bases of law and morality in education, the legal foundations of the Canadian education system, the legal and moral rights and responsibilities of teachers and students, and teacher liability.

4425. Introduction to Educational Administration (P, E, H). An examination of the roles of various levels of government in Education; theories of administration; management as it relates to curriculum, organization, personnel, finance, and communication; and their implications for teachers in the Newfoundland context.

Note: Credit may not be obtained for both Education 4425 and the former Education 2410.

4430. Seminar: Current Issues in Native and Northern Affairs (P,E,H). This course provides the student with an opportunity to integrate many of the ideas and notions expressed in other course work and in practical experience. The development of native political groups, the impact of the native person on the fabric of Canadian society, will be examined in a positive, objective light. In this particular course, a tremendous opportunity presents itself to invite native peoples and/or political leaders to share with students ideas, beliefs, or experiences vis-a-vis the development of Canadian native persons within the Canadian society.

4440. Teaching and Learning Mathematics in the Junior High School Years (E,H). Mathematics programmes for junior high school

SPECIAL TOPICS COURSE

GLOBAL EDUCATION AND THE SCHOOL CURRICULUM

Instructor: Frank Cramm

Course Description: This course will examine the nature of global education and the issues associated with developing, through school experiences, a heightened awareness of its importance. Particular attention will be paid to approaches applicable to the infusion of a global education approach into curriculum areas of the public school.

Reference Texts:

1. Pike, Graham, and David Selby, Global Teacher, Global Learner, Hodder and Stoughton, London, 1988.
2. Tye, Kenneth (Ed.) Global Education from Thought to Action. 1991 Yearbook of the Association for Supervision and Curriculum Development.

Additional Readings:

- Alladin, I. (1989, May-June). Teaching for global awareness. The ATA Magazine, pp. 6-11.
- Barnes, B.R. & Curlette, W.L. (1985). Effect of instruction on teachers' global mindedness and patriotism. Theory and Research in Social Education, 13 (1), 43-49.
- Becker, J. (1974, November-December). Perspectives in global education. Social Education, pp. 678-682.
- Berry, T. (1988). The Dream of the Earth. San Francisco: Sierra Club.
- Brown, L.R. (1993). State of the World. New York: W.W. Norton & Company.
- Colman, P. (1989, January-February). Global education: Teaching for an interdependent world. Meida & Methods, pp. 21-23, 59-61.
- Developing a Co-operative Framework for Sustained Development Education, 1993.
- Durning, A. (1992). How Much Is Enough? The Consumer Society and the Future of the Earth. New York: W.W. Norton and Co.
- Eulie, J. (1988). Teaching understanding and developing critical thinking. The Social Studies, 79(6).

Evans, Charles S. "Teaching a Global Perspective in Elementary Classrooms." The Elementary School Journal. 87, no. 5 (1987):545-555.

"Global Education: Larger Classroom, Smaller World" (1992) Issue of PRISM. St. John's, NF: Newfoundland Teachers' Association, 1 (2).

Howarth, M. (1986, June). Global education: A trend for the future. FWTAO Newsletter, pp. 1-9.

Kidron, M. and Segal R. (1991). The New State of the World Atlas. New York: Simon Schuster, Inc.

Kniep, Willard M. "Essentials for Global Education." The ATA Magazine, May-June 1989, 12-15.

Kobus, Doni Kwolek. "The Developing Field of Global Education: A Review of the Literature." Education research Quarterly 8, no. 1 (1983):21-28.

Lyons, T. G. (1989). Global perspective: A draft document for discussion purposes. Ontario: Global Education.

Meadows, D.H., Meadows, D.L., and Randers, Jorgen. (1992). Beyond the Limits. Post Mills, VT.: Chelsea Green Publishing Company.

Merryfield, M.M. (1991). Preparing american secondary social studies teachers to teach with global perspective: a status report. Journal of Teacher Education 42(1), 11-20.

Myers, N. (1993). Gais: An Atlas of Planet Management. London: Gaia Books.

Orr, D. (1992). Ecological Literacy: Education and the Transition to a Postmodern World. New York: SUNY Press.

Sitarz, D. (1993). Agenda 21: The Earth Summit Strategy to Save our Planet. Boulder, Colorado: Earthpress.

Smith, G. (1992). Education and the Environment: Learning to Live with Limits. New York: SUNY Press.

The Newfoundland Teachers' Association. "Global Education: The Newfoundland and Labrador Project." C.I.D.A. Project Proposal.

Tooke, M. (1986). The global village in the classroom. History and the Social Science Teacher. 22(2), 74-76.

Weaver, P.V. (1988, May-June). Education that is multicultural and global. The Social Studies, pp. 107-109.

Zevin, J. (1990). Teachers in social studies education. The Social Studies. 81 (6) 254-263.

Evaluation:

Oral and Written

Presentation of Research Findings relative to Global Education 30%

Project:

The design of specific curriculum activities appropriate for infusion of Global Education principles into the provincial curriculum 50%

Participation in class Seminars 20%

THE ONTARIO INSTITUTE FOR
STUDIES IN EDUCATION

CENTRE FOR COMMUNITY
AND GLOBAL
TRANSFORMATION LEARNING

INTEGRATING MOVEMENTS,
KNOWLEDGES, AND PRACTICES



○ PHILOSOPHY

The Centre for Community and Global Transformation Studies is based on the concept of Masakhane, a Zulu/Xhosa word meaning, "Let us build each other" which represents a way of working; the voice of a non-dominant language; and a challenge for the Centre to work in fully inclusive ways. The Centre contributes to the "lowering of the walls" between communities and OISE.

Work in the Centre may examine the relationship of learning to major concepts in the social sciences, humanities, natural sciences and the arts; to areas of ancient or indigenous knowledges; to alternative ways of knowing; to concepts and

mechanisms of power in relationship to knowledge; and to popular culture in the context of non-mainstream groups. The Centre's perspective on international collaboration is based on a "post-development" framework (acknowledging that much of so called 'development' has been maldevelopment).

The Centre is building new partnerships between the university, and the community and school based on mutual respect and recognition of social movements as places where new knowledge is built. The Centre, along with other approaches, supports methods and practices developed in the community and in social movement settings such as popular education, "the moment process", anti-racist education, coalition-building skills, meditation, healing circles and sweat lodges. Participatory research is encouraged which avoids exploiting the ideas, capacities or creativity of community-based groups or social movements.

Most importantly the Centre supports new ways of working in practical settings such as school systems, community organizations, trade unions, health promotion sites, adult education structures, environmental non-governmental organizations, and others.

○ THE CENTRE'S PURPOSES

1. To provide a focus within OISE for critical school and community-linked research and dissemination related to the environment, global education and global transformation studies.
2. To support and provide an OISE base for research concerned with and linked to transformative practices in communities, social movements and networks.
3. To support reflection by community and school-based groups, movements and networks on their work.

4. To encourage involvement of OISE students and faculty in working on a variety of transformative or democratic projects outside OISE.

5. To provide a critical forum for discussion of the interrelationship of education and learning to such concerns as the environment, planetary survival, labour and economic justice, anti-racism, feminist perspectives, militarism, anti-colonialism, ecological sustainability, social economy, global economic structures, health and social justice, and other issues.

6. To facilitate OISE Institutional participation in a variety of school, community and international networks.

○ RESOURCE CENTRE

The Centre is collaborating with the Comparative International and Development Education Centre (CIDEC) in the operation of a resource centre, located on the 7th Floor of OISE in the Adult Education Department. It is hoped that the collection will eventually include more materials on environmental issues, issues related to indigenous knowledge and other areas related to community-based knowledge.

○ STRUCTURE OF THE CENTRE

The Centre is the research and community-linkage arm of Community and Global Transformation Studies (OISE's Inter-departmental Programme of Graduate Instruction).

The Centre is based within OISE, presently in the Departments of Adult Education, Curriculum and Sociology, and is open to participation by anyone in OISE with shared interests.

The Centre works collaboratively with other OISE foci, centres, networks particularly the Indigenous

Education Network, Centre for Women's Studies in Education, CIDEK, Critical Global and Community Issues focus, Co-operative Education Resource Centre, and Critical Pedagogy and Cultural Studies and Holistic Education. In addition the Centre has established a working relationship with the International Institute for Global Education at Faculty of Education at the University of Toronto, the Faculty of Environmental Studies at York University and the Centre for Ecology and Spirituality at St. Michael's College at the University of Toronto.

The Faculty Coordinators are: George Dei (Sociology), Budd Hall (Adult Education), Angela Miles (Adult Education), Roxana Ng (Sociology), Jack Quarter (Adult Education), and Edmund Sullivan (Curriculum).

Associated Faculty: Clive Beck (History and Philosophy), Margrit Eichler (Sociology), Allen Tough (Adult Education), Sherene Rezak (Adult Education), Helen Lenskyj (Adult Education), Gord West (Sociology), Paul Olsen (Sociology), Florian Lesveque (Franco-Ontarian Centre).

○ RESEARCH

The Centre welcomes ideas for community partnerships which may result in collaborative research between outside groups and OISE students or faculty.

"Transformative Education through Environmental Education" to be supported by IDRC. (In cooperation with CEMIMA, a feminist communications and environmental NGO in Brazil, the Faculty of Environmental Studies at York University and WEB).

The following are projects in progress by members of the Centre. This list includes both funded and non-funded research.

Impact on Schooling in Canada"

2. "Impact of Economic Restructuring on Education and Educational reforms in Africa/Developing Countries"
3. "Challenges of Anti-Racist Education"
4. "Transformative Feminisms: Integrative Global Perspectives"
5. "Patterns in Community Education and Development"
6. "The Dream Drives the Action"
7. "Participatory Research in North America"
8. "Global Networks: Building a Global Civil Society"
9. "Popular Education and the Academy: A Study of Experiences linking Universities and the Community"
10. "Building a Popular Education Alliance"
11. "Adult Education in Context of Struggles for Economic Justice"
12. "The Epistemological Underpinnings of Radical Adult Education"
13. "Empowering the United Nations through the Empowerment of a Global Citizenship"
14. "Politics of Art and Creativity"
15. "Gaps and Barriers in English Language Training Programs for Immigrant Women"
16. "UNCED (The United Nations Conference on Environment and Development) and the Global Forum Citizen's Treaties: Implications for Global Education"

17. "Peace and Global Studies from Feminist Perspectives in Adult Education and Environmental Studies"

○ ACTIVITIES to date: Speaker Series:

Thomas Berry, "A Decade of Grace and the Ecozoic Era"

Ted Jackson, "Social Investment in International Perspective: Social Transformation Meets the Market?"

Anna Isla, "Debt, Women and Transformation: Latin America"

Elaine Briere, "Tribal Knowledge and Ecologically Sane Societies"

Dr. Yolanda Huet-Vaughn, Physician, "Courage and Conviction: Conscientious Objection to the Gulf War"

and Public Fora:

"Social Action and Learning in a Global Age: Words are Not Enough"

"Education and Global Transformation": Symposium at the Eco-Ed World Conference on the Environment

○ GENERAL INQUIRIES

Centre for Community and Global Transformation Studies
 Ontario Institute for Studies in Education
 7th Floor
 252 Bloor Street West
 Toronto, Ontario
 M5S 1V6
 Telephone: (416) 923-6641 ext. 2592 or 2410
 Fax: (416) 926-4725

1. "National Economic Restructuring and the

AUX ÉTUDIANTES ET ÉTUDIANTS DE 2^e CYCLE

AUTOMNE 94

2/10

EDU 7011

ÉDUCATION RELATIVE A L'ENVIRONNEMENT: théories et pratiques

**Ce cours a pour but de répondre aux deux principales questions suivantes:
qu'est-ce que l'éducation relative à l'environnement (ERE)?
quelles approches, stratégies et modèles pédagogiques adopter
en contexte scolaire et/ou en milieu communautaire?**

HIVER 95

EDU 7111

ÉDUCATION RELATIVE A L'ENVIRONNEMENT: l'intervention (préalable: EDU 7011)

**Ce cours fait un tour d'horizon de la situation de l'ERE
au Québec et à l'échelle internationale.
Il offre un encadrement pour une expérience d'intervention pédagogique
dans un contexte de recherche-action.**

**Pour informations:
Lucie Sauvé - 987-6992
Professeure - Département des sciences de l'éducation**

UNIVERSITÉ DU QUÉBEC À MONTRÉAL**Plan de cours****EDU 701D****ÉDUCATION RELATIVE À L'ENVIRONNEMENT I****Théories et pratiques****Automne 1994****Jeudi, 18 h à 21 h****Préparé par :****Lucie Sauvé, Ph.D.****Professeure****Département des sciences de l'éducation****987-6992****Local N-4270**

Note : Ce cours est le premier de deux cours complémentaires :
EDU 7011 - Éducation relative à l'environnement I : Théories et pratiques
EDU 7111 - Éducation relative à l'environnement II : L'intervention

JUSTIFICATION

L'éducation relative à l'environnement (ERE) est désormais reconnue comme une dimension intégrante, voire fondamentale, de l'éducation contemporaine. Elle répond à une triple problématique : la dégradation des systèmes de support à la vie; l'aliénation de l'Homme à l'égard de son milieu de vie, de même que son manque de solidarité dans le partage des ressources planétaires; enfin, l'inadéquation des systèmes d'éducation actuels face aux besoins du monde contemporain caractérisé par la rapidité et l'ampleur des changements, la diversité et la complexité des réalités, de même que la gravité et le caractère multidimensionnel des problèmes environnementaux et sociaux.

Depuis les vingt dernières années, les travaux de l'Unesco et du Programme des Nations unies pour l'environnement (PNUE), dans le cadre du Programme international d'éducation relative à l'environnement (PIEE), ont souligné l'importance de développer l'ERE tant dans les secteurs d'éducation formelle, que non formelle et informelle. Dans les diverses régions du monde, de nombreux programmes nationaux et régionaux d'ERE ont été développés.

Au Québec, on constate une préoccupation croissante pour l'ERE. Venant soutenir et compléter le patient travail des ONGs en ce sens depuis les dernières décennies, une trame structurante se tisse pour favoriser le développement de l'ERE dans les différents secteurs de notre société. Entre autres, un nouveau Comité interministériel regroupant trois ministères (Éducation, Environnement et Faune et Ressources naturelles) développe un programme cadre d'éducation relative à l'environnement en milieu scolaire. La Centrale de l'enseignement du Québec (CEQ) poursuit depuis plus de quatre ans des activités intensives dans le domaine de l'ERE : production de matériel pédagogique, formation d'un réseau d'enseignants, diffusion d'informations, etc. La Fédération des Commissions scolaires du Québec a joint ses efforts à ceux du Fonds pour l'éducation relative à l'environnement (FERE) pour promouvoir l'ERE au sein d'"écoles vertes". Dans diverses régions de la province, des centres et programmes de formation en environnement, destinés à l'intervention en milieu de travail, commencent à se développer. Depuis 1990, l'Association québécoise pour l'éducation et la formation relatives à l'environnement (AQPERE) regroupe les agents d'éducation et les organismes voués à l'ERE, de façon à favoriser la concertation et l'échange d'informations. L'AQPERE a participé en 1993 à la création d'un réseau pan-canadien en ERE (EECOM). En somme, les structures et initiatives se multiplient dans le domaine de l'éducation relative à l'environnement au Québec, comme au Canada et dans les diverses régions du monde.

Un tel essor de l'ERE fait appel au développement de compétences professionnelles spécifiques chez les agents d'éducation (enseignants, formateurs, animateurs, responsables de programmes, concepteurs de matériel pédagogique, etc.). Les cours EDU 7011 et 7111 veulent offrir un contexte de formation où chacun pourra approfondir des connaissances utiles, acquérir des outils conceptuels et méthodologiques et développer des habiletés spécifiques dans le but de participer activement et de façon pertinente au développement de l'ERE à l'école comme dans d'autres milieux d'intervention, tant au sein de la société québécoise que dans le cadre de projets de coopération internationale.

OBJECTIFS GÉNÉRAUX

1. Explorer la diversité des conceptions et des pratiques de l'éducation relative à l'environnement.
2. Envisager le développement d'une théorie compréhensive de l'ERE.
3. Acquérir des outils de design pédagogique en ERE de façon à favoriser la conception d'interventions plus pertinentes.
4. Développer des compétences liées à la pratique réflexive de l'ERE, en particulier une approche critique des réalité associées à l'ERE.
5. Caractériser les principaux aspects de la problématique de l'ERE et entrevoir des voies de développement.

OBJECTIFS INTERMÉDIAIRES

1. Caractériser et comparer différentes théories et divers modèles d'intervention en éducation relative à l'environnement.
2. Développer une approche critique des diverses propositions théoriques et méthodologiques en ERE.
3. À la lumière de ces diverses propositions, clarifier ses propres théories et valeurs personnelles sur l'environnement, sur l'éducation, sur la relation éducation-environnement.
4. Cerner la niche de l'ERE dans l'éducation globale, en particulier en regard de la formation fondamentale.
5. Cerner le rôle de l'ERE, comme outil de résolution des problèmes contemporains associés au réseau des relations personne - société - environnement.
6. Clarifier le lien entre l'ERE et les autres dimensions de l'éducation contemporaines, en particulier l'éducation pour le développement durable et l'éducation planétaire.
7. Explorer diverses approches, stratégies et modèles pédagogiques en ERE.
8. Identifier et discuter certains principes du design pédagogique en ERE.
9. Explorer les voies d'intégration de l'ERE dans divers milieux d'intervention.
10. Adopter une définition compréhensive et, ou contextuelle de l'ERE : définition formelle, axiologique, pratique et explicative.
11. Identifier les principaux changements sociaux, environnementaux et éducationnels auxquels le développement de l'ERE fait appel et repérer les principaux facteurs limitants à cet effet.
12. Explorer divers processus de changement de nature à favoriser le développement de l'ERE.

STRATÉGIES PÉDAGOGIQUES

Les principales stratégies d'enseignement utilisées seront : l'exposé formel, l'exposé informel (ou interactif), l'animation de discussions de groupe et d'ateliers, le tutorat pour l'encadrement des travaux.

Les principales stratégies d'apprentissage suggérées sont : l'écoute critique des exposés formels, la participation aux exposés interactifs et aux ateliers en classe, la lecture des notes de cours et du manuel de référence, la réalisation d'une recherche documentaire et d'un travail-examen (analyse critique de discours).

ÉVALUATION

Deux travaux :

1. Une brève recherche documentaire (à partir de trois à cinq sources) sur un sujet choisi en ERE en relation avec les intérêts particuliers de chaque étudiante, étudiant.
Une liste de sujets suggérés et un protocole de travail seront remis à la deuxième rencontre.
Ce travail pourra être réalisé individuellement ou en équipe de deux. Dans ce deuxième cas, des ajustements de la quantité de travail sont prévus au protocole.

a) Rapport de recherche (environ 10 pages) :	40 points
b) Présentation orale ou sur vidéo (environ 15 minutes) :	10 points

2. Travail-examen individuel de fin de session
(*take home* - environ 10 pages) : 50 points
Analyse de discours en ERE :
 - un article de revue
 - une activité pédagogique
 - une brève entrevue avec un(e) intervenant(e) en ERE.
 Un protocole d'analyse sera remis à la mi-session.

Notes de cours :

10\$: Des fascicules seront distribués au cours de la session.
(Références bibliographiques incluses).

Manuel de référence :

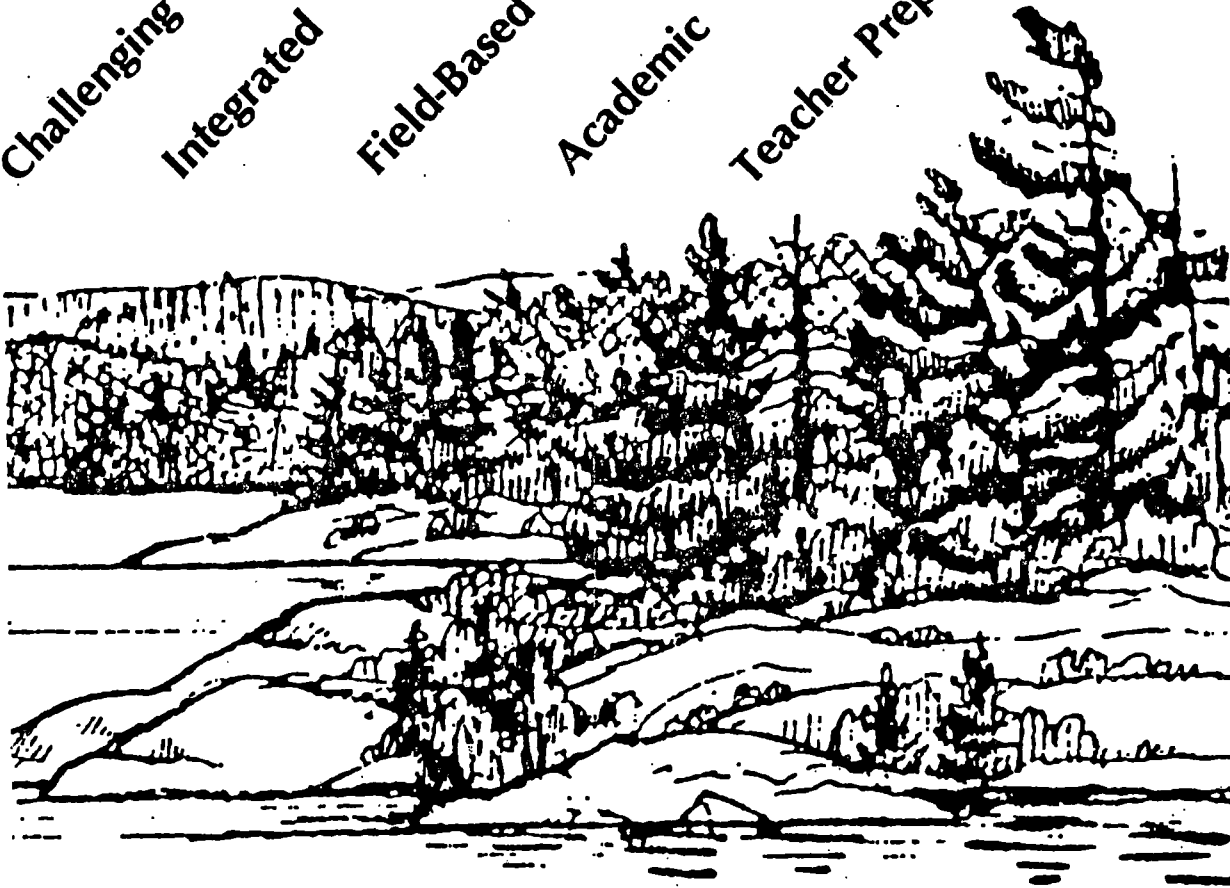
SAUVÉ, Lucie (1994), *Pour une éducation relative à l'environnement - Éléments de design pédagogiques*, Guide de développement professionnel à l'intention des enseignants et animateurs, Montréal : Guérin\Eska, 375 p. (à paraître août-septembre, 1994)

Lecture préparatoire facultative :

GIORDAN, André et SOUCHON, Christian (1991), *Une éducation pour l'environnement*, Nice : Les Z'Éditions, 232 p.

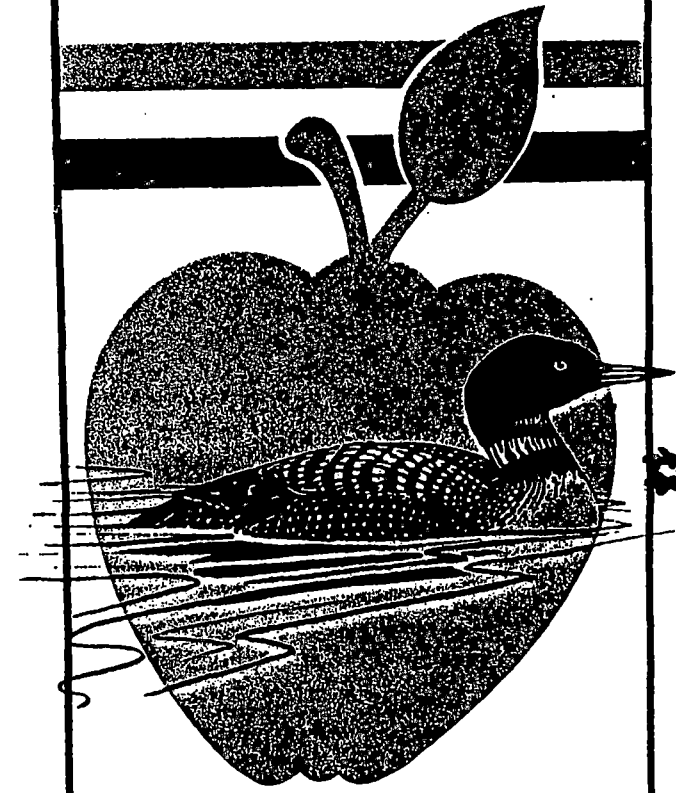
Outdoor and Experiential Education

Challenging
Integrated
Field-Based
Academic
Teacher Preparation

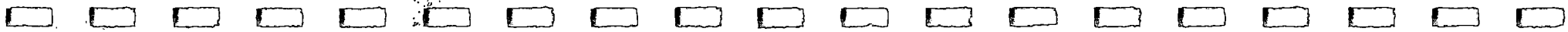


FOR FURTHER INFORMATION SEE OTHER SIDE

Co-Operative Program
in Outdoor and
Experiential Education
SPEC 217



THE FACULTY OF EDUCATION
AT QUEEN'S UNIVERSITY



Co-Operative Program in Outdoor and Experiential Education

Queen's University offers a program of integrated study and supervised work experience for selected students who wish to combine preparation for conventional teaching with preparation for work in experience-based alternative settings. The aim of the program is to provide access to a wide diversity of professional opportunities where experiential learning is valued.

The Program

PHASE ONE

Phase One begins in May with a ten-day residential orientation course. This is followed by two individually arranged, 6 week internships. A final residential course ends the summer component.

PHASE TWO

Phase Two consists of the regular B.Ed. Program in the Faculty of Education. Students may work in any of the three divisions (Primary-Junior, Junior-Intermediate, Intermediate-Senior) and in either the Consecutive or Concurrent Programs. Members of the Co-operative Program are offered two Special Studies courses in Outdoor and Experiential Education during the Fall and Winter terms, one of which is a 1 week residential course at the end of April.

Admission Requirements

The Co-op Program appeals to persons who are committed to working with people and who have strong backgrounds in fields such as environmental concerns, sciences, arts, humanities, interpretation, outdoor pursuits and recreation.

Applicants must have an acceptable Bachelor's degree and meet the other academic requirements of the Faculty of Education. In addition they should have a background of work experience in outdoor settings, social agencies or equivalent. A resume must be submitted and an admission interview is required.

The Co-op Program has limited enrollment and seeks to register equal numbers of men and women.

Benefits

Graduates of the Co-op Program earn the B.Ed. degree, the Ontario Teacher's Certificate and Qualification appropriate to their program of studies. The Faculty of Education also issues a certificate in Outdoor and Experiential Education.

A major practical benefit of the Co-op Program is the network of professional connections which students build as a result of their work with experiential educators.

A Challenging Program

The Co-op Program is demanding. It requires that participants be willing to push themselves, to make responsible decisions and to run some risks.

Those who wish to influence the growth and development of others must be willing to promote their own growth and development.

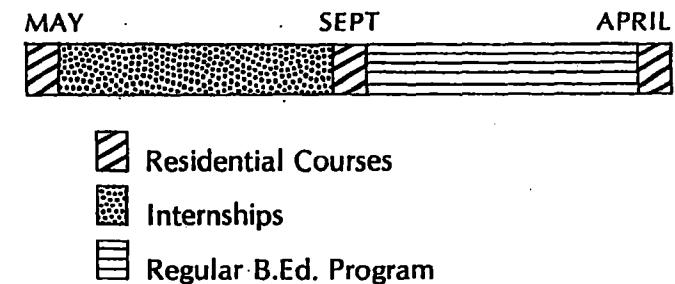
This is the challenge we will share with you.

Further Information

For full details and application information contact:

Prof. James Raffan
Faculty of Education
Queen's University
Kingston, Ontario
K7L 3N6
613 545-6209

The Co-Op Program Time-Line



CO-OPERATIVE PROGRAM IN OUTDOOR AND EXPERIENTIAL EDUCATION
Answers to Commonly Asked Questions

WHAT ARE THE PROGRAM DATES?

The Co-op Program starts on 1 May with a ten-day orientation to experience-based education and to teacher education. Students in the Co-op program must attend this course. Internships occupy the bulk of the summer months. The academic work and practica of the B.Ed. year run through Fall and Winter. The Program terminates with a final residential course in late April. Total time: 12 months.

HOW MANY PEOPLE ARE INVOLVED?

There are usually upwards of 200 inquiries which yield about 130 applicants.

WHAT ARE THE STANDARDS FOR CHOOSING APPLICANTS?

Co-op students must meet the admission standards for all B.Ed. students. These include at least a bachelor's degree with a "B" standing and teaching subject prerequisites appropriate to the program chosen. Successful Co-op applicants also have backgrounds and work experience in the outdoors and in people-oriented settings. We tend to value a diversity of experience including travel and previous exploration of another career. References are checked and an interview is required. Applicants are chosen on the basis of the favourable professional impression created by all of this information. We also attempt to create a class with gender balance, a variety of interests, skills and backgrounds, and different grade level commitments.

HOW DO I GET RESIDENCE INFORMATION?

Specific information is sent as part of the B.Ed. program processing for successful applicants. Some university residence space is available and some space is found in rental housing in Kingston. Housing seems not to be a serious problem for most students.

WHAT DOES THE PROGRAM COST?

Costs are not predictable with accuracy. Tuition fees are the same as for the B.Ed. Program plus 20% (about \$2400.00 in 1992). The O.E.E. courses have food and transportation fees which totalled about \$370 in 1992. Allow something, too, for student government and text book costs.

WHAT FINANCIAL SUPPORT IS AVAILABLE?

The program qualifies for the Ontario Student Aid Program. Most students organize their OSAP applications to start in the Fall, rather than in May. Information about other bursaries and awards is available from the Student Awards Office.

WHAT DO PEOPLE DO AFTER GRADUATING?

About one third of graduates work in publicly-supported school systems as teachers. Nearly one third work around the world in private or alternative schools/outdoor educational centres. Of the remainder, about half work in various youth agencies related to the criminal justice system, native communities, service agencies, and the like, and the rest continue in diversified areas, including travel and further study. A very few are unsuccessful in finding work.

'Environmental Studies' portion of PJ 'Social and Environmental Studies'

learn how to implement a variety of teaching strategies appropriate to student needs and Ministry guidelines. Resource material will be examined and students will develop learning materials suitable for classroom implementation. A variety of evaluation strategies will be examined.

Environmental Studies The purpose of this course is to familiarize candidates with science curricula and methods for its effective teaching in the formative years. Participants will have an opportunity to explore science through a variety of approaches which focus on problem solving, hands-on activities and integrated learning experiences. Ministry of Education and Training guidelines will be examined as they apply to science teaching in the early years. This course includes work in sample units and group activities, and current issues such as environmental concerns will be explored as starting points for curriculum consideration and development of decision-making skills. Learning materials \$10.

CURR 374/0.5 The Arts (Primary-Junior)

Children's growth and development are fostered through his imagination, personal explorations, reaction to the environment through all the senses and through the security gained from achievement and proficiency. It is through the Arts that children first express themselves and communicate. The continued development of this personal and creative expression is a major aim of the Arts. Although there are four distinct components (Visual Arts, Drama, Physical Education and Music), each provides for the development in its own unique way.

Visual Arts This component explores the needs of children from kindergarten to Grade 6 in Art Education, through investigation of resource materials and studio sessions. It is intended to sharpen the focus on the levels of creative and mental growth and children's experiences when planning curriculum, selecting media and developing a Visual Arts program designed to enhance children's visual awareness, sensitivity and appreciation. Learning materials \$5.

Drama This component offers opportunities to students to explore the imaginative use of drama in the classroom and its place in the school in general. Suggestions will be given on how to use dramatic techniques in teaching various subject areas.

Music This is an introduction to teaching music in the elementary school. It focuses on the integrative aspects of music in the curriculum and introduces suitable strategies and materials. There will be an emphasis in which experiential learning, self-confidence and musical skills be can be developed.

Physical Education This activity-based component is designed to provide the student teacher with sufficient knowledge and skills to develop a program which provides meaningful experiences for the children in the gymnasium. A rationale along with the related activities, will be developed, dealing with the nature and development of motor skills in young children. This component will examine curriculum concerns and familiarize the candidate with the activities and gymnasium organization for children at these levels. In addition to motor skills, activities covered will be cooperative and traditional games, gymnastics (movement education) and rhythmic.

JUNIOR - INTERMEDIATE PROGRAM

CORE SUBJECTS - JUNIOR AND GRADES 7 AND 8

CURR 375/0.5 Communication

Communication has both expressive and receptive components, involving all the ways in which children receive and interpret the ideas, attitudes and feelings of others. Communication also allows children to record what they wish to express and allows them to represent their experiences and their thinking through language and mathematics. This course has two distinct components:

Reading and Language Arts (Junior and Grades 7 and 8) This component is designed to prepare prospective teachers to develop and implement an effective Reading and Language Arts Program in the Junior and Intermediate grades of an elementary school. Emphasis will be given to the development of basic pupil skills in reading, writing, speaking and listening. Consideration will be given to the concept of Language and Reading across the Curriculum.

Mathematics (Formative and Transition Years) This component is designed to familiarize candidates with the content of the mathematics curricula in the Formative and Transition Years, and with a variety of methods for effectively teaching fundamental mathematical concepts. Candidates will use and analyse a wide range of resources. The course will also provide an opportunity to examine those Ministry of Education guidelines and policies relating to the teaching of mathematics in grades 4 through 8. Present trends in mathematics education in Ontario and other jurisdictions will be examined. The acquisition of a positive attitude towards mathematics and its teaching is a high priority of the course.

CURR 376/0.5 Social and Environmental Studies

The world with which the child is familiar is used as a starting point for the development of values, attitudes, concepts and skills. The focus is on aspects of the total environment: the social, biological, and physical relationships of the child's world in time and space. This course is comprised of two distinct components:

Social Studies (Junior and Grades 7 and 8) This component is designed to assist candidates in exploring ways of developing, implementing and evaluating an effective social studies (gr. 4-5-6) as well as a geography (gr. 7-8) and history (gr. 7-8) program. Emphasis will be on utilizing a variety of teaching and evaluation strategies appropriate to student needs and Ministry philosophy. A wide range of resource materials will be examined with a goal of assisting students in developing practical and effective learning materials suitable for classroom implementation. A strong emphasis is placed on cooperative development and sharing of curriculum ideas and resources. Whenever possible, the integrative links between the social studies, science, geography and history components will be emphasized.

Science (Junior and Grades 7 and 8) This component views science activities in the elementary school as a basis for developing social and communication skills. Candidates will prepare teaching materials aimed at stimulating inquiry into natural phenomena and associated value issues. Varied teaching methods will be explored to achieve an inquiry orientation. These include using the out-of-door, project work and activity centres.

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ESCI 302 - ENVIRONMENTAL SCIENCE EDUCATION**FRAMEWORK CONTENT PLANS****PHILOSOPHY OF ENVIRONMENTAL EDUCATION****WHAT IS THE ENVIRONMENT? &
WHAT IS ENVIRONMENTAL EDUCATION?****Articles:**

1. Swan, M. "Forerunners of environmental education." In N. McInnis & D. Albrecht (Eds.). *What makes education environmental?* Data Courier, Inc. & Environmental Educators Inc. Louisville, KY. 1975. pp. 4 - 20.
2. Stapp, W. (1969). The concept of environmental education. *The Journal of Environmental Education*. 1, (1). pp. 30-1.
3. Hill, W. & White, R. (1969). New horizons for environmental education. *The Journal of Environmental Education*. 1, (2). pp. 43-6.
4. Hungerford, H. & Peyton, R. *Teaching environmental education*. Walch. Portland, Maine. 1976.
5. Smyth, J. (1988). What makes education environmental? In S. Briceno & D. Pitt (Eds.). *New Ideas in Environmental Education*. Croom Helm. London. pp. 33-56.

Project wild workshop**Articles:**

1. Hansen, W. Social mythologies & environmental education. In N. McInnis & D. Albrecht (Eds.). *What makes education environmental?* Data Courier, Inc. & Environmental Educators Inc. Louisville, KY. 1975. pp. 184 - 201.

Native elder

Activities - Keepers of the Earth

Articles:

1. Herbst, R. (1980). Environmental education - The unfinished agenda. *The Journal of Environmental Education*. 11, (4). pp. 2-3.

Rick Morrell

Readings

Activities - Karimlan

WHAT IS THE ROLE OF ENVIRONMENTAL EDUCATION?**Articles:**

1. Boersma, K. (1988). The education side of environmental education. In S. Briceno & D. Pitt (Eds.). *New Ideas in Environmental Education*. Croom Helm. London. pp. 57-78.
2. Schneider, D. (1993). Teach your children well. *Nature Canada*. 22, (2). pp. 24-29.
3. McInnis, N. What makes environment educational? In N. McInnis & D. Albrecht (Eds.): *What makes education environmental?* Data Courier, Inc. & Environmental Educators Inc. Louisville, KY. 1975. pp. 21-29.
4. Schaeffer, V. (1992). Thinking locally in environmental education: The Victoria, B.C. experience. *The Journal of Environmental Education*. 24, (1). pp. 5-8.

Barry Mitschke

Activities - Wetland Simulation

Articles:

5. Singletary, T. (1992). Case studies of selected high school environmental education classes. *The Journal of Environmental Education*. 23, (4). pp. 35-40.

WHAT IS OUR ROLE AS CLASSROOM EDUCATORS?**Articles:**

1. Podewell, R. Using our capabilities. In N. McInnis & D. Albrecht (Eds.). *What makes education environmental?* Data Courier, Inc. & Environmental Educators Inc. Louisville, KY. 1975. pp. 30-33.
2. Gigliotti, L. (1992). Environmental attitudes: 20 years of change? *The Journal of Environmental Education*. 24, (1). pp. 15-26.
3. Swan, J. Behaviour: Practice v.s. preach syndrome. In N. McInnis & D. Albrecht (Eds.). *What makes education environmental?* Data Courier, Inc. & Environmental Educators Inc. Louisville, KY. 1975. pp. 202-208.
4. Yambert, P. Language & word power. In N. McInnis & D. Albrecht (Eds.). *What makes education environmental?* Data Courier, Inc. & Environmental Educators Inc. Louisville, KY. 1975. pp. 176-178.

PHILOSOPHY OF SCIENCE EDUCATION

The philosophy development will extend over the entire course.

Dimensions of Scientific Literacy (DSL) - factors

Presentation - Overview - Instructor

Also include a brief look at the Core and Optional units at the different grade levels. Illustrate the spiralling and the overlap.

Detailed examination on a DSL - Student Assignment

- each team of students will be assigned ONE Dimension of Scientific Literacy (DSL). They will be expected to identify all of the factors of that dimension, that could be introduced, taught and/or experienced using an Environmental Education focus.

- each team will be expected to make a verbal presentation noting all of the factors that could be introduced, taught and/or experienced using an Environmental Education focus. For each factor the team will be asked to explain and/or illustrate how the factor might be introduced, taught and/or experienced in a classroom setting. (This setting could be an in-classroom or outdoor classroom setting).

- each team will be expected to submit a written summary noting all of the factors that could be introduced, taught and/or experienced using an Environmental Education focus. For each factor the team will be asked to explain and/or illustrate how the factor might be introduced, taught and/or experienced in a classroom setting. (This setting could be an in-classroom or outdoor classroom setting).

[Draw Dimensions from a beaker to determine assignments for each team.]

ENVIRONMENTAL MINI-UNIT PREPARATION

Assignment

- a) Each team will be expected to plan a series of 3 - 5 lessons (mini-unit). The mini-unit topic must relate to a Core or Optional unit topic from the Science curriculum.

A grade level at which the mini-unit would be taught must be identified.

- b) In preparation for planning, ESCI 302 students are expected to observe students at the grade level for which they are developing their mini-unit. ESCI students are asked to plan for two observation periods, one in the morning and one in the afternoon. These observation periods should not be conducted on the same day.

If possible try to arrange for the students to be able to observe the students in a field-trip setting.

Rationale:

It is important for the prospective teachers to see and experience a classroom. The observation periods will provide an occasion to see and hear students at the grade level

for which plans are being formulated. The different observation times will give the ESCI students a sense of the variability of the students; their moods, energy levels and personalities at different times of the day and from one day to another.

Suggestions for Observational visits:

N.B. Observe the students not the teaching. The observations should serve as a reference when planning the mini-unit

As a group we might brainstorm a list of characteristics and features for which the ESCI students might observe. Some of the features might include:

Language used

- by the students
- by the teacher

Interactions

- student-student: in a group setting
- student-student: on a one-to-one basis
- student-teacher: in a group setting
- student-teacher: on a one-to-one basis
- student with resources/materials with which they worked

Activities in which the students engage

- whole class activities
- learning centres
- cooperative groups
- seat work
- individual projects

Attitude toward learning

Observation Journal

- a) Each student will be expected to submit their observation journal records for each classroom visit. The journal records should be edited for grammatical and spelling errors. There is no need to have the records word-processed or re-written.
- b) Each team of students will be expected to verbally summarize their observations. (Students may wish to use A.V. aids to enhance or support their presentation). Included in the summary should be observations and any influence the observations may have had in planning for the mini-unit. (i.e., what, if any, observations helped to plan the mini-unit?).

Mini-unit Planning

Objectives:

- try to address at least one factor for each DSL

Teaching approaches:

- variety - a minimum of one lesson must be an activity - i.e., field trip, experiment, study, etc.
- the teaching approaches must be appropriate for the intended student audience

Evaluation/Assessment:

- a minimum of two different types of approaches must be used. If the minimum number (two) are used only one of them may be a paper and pencil method.

Resources:

- students should list any resources they used to plan the lessons. They should also include a listing of other resources they might use such as print resources, computer software, A.V. materials, field trips and guest speakers.

Mini-unit Teaching

Each team is expected to teach one lesson from their mini-unit. The lesson will be taught to their ESCI colleagues.

Mini-unit Assessment/Evaluation

Peer-evaluation of the mini-unit lesson taught to the class.

Self-evaluation of the mini-unit lesson taught to the class.

Self-critical Reflection -

After having an opportunity to reflect on the lesson and having feedback from peers each team will be expected to reconsider their original plans. Included in the reflections should be rationale for the objectives, teaching approaches and evaluation methods identified.

Instructor evaluation of the mini-unit plans.

Resources:

Science Curricula - M.Y. & Secondary (in the area of their major & minor)

Project Wild

Prairie to Pine

UNIVERSITY OF REGINA

Faculty of Education

ESCI 302-020

Winter 1994

ENVIRONMENTAL EDUCATION

Fall MWF 9:30-11:30

Winter MWF 12:30-2:30

Instructor: Tom Ash
Office: ED 338
Phone: 585-4555

Objectives of the course:

1. To provide you with an opportunity to develop and/or reassess your concept of the Environment and Environmental Education.
2. To help you come to a personal understanding of the relationship between Environmental Education and the Dimensions of Scientific Literacy which underlie the Science curricula.
3. To have you investigate an environmental issue that is of personal interest.
4. To have you plan a unit/theme which have an Environmental Education focus.

CONTENT OVERVIEW:

The Environment & Environmental Education

The Environment: What is it? Human impact on the environment, societal? Personal?
Environmental Education: What is it? What is its role? What might its role become?
My role as an environmental educator: What is it? What might it become?

Philosophy of Science Education

Dimensions of Scientific Literacy -
Focus on the Science-Technology-Society-Environment Interrelationships (STSE)

Rationale for the course outline:

By going through the process of considering the philosophy of environmental education to teaching with an environmental education focus I hope the students are encouraged to more deeply consider their own views of environmental education. I also want the ESCI students to consider very carefully, the students with whom they will be working.

UNIVERSITY OF REGINA

Faculty of Education

ESCI 302-020
Winter 1994

Environmental Education

Learning Activities & Course Evaluation/Assessment

Instructor: Tom Ash
Office: ED 338
Phone: 585-4555**ENVIRONMENTAL ISSUE INVESTIGATION****A. Article review & analysis**

The course reference book is divided into five major topic areas:

Population, Energy, Pollution, Resources and Biosphere: Endangered species

You are expected to select one article from one of the topic areas. You will read, analyse, summarize and share the main points of the article with your fellow ESCI classmates. You are encouraged to use the 'Article Review Form' found at the back of the book following the Index.

You will have approximately 15 minutes of class time in which to share your article summary.

Evaluation:

We will use a rating scale composed of ten categories.

B. Environmental Issue Investigation

You expected to investigate an environmental that is of personal interest and/or concern. The issue can be global or local. The issue should be related to one of the five major topic areas outlined in the reference book; Population, Energy, Pollution, Resources and Biosphere: Endangered species

You may choose to investigate an issue from the same topic area as the one you considered in your 'Article review'.

In the investigation of the issue you are expected to consider the following questions:

What is the issue?

Why is the issue an issue?

Where is this issue an issue?

What is the history of this issue?

How is the issue related to Saskatchewan?

What, if any, is our (ESCI 302 participants) relation to the issue? How are we affected by the issue and/or how do we affect the issue?

What, if any, are possible answers/solutions/directions to address the issue?

Written summary of the issue with consideration to all of the above questions.

This summary is expected to include an annotated bibliography of print, A.V., computer and human resources used in studying the issue.

Verbal presentation

You will be given 1/2 hour (more time if required; to be arranged in advance) to share results of their investigation.

N.B. Your written summary is a future reference. The more thorough your summary, the more useful it will be as a reference.

REFLECTIVE JOURNAL DURING THE SIMULATION

During the course of the semester you will have the opportunity to participate in an environmental simulation exercise. You will be expected to maintain a journal during the simulation. Your journal should include your thoughts, ideas, feelings and impressions as a simulation participant. What was it like assuming a role in the simulation? Are there any parallels between the simulation and real life? If there are parallels, what are they?

What benefits and/or drawbacks might there be in using a simulation in the classroom?

ENVIRONMENTAL UNIT/THEME PREPARATION

Overview:

a) In teams of 2 - 3 or individually, you will be expected to plan a unit/theme of 5 lessons (minimum). **THE UNIT/THEME TOPIC MUST HAVE AN ENVIRONMENTAL FOCUS.**

A grade level at which the unit/theme would be taught must be identified.

b) In preparation for planning, you are expected to observe students at the grade level for which you are developing your unit/theme. Try to plan for two observation periods, one in the morning and one in the afternoon. These observation periods should not be

conducted on the same day.

If possible, try to arrange for one of the observation times to occur during a field-trip setting.

Rationale:

It is important for you as a future teacher to see and experience a classroom. The observation periods will provide an occasion to see and hear students at the grade level for which plans are being formulated. The different observation times will give you a sense of the variability of the students; their moods, energy levels and personalities at different times of the day and from one day to another.

Suggestions for Observational visits:

N.B. Observe the students not the teaching. The observations should serve as a reference when planning the mini-unit

Following is a list of some characteristics and features for which the you might observe.

Language used

- by the students
- by the teacher

Interactions

- student-student: in a group setting
- student-student: on a one-to-one basis
- student-teacher: in a group setting
- student-teacher: on a one-to-one basis
- student with resources/materials with which they worked

Activities in which the students engage

- whole class activities
- learning centres
- cooperative groups
- seat work
- individual projects

Attitude toward learning

Expectations for the Unit/Theme Plans

Objectives:

- try to address at least one factor for each DSL
- try to address as many CEL as possible

Teaching approaches:

- variety - try to have as many activities as possible- e. g., field trips, experiments, studies, investigations, guest speakers.
- the teaching approaches must be appropriate for the intended student audience. [This relates to the classroom observations.]

Evaluation/Assessment:

- a minimum of two different approaches must be used. If the minimum number (two) are used only one of them may be a paper and pencil method.

Resources:

- you are expected to prepare an annotated list of resources used to plan your unit/theme. You should also include a listing of other resources you surveyed and might use in the future. Resources such as: print resources, computer software, A.V. materials, field trips and guest speakers, businesses, government agencies and non-government agencies.

Teaching a lesson from your Unit/Theme

Each student is expected to teach one lesson from the unit/theme which they helped to plan. The lesson will be taught to your ESCI colleagues.

You will be given a 45 minute period of time to teach your lesson.

Evaluation of the Unit/Theme Plan**Teaching a lesson**

Peer-evaluation & Instructor evaluation of the lesson taught to the class.

Self-critical Reflection -

After having an opportunity to reflect on the lesson and receiving feedback from peers, each team will be expected to reconsider their original plans. Included in the your reflections should be rationale for the objectives, teaching approaches and evaluation methods identified.

Written copies of the plans

Instructor evaluation of the unit/theme plans.

Resources:**Print resources:**

Bosak, S., Bosak, D., & Puppa, B. (1991). *Science is . . .* (2 nd ed.). Richmond Hill, Ontario: Scholastic.

Chiras, D. (1991). *Environmental science : Action for a sustainable future.* (3rd ed.). Redwood City, CA: Benjamin/Cummings.

Instructional strategies booklets (SIDRU/SPDU)

Meyers, N. (Ed.). (1984). *Gaia: An atlas of planet management.* New York: Doubleday.

Nebel, B. (1990). *Environmental science: The way the world works.* (3 rd ed.) Englewood cliffs, NJ: Prentice-Hall.

Saskatchewan Education. (1993). *Science: A curriculum guide for the middle level.* Regina: Author.

Saskatchewan Education. (1991). *Science 10: A curriculum guide for the secondary level.* Regina: Author.

Saskatchewan Education. (1991). *Student evaluation: A teacher handbook.* Regina: Author.

Authorized and recommended textbooks and programs.
Project Wild
Prairie to Pine

Our common future

Computer resources:

SIRS

A. V. resources:

Video disks

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

COLLEGE OF EDUCATION

UNIVERSITY OF SASKATCHEWAN

Winter Term 1994

EDFDT 851.3 International Education and Modernization

Professor: Dr. Howard Woodhouse, Room 3089, Tel: 966-7522

COURSE OUTLINE

This course will consider educational issues in development from several perspectives, including modernization theory, economic and cultural dependency, Aboriginal thought, women in development, sustainability, deep ecology, peace research, postmodernism, and process philosophy. The aim will be to gain a clear understanding of the meanings of development and modernization, their relationship to dependency, and their philosophical and practical limitations.

We shall also analyse the potential of education to enhance international understanding and cooperation by comparing it to the growing tendency of educational systems to foster tribalism, nationalism, and conflict. Our analysis will include discussions of education in both the 'developing' and 'developed' world.

EVALUATION

Students will write a research paper of not more than 15 typed pages on a topic that interests them. They may choose one of the several topics proposed by the professor or devise one of their own making, provided that it is approved by the professor first. A first draft of the paper, which will be returned with corrections and suggestions for revision, is due on February 14. It will not be marked. The final draft will be completed by April 4 and will be worth 50% of the final mark. A final examination will also be worth 50%.

THE COURSE STRUCTURE

Our discussions will centre on the following topics. As you will see, two classes have been set aside for open discussion of topics of interest to students. You are encouraged to make suggestions about the content of these sessions. We may wish to view a film or video tape, for example.

There is no text book. All the readings will be photocopied and printed. Students will be charged at cost at the end of the course (sorry!).

Session #1: Introduction: January 3
No readings.

Session #2: The Origin of 'Modernization' and 'Development':
January 10

Alfred North Whitehead: Science and the Modern World. The Free Press. New York. (1925)1953. Chapter Three, 'The Century of Genius'.

Session #3: Metaphors of Education for Development: January 17

Mathew Zachariah: 'Lumps of Clay and Growing Plants: Dominant Metaphors of the Role of Education in the Third World, 1950-1980'. Comparative Education Review. Vol. 29, No. 1. 1985.

Session #4: The Theory of Development in Education: January 24

C.E. Beeby: The Quality of Education in Developing Countries. Harvard University Press. Cambridge, Mass. 1966. Chapters 4 and 5, 'An Hypothesis of Educational Stages' and 'Progress through the Stages'.

Session #5: Economic Dependency as a Critique of Development:
January 31

Paul Hurst: 'Educational Aid and Dependency'. In C.B.W. Treffgarne (ed). Contributions to the Workshop on 'Reproduction and Dependency in Education'. EDC Occasional Papers, No. 6. Department of Education in Developing Countries, University of London Institute of Education. 1984.

Session #6: Cultural Dependency as a Critique of Development:
February 7

Ali Mazrui: Political Values and the Educated Class in Africa. University of California Press. Berkeley. 1978. Chapter 16, 'The African University as a Multinational Corporation'.

Session #7: Where Are We Going?: February 14
No Readings.

Session #8: Aboriginal Thought as an Alternative to Development:
February 28

Martha Johnson (ed). Lore: Capturing Traditional Environmental Knowledge. Dene Cultural Institute and International Development Research Centre. Ottawa. 1992. Chapter One, 'Research on Traditional Environmental Knowledge: Its Development and Its Role'.

Session #9: Women in Development: March 7

Howard Woodhouse and Theresa Ndongko: 'Women and Science Education in Cameroon: Some Critical Reflections'. Interchange. Vol. 24. No's. 1/2. 1993.

Session #10: Sustainability and Education: March 14

Bob Jickling: 'Editorial: Environmental Education and Sustainable Development'; D. Scott Slocombe: 'Getting to the Heart of Sustainable Development'; Suzana M. Padua: Sustainability versus Sustainable Development'. Green Teacher. No. 35, 1993.

Session #11: Deep Ecology and Peace Research: March 21

Peter Reed and David Rothenberg (eds).: Wisdom in the Open Air. University of Minnesota Press. Minneapolis. 1993. Chapter One, 'Introduction: Deep Ecology from Summit to Blockade' (selections) and Chapter Seven, 'Johan Galtung'..

Session #12: Alternative Philosophies of Development-- Postmodernism and Process Philosophy: March 28

Vaclav Havel: Address to the World Economic Forum. Annual Meeting, Davos, Switzerland. February 4, 1992.
Alfred North Whitehead: Science and the Modern World. The Free Press. New York. (1925)1953. Chapter 13, 'Requisites for Social Progress'.

Session #13: Where Are We From? What Are We? Where Are We Going?: April 4.
No Readings.

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UNIVERSITY OF SASKATCHEWAN
College of Education
Department of Educational Foundations

EDFDT 480.3 (02) Education for a Global Society

Professor: Dr. Howard Woodhouse
(Office ED 3089)

Fall 1992

In this course we shall analyse the following question: how best to educate men and women in the context of a global culture in which unprecedented levels of international interdependence could entail either greater cooperation or final disaster?

Among the central issues pertinent to global education that we shall consider in answering this question will be the following: peace, development, human rights, and the environment.

Our aim will be to develop an educational framework that reveals the relationships among these various issues and that articulates ways in which to think critically about them and eventually resolve them in concrete, emancipatory ways. In order to do so, we shall analyse the different pertinent issues in some detail by means of an ongoing dialogue about the various views presented in the texts under consideration. We shall, indeed, try to achieve a consensus about the kind of education for a global culture that we as a group would uphold. The extent to which we shall achieve such a consensus will depend upon how far we can agree on the kinds of normative structures appropriate for the task at hand. We shall be assisted in this task by several visiting speakers, representing different cultures and viewpoints.

The aims of the course will include the following:

- 1) To understand the meaning of global education, the issues involved in it, and the ways in which they could be integrated in the school curriculum.
- 2) To think critically about the ways in which global issues are currently presented in schools, the media, and society.
- 3) To propose ways for developing global awareness in the lives of students and for incorporating this awareness into the structures of schools and society.

Evaluation:

Students will be evaluated on the basis of the following assignments:

- 1) **Either:** a two or three page outline of their final paper that includes a clear statement of the issue to be addressed, a summary of the main arguments to be presented, and a short list of the principal sources to be consulted. The outline is due on October 2nd.

OR: a class presentation of about 15 minutes containing the preliminary findings for the term paper. The presentation should also contain the main arguments and the principal sources for the term paper.

Presentations will be made during early October.

EACH of these is worth 20% of the final mark.

- 2) A term paper based on either the outline of class presentation plus any comments made by the instructor or members of the class.

The term paper will be approximately 3,000 words in length. A Guide to Essay Writing for this course is enclosed with the Course Description. A list of suggested topics will be distributed. However, you are not required to choose a topic from the list, provided that you discuss it with the instructor first.

The term paper is worth 30% of the final mark and is due November 9th.

The outline, the class presentation, and the final paper can all be undertaken as group projects with up to four students in each group.

- 3) A Final Examination to be taken in the December examination period and worth 50% of the final mark.

At least one class will be set aside towards the end of the course to discuss the exam.

- 2) A Final Examination to be taken in the April examination period and worth 50% of final mark.

Textbooks:

M.I. Alladin (ed.): Perspectives on Global Education, Centre for International Education and Development, University of Alberta, Edmonton, 1990.

Sue Greig, Graham Pike, and David Selby: Earthrights: Education as if the Planet Really Mattered, World Wildlife Fund & Kogan Page, London, 1987.

A Framework for Writing about Global Education

When writing about any issue in global education (and indeed in other areas too), you should try to pose the following questions of the subject matter that you have been reading, and then in your essay propose answers to the questions on the basis of both the evidence available and the reasoning stemming from such evidence.*

- 1) What is happening?
- 2) How is it happening?
- 3) Why is it happening?
- 4) Should it be happening?
- 5) What is the role of global education in changing the situation?
- 6) What is to be done? And how can it be achieved?

*See accompanying page for details about the kinds of reasoning that you should use.

Select Bibliography

(* Denotes available from professor

** Denotes available from university library)

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- * S. Audean Allman et. al. (eds.): Environmental Education, Charles E. Merrill, Columbus, Ohio, 1976.
 - * Christian Bay: 'Toward a Postliberal World Order of Human Rights', XV11th. World Congress of Philosophy, Montreal, August 21-27, 1983.
 - ** Morris Berman: The Reenchantment of the World, Cornell University Press, Ithaca, New York, 1981.
 - ** Daniel Berrigan: To Dwell in Peace, Harper Row, New York, 1988.
 - I. Brecher (ed.): Human Rights, Development and Foreign Policy: Canadian Perspectives,

- Institute for Research on Public Policy, Montreal, 1990.
- ** Robert S. Brumbaugh: Whitehead, Process Philosophy, and Education, State University of New York Press, Albany, 1982.
- Sarah Carter: Lost Harvests, McGill-Queen's University Press, Montreal, 1990.
- * Terrance R. Carson and Hendrik D. Gideonse (eds.): Peace Education and the Task for Peace Educators, World Council for Curriculum and Instruction Monograph, Cincinnati, Ohio, 1987.
- ** Noam Chomsky: The Fateful Triangle, Black Rose Books, Montreal, 1984.
- * Richard Q. Elvee (ed.): Mind in Nature, Harper and Row, San Francisco, 1982.
- * Final Report: European Seminar on Implementation of the Unesco Recommendation on Education for International Understanding in Teacher Education, Espoo, Finland, September 2-5, 1980.
- Randall Forsberg and Carl Conetta (eds.): Peace Resource Book, 1988-89, Ballinger Publishers, New York, 1988.
- Ursula Franklin: The Real World of Technology. CBC Enterprises, Montreal, 1990.
- ** Paulo Freire: Pedagogy of the Oppressed, Herder and Herder, New York, 1970.
- * Nance Lui Fyson: The Development Puzzle, (7th. ed.), Hodder and Stoughton, London, 1984.
- ** Johan Galtung: Development, Environment, and Technology, United Nations, New York, 1979.
- ** Johan Galtung: Essays in Peace Research, Fjlers, Copenhagen, 1975.
- ** Johan Galtung: There are Alternatives!: Four Roads to Peace and Security, Spokesman Books, Nottingham, 1984.
- ** Johan Galtung: The True Worlds: A Transnational Perspective, Free Press, New York, 1980.
- Anita Gordon and David Suzuki: It's a Matter of Survival, Stoddart, Toronto, 1990.
- * Garret Hardin (ed.): Science, Conflict and Society, W.H. Freeman, San Francisco, 1969.
- * Ivan L. Head: On a Hinge of History, University of Toronto Press, Toronto, 1991.
- * Jeremy Hull, Michael Murphy, and Robert Regnier (eds.): Underdevelopment and Education: Selected Annotated Resources for Saskatchewan and Canadian Educators, University of Saskatchewan, Saskatoon, 1982.

- * Robert Jackson (ed.): Global Issues 90/91, (6th. Ed.) Dushkin, Guilford, Connecticut, 1990.
- * Learning to Be, UNESCO, Paris, 1972.
- * Mario Vargas Llosa: The Storyteller, Faber and Faber, London, 1990.
- * Jim MacNeill et. al. (eds.): Beyond Interdependence, Oxford University Press, New York, 1991.
- * Estela C. Matriano (ed.): Lifelong Learning for Global Development: Toward a Humane Quality of Life, The Development Academy of the Philippines, Tagatay City, 1981.
- ** Ali A. Mazrui: Political Values and the Educated Class in Africa, University of California Press, Berkeley, 1978.
- ** Pam McAllister (ed.): Reweaving the Web of Life: Feminism and Nonviolence, New Society Publishers, Philadelphia, 1982.
- * John McMurtry: Understanding War, Science for Peace/Samuel Stevens, Toronto, 1989.
- * John McMurtry: 'The Unspeakable: Understanding the System of Fallacy in the Media', Informal Logic, Vol. X, No. 3, 1988.
- * Maria Montessori: Education and Peace, Henry Regnery, Chicago, 1972.
- * G. Pike and David Selby: Global Teacher, Global Learner, Hodder and Stoughton, London, 1988.
- * Proceedings of the First World Congress of Comparative Education Societies on The Place of Comparative and International Education in the Education of Teachers, Ottawa, 1970.
- Douglas Ray (ed.): Peace Education: Canadian and International Perspectives, The Third Eye, London, Ont., 1988.
- * Readings in Education for the Global Society, College of Education, University of Saskatchewan, 1981.
- * Jeremy Rifkin: Algeny, Penguin Books, Harmondsworth, Middx., 1984.
- ** Bertrand Russell: Principles of Social Reconstruction, Allen and Unwin, London, 1916.
- ** Bertrand Russell: Has Man a Future?, Allen and Unwin, London, 1967.
- ** Bertrand Russell: War Crimes in Vietnam, Allen and Unwin, London, 1967.
- ** Jonathan Schell: The Fate of the Earth, Avon Books, New York, 1982.

- * Herbert I. Schiller: Culture Inc., Oxford University Press, New York, 1989.
- ** E.F. Schumacher: Small is Beautiful, Abacus, London, 1974.
- ** David Selby: Human Rights, Cambridge University Press, Cambridge, 1987.
- * Stockholm International Peace Research Institute: The Arms Race and Arms Control, Taylor and Francis, London, 1984.
- * The Open University Third World Atlas, Open University Press, Milton Keynes, 1986.
- * Norma Bernstein Tarrow (ed.): Human Rights and Education, Pergamon, Oxford, 1987.
- ** Laurie S. Wiseberg and Harry M. Scoble: Human Rights Directory, Latin America, Africa, Asia,..., HRI, Washington, D.C., 1981.
- ** Mathew Zachariah: "Lumps of Clay and Growing Plants: Dominant Metaphors of the role of Education in the Third World, 1950-1980", Comparative Education Review, Vol. 29, No. 1, 1985.

Plus any of the references cited in the two textbooks.

You may also be interested in the following special issues of journals:

- ** Cecille DePass et. al. (eds.): New Challenges for Development Education in Canada, Canadian and International Education, Vol. 20, No. 1, 1991.
- ** 'The Ethics of Nuclear Deterrence and Disarmament', Ethics, Vol. 95 (April 1985).
- ** 'Education and the Threat of Nuclear War', Harvard Education Review, Vol. 54 (August 1984).
- * 'Global Education', Theory into Practice, Vol. XX1, (Summer 1982).
- * 'Philosophy and Nuclear Arms, Papers from a conference at the University of Waterloo, September 28-30, 1984.

Also, the following journals are among those that focus on issues pertinent to global education:

- ** Africa Report
- ** Alternative (committee for non-violent revolution)
- * Canadian Ethnic Studies
- ** Canadian and International Education

- * Edges
- ** Green Teacher
- ** Journal of the World Council for Curriculum and Instruction
- ** New Internationalist
- ** New Scientist
- ** Our Schools Our Selves
- ** Peace Science Society (International) Papers
- * Pugwash
- ** Science Forum: A Canadian Journal of Science and Technology
- * The Journal of Wild Culture
- ** The Science of the Total Environment
- ** This Magazine



TAKE A HALF CLASS IN GLOBAL EDUCATION IN AN EIGHT DAY RESIDENTIAL COURSE

July 22 - 30, 1994, St. Peter's College, Muenster

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Concerned about the direction society is taking? Looking for a unique educational experience? Come spend a week with us exploring the environment, ecology and sustainability. Discover why global education is growing in importance around the world. Gather ideas that you can use in your classroom.

Ideal for teachers living in rural Saskatchewan

Rather than being spread over six weeks, this University of Saskatchewan summer school class is being offered at an eight-day summer course held in scenic St. Peter's College, Muenster.

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Lecturers:

Martin Sterling - Global Education

Lynn Oliphant - Ecology

For further information, contact Martin Sterling at 966 7514 (Dept. of Ed. Fdfdts.) or 374 6033 (home). Register through Extension Division, University of Saskatchewan, Saskatoon.

Graduate Studies
in
Global &
International Education

**The Departments of
Curriculum Studies
and
Educational Foundations**

**College of Education
University of Saskatchewan
Saskatoon, SK S7N 0W0**

Beginning in the fall of 1994, the College of Education will offer a new interdisciplinary master's program in global and international education. Students may elect to take a Post-Graduate Diploma (PGD), Masters with thesis, or Masters with project. For details of these options, please consult the Graduate Co-ordinator of the relevant department.

The program has three strands:

(1) **K-12 global education** The first is designed for teachers in the K-12 system whose interest is primarily in classroom pedagogy and instructional design. The focus will be on developing appropriate global perspectives in elementary and secondary students. Ways of integrating global studies will be explored.

Contact: Graduate Co-ordinator, Department of Curriculum Studies

(2) **Non-formal education** The second will interest those persons whose careers focus on education provided by, for example, NGOs, development agencies, and church organizations who wish to expand their knowledge of international development activities and organizations. The emphasis here will be on non-formal education, exploring a range of political, social, economic, and ethical questions related to development and literacy programs.

Contact: Graduate Co-ordinator, Department of Curriculum Studies

→ (3) **Education and indigenous knowledge** The third will interest those teachers and others who wish to specialize in Indigenous knowledge and the situation of Indigenous peoples around the world. Among the kinds of issues to be explored are indigenous knowledge as an alternative to Western science, values, education, and technology, as well as the process of decolonization that is currently taking place among First Nations peoples in Canada and elsewhere.

Contact: Graduate Co-ordinator, Department of Educational Foundations

Students in all three strands will be expected to fulfil the regular graduate requirements of their department. A special core program has been designed for each strand. A wide range of electives is available. Students may choose to focus on human rights, development, peace, or environmental education. Students should anticipate spending a minimum of three months on a field-study project, either in a foreign country or with an agency or school in Canada. If they decide to go abroad, a language proficiency at least to the level of one semester's study in Division of Extension's Multi-Lingual Program will be required.

Pre-requisite for all strands:

Edfdt 480.3 - Education for a Global Society

Core for all strands

IntSt 299.6 - Special Topics: Planet Earth

Edfdt 898.3/6 - Field Service (Abroad)

Core for Curriculum Studies Core

EdCur 801.6 - Principles and Practices of Curriculum and Instruction

EdRes 880.3 - Research Methods

EdCur 807.3 - Models and Methods for the Evaluation of Educational Programs, and for K-12:

(a) EdCur 887.3 - Issues and Trends in Social Studies Education (I)

(b) EdCur 888.3 - Issues and Trends in Social Studies Education (II)

(c) EdCur 898.3 - Individual Reading - Special Problems in School Subjects

and for the non-formal education strand:

(a) EdCur 898.3 - Special Topics: Non-formal Education

(b) EdCur 898.3 - Special Topics: Issues and Trends in Non-formal Education

Core for Educational Foundations Students

EdFdt 820.3 - Early Educational Classics or

Edfdt 821.3 - Modern Educational Classics

One of several research courses offered in the department or EdRes 880.3

Electives - The following is a list of some of the courses that will be offered for those in all strands:

Edfdt 850.3 - Comparative Studies in Education

Edfdt 851.3 - International Education and Modernization

Edfdt 860.3 - Seminar in Anthropology and Education

EdInd 860.3 - Cross-Cultural Education Within Circumpolar Countries

EdInd 870.3 - Cross-Cultural Education Within Third World Countries

Edcnt 878.3 - Comparative Continuing Education (Abroad: England in May, 1994; China in May, 1995; Germany proposed for May, 1996, and France proposed for May, 1997).

Edfdt 898.3/6 - Special Study - Individual Reading Course

Inquiries can be made

for the K-12 and non-formal education strands to

for the Indigenous knowledge strand to

Graduate Co-ordinator
Department of
Curriculum Studies

Graduate Co-ordinator
Department of Educa-
tional Foundations

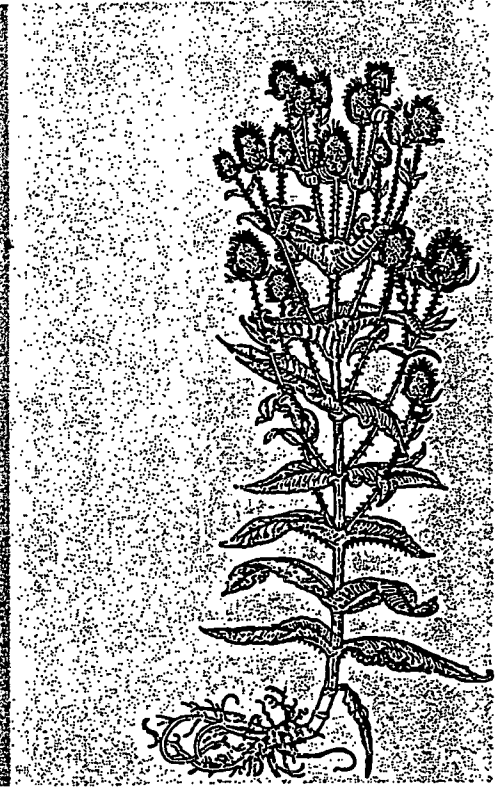
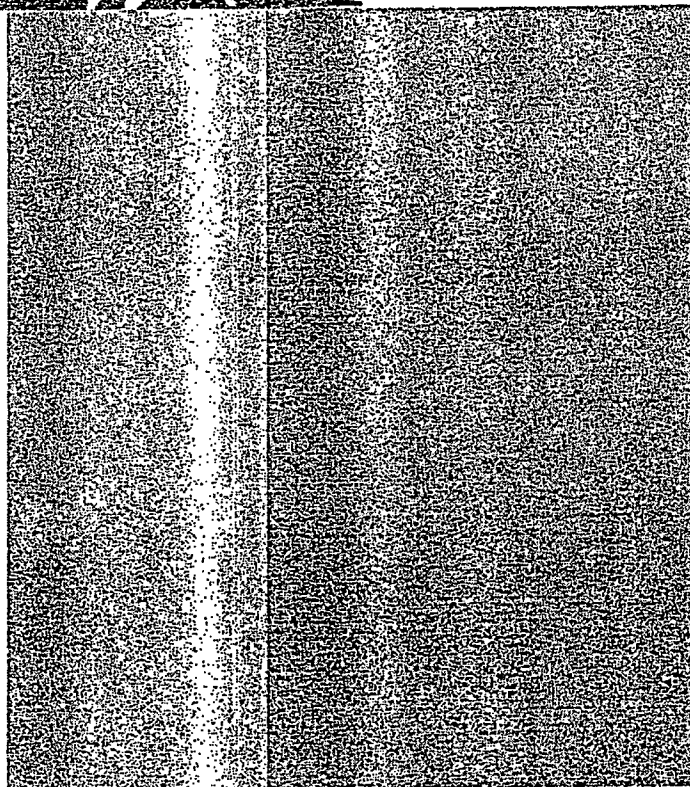
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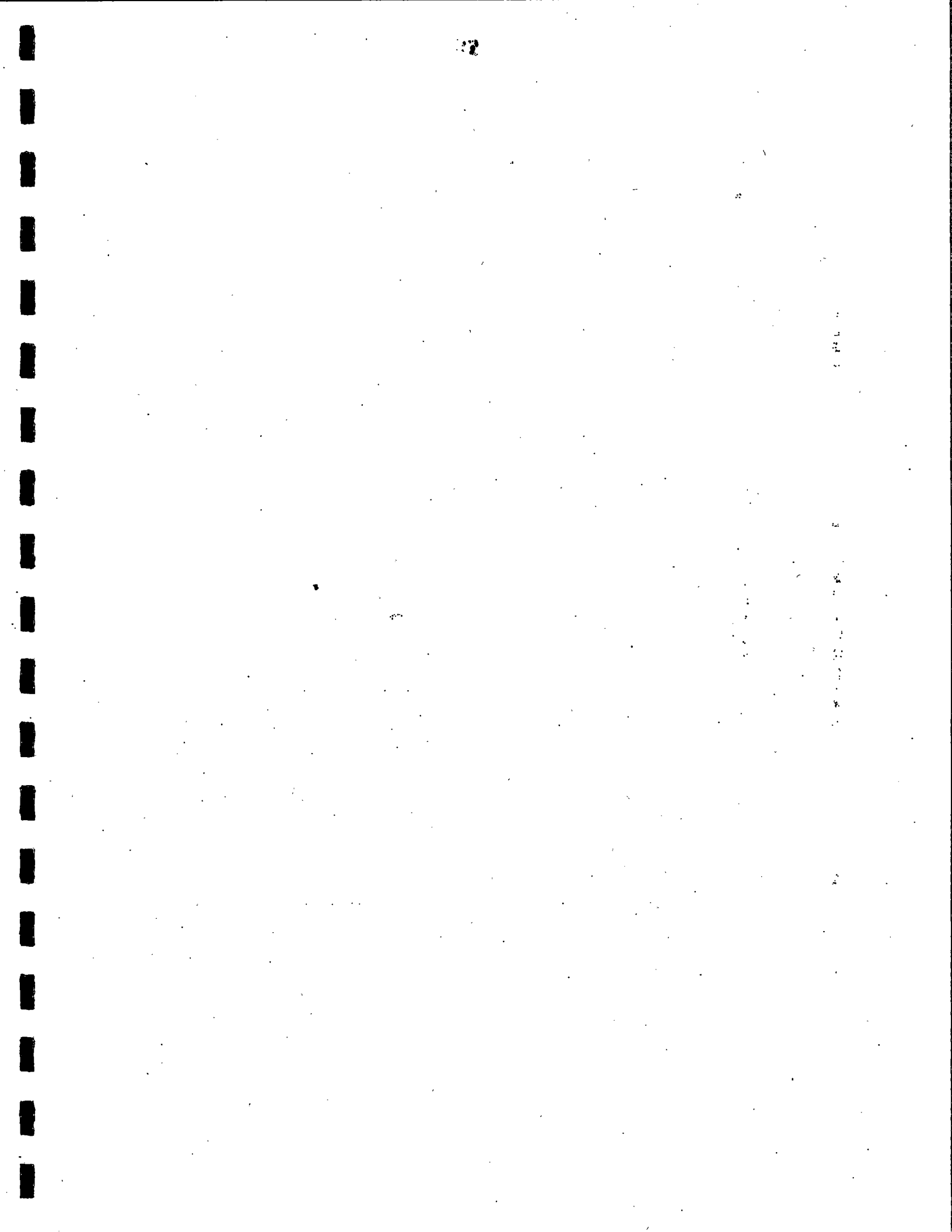
FAX: (306) 966-8719

College of Education
University of Saskatchewan
Saskatoon, SK S7N 0W0

Summer Institute in Environmental Education



1994 Simon Fraser University



Summer Institute in Environmental Education. Course Introduction.

Welcome to the 1994 Summer Institute in Environmental Education. This year marks the twenty-third anniversary of the Summer Institutes in Environmental Education. S.F.U. was the first university in Canada to offer such a program for in-service and pre-service teachers interested in Environmental Education. We began the Institutes as a joint venture between Kamloops School District and its McQueen Lake Environmental Study Centre and the university in the summer of 1971. At that time the McQueen Lake centre had just been leased to the Kamloops school district and the university and the district developed the Institute as a means of developing expertise in Environmental Education among district teachers so that they could make effective use of the new asset.

Over the years many hundreds of teachers from all over B.C. and Canada have completed the program. We have offered the Institute in both residential and non-residential formats and have collaborated with the Sunshine Coast School District, Sooke School District, North Vancouver School District, and with the Pemberton Band and Strathcona Outdoor Education Centre. In 1994 the Institute will be offered in Kelowna at SFU's Kelowna regional centre located on the campus of Okanagan University College at K.L.O. Road.

We have planned a full program of experiences which we feel will provide you with both a personally and professionally rewarding educational experience. Environmental Education is a field of study which reflects trends in modern scholarship. It does not fit easily into any of the traditional subject compartments. Environmental Education requires an interdisciplinary approach and it is a natural vehicle for the integrated approaches to content recommended by the Sullivan Royal Commission on Education and by the Year 2000 Framework. The view of EE as interdisciplinary has been a basic element of this Institute from the outset. As a result, we have always tried to incorporate a variety of disciplinary orientations into our studies, drawing from the Arts, Language Arts, Drama, Music, History, Architecture, Social Sciences, Humanities, and Natural Sciences. We have also taken the view that no consideration of the environment can be complete without attention to the built, or human constructed elements of that environment in which we spend the great majority of our daily lives.

When we developed the Institute we also held the view that we had to model the teaching practices and approaches which we held to be imperative for effective teaching and learning. Thus, we have always created an experientially rich learning environment during the Institute, making extensive use of field experiences and appealing to a range of learning modalities. We have tried to blend the theoretical with the practical. We have also attempted to make connections from the experiences we provide at the Summer Institutes to your classroom settings as teachers.

Each year of the Institute the most important element has been the human element. The people who attend this institute are a treasure trove of experience, skill, and knowledge. We hope that everyone views him or herself as not only a participant, but also as a contributor. Our philosophy of learning is constructivist in orientation. We believe that learning is driven by a search for personal meaning and to make sense of things. We also believe that no one can learn for someone else, although we can act as mentors and facilitators of the learning of others. We invite your contribution to the learning of your fellow students and to the learning of the instructors.

We also believe that learning is a personal activity which can be nurtured in social or community settings and facilitated through human interactions. Accordingly, we make frequent use of group and team work during the course and emphasize various cooperative approaches.

Summer Institute in Environmental Education. Course Introduction.

Finally, we believe that Environmental Education is an essential element of Post-Industrial Schooling. Post Industrial schooling moves away from the view of the natural world and humans as resources. It reintegrates humankind with the natural world and attempts to address the educational challenges which we must confront in order to create a sustainable pattern of human activity on the planet. Accordingly, the focus of the Institute will be Developing Environmental Literacy.

During 1992,93, and 1994 we have been engaged in developing a new provincial curriculum project at the Kelowna Regional Centre. This project, the B.C. Water Stewardship Project is intended to create a curriculum for use in the schools of B.C. focussing on water, aquatic life, and aquatic habitats integrated around the concept of human stewardship or responsibility for the wise use, development, conservation, and management of water, wetlands, and aquatic life. We are fortunate to have Kim Fulton from Armstrong School District on secondment to the project and he will be providing us with an opportunity to examine water stewardship as an important sub theme of this summer's institute.

Goals of the Programme.

The Summer Institute in Environmental Education has the following goals:

- to provide teachers and pre-service teachers with an opportunity to develop an understanding of the domain of environmental education and of the attributes of environmental literacy;
- to provide teachers with examples of teaching/learning activities relevant to and appropriate for developing environmental literacy in students of a range of ages and experiences;
- to provide teachers with an awareness of teaching strategies appropriate for the goals of environmental education through the use of these strategies during the institute;
- to provide teachers with an awareness of some of the resources available to support environmental education programmes in schools;
- to provide teachers with the opportunity to develop understanding of the connections between the purposes and aims of environmental education and those of other areas of the school programme;
- to provide teachers with an opportunity to explore the dimensions of their own learning styles;
- to provide teachers with an opportunity to increase their personal knowledge of a number of environmental issues.

We also hope that the programme will be enjoyable and relevant.

Student Requirements and Assessment Criteria.

It is our goal to make clear connections between the expectations of students for performance and the purposes of the course. This course provides a lot of field experiences and group work is integral to what we do in the field. We want to use the field experiences and the course work as a resource to support student performance demonstration. It is all too often the case that field work courses still ask students to produce demonstrations of learning which could be accomplished without the field work or other course experiences--by using a library or reading source books and references rather than by using the first hand experiences and concepts of the course directly. In these cases, the actual course experiences are extraneous to the assignments and tasks which determine student evaluations.

In order to avoid this situation we are attempting to accomplish the following in our demonstration and performance requirements:

- to provide students with a chance to apply the conception of environmental literacy used in the course to "case study" problems in environmental education based directly on course experiences. For example, if we do some pond studies we may ask that students develop a plan for learning experiences for students of a selected age based on pond studies and emphasising systems thinking as a means of applying the pond experience to the development of an attribute of environmental literacy for a given group of students.
- We also wish to emphasise group work and collaboration. An intensive institute such as this brings people with differing backgrounds into close contact for a month. This is a good chance to take advantage of the various strengths and experiences of different people to support learning. Thus, most case study assignments will provide an opportunity for students to work in groups and teams and to examine their group's process as a part of the task.
- We wish to provide tasks for the demonstration of competence which can contribute not only to the learning of individual students but to the learning of all those attending the institute. Therefore we will provide opportunities for the sharing of task work among all members of the group.
- We wish to provide relevant tasks which can be applied to your current professional work.
- We wish to provide tasks which can be accomplished in a defined time, without extensive use of reference sources but which clearly require reflection on, application of, and demonstration of the concepts and experiences of the course.
- Finally, we will try to provide, in advance of each demonstration, our criteria for the assessment of the task. Our assessment therefore will be based on, and reported in terms of, criteria of performance.

Summer Institute in Environmental Education. Course Introduction.

The course is four weeks in length. During each segment of the course you will be given a task based on the experiences of that week. In some cases you will have several days to accomplish the task. In other instances you will have a shorter period of time in which to develop your demonstration. A demonstration may entail written work, but it may entail oral presentation, possibly supplemented by a written summary or synopsis. Because we want to emphasize experience accompanied by reflection on and discussion of experience, assignments will be designed to be accomplished without extensive written elements. Where group participation and accomplishment is required, discussion or demonstration of group process will be an element of the assessment. You will work in several different teams/groups during the course so that you have a chance to experience different sets of perspectives and talents. You will leave the course on the last day with all requirements completed and with assessment completed for 3/4, if not all of the tasks.

UNIVERSITY OF VICTORIA

ED-E 373 Introduction to Environmental Education

Sept. - Dec. 1993
1.5 units

Instructor: Dr. Gloria Snively
MacLaurin A552
721-7779

Office Hours: Mondays & Wednesdays
3:30 - 5:30

An introductory course which will explore the major ecosystems in B.C. as a focus for instruction and curriculum development. The course will lend itself to a multidisciplinary approach and should be of interest to teachers of all subjects and grade levels. Topics include: man's impact on ecosystems; goals for environmental and outdoor education; current issues and trends; teaching strategies; program and curriculum development. Selected fieldtrips to a variety of locations in B.C.

Topic Outline

- an overview of the various philosophical, theoretical and ideological approaches to outdoor education
- ecological concepts: life cycle, habitat, predator-prey, food chain, food web, energy flow, adaptation, interrelatedness, community, conservation, pollution, resource management
- review of environmental and marine topics in B.C. Science and Social Studies curriculum guides
- analysis of environmental education curricula: ENCORE, OBIS, ESSENCE, WEDGE, Salmonids, Project Learning Tree, Project Wild, Project Wet and Wild, Project ORCA, Project FOR SEA, Etc.
- incorporating environmental education into existing programs
- adapting current materials to regional and national interests and needs
- teaching strategies: sensory awareness, creative drama, guided imagery, role-playing, games, simulations, design-in, case studies, valuing
- inquiry teaching and questioning strategies
- planning fieldtrips: safety, liability, responsibilities, and logistical considerations
- developing environmental curricula
- fieldtrip possibilities: West Coast rain forest, boreal forest, lakes and ponds, rivers and streams, alpine meadow, bog, estuary, small town, city, harbour, farm

Course Assignments

Grades will be determined on the basis of the following criteria:

- 2 -

1. Quality of assignments (written and verbal). Quality is not judge by the kilogram! Some criteria which will be stressed are: science appropriateness, quality of background materials, organization, thoroughness and detail, overall usefulness.
2. Note: The penalty for late assignments is one letter grade per day, i.e., B+ becomes B.
3. Participation in and contribution to classwork and group work. As this course is activity oriented, ATTENDANCE IS COMPULSORY and involvement in class activities is expected. Unexcused absence and/or tardiness is unacceptable and will result in grade point penalty.

Selected readings in environmental education and resource management. Students are expected to participate and contribute in all phases of class activities.

Field Notebook

Each student is required to maintain a field notebook. This notebook is used to record all relevant information related to fieldtrips (or experiments) done during the course. While the nature of the notebook is somewhat personal, it should include the following:

- i) Purpose of the trip
- ii) Location of the trip
 - general description of the area including weather, temperature, tide level (if appropriate), etc.
- iii) List of plants and animals identified
- iv) Details about the organisms or topics studied
 - drawings, notes, results of fieldplots, etc.
- v) Discussion/Conclusion
 - general statement reflecting increased knowledge about the purpose of the trip

The major purpose of the field notebook is to ensure that you do not lose material that you might need to do your lab reports or understand for the final examination.

This notebook will not be marked but you will be expected to maintain it and I will check to see that you are doing so.

Assignments

Assignment #1: Inquiry with Marine Organisms

15 points

With 2 or 3 partners, develop a set of experiments that will analyze aspects of your organisms' physiology and behaviour. Demonstrate as many science inquiry skills as possible: observing, inferring, predicting, measuring, and recording, controlling variables, analyzing, etc. Write a group report including the natural history, internal morphology, sexual behaviour, reproductive system, etc. See additional course handout.

Assignment #2: Swan Lake Ecology Study

15 points

This fieldtrip activity will involve identifying freshwater plants and animals, mapping, the study of succession, how organisms are adapted to survive winter conditions, and causes of water quality contamination. See additional course handout.

Assignment #3: Mount Douglas Forestry Study

15 points

This fieldtrip activity will involve identifying trees, shrubs, and flowers; mapping, the study of zonation and succession. See additional course handout.

Assignment #4: Choose one of the following:

35 points

Plan a 5 Day Camp Experience

Plan a 5 day overnight camp experience; including key concepts, measurable outcomes, tentative timetable, 6 detailed lesson plans, letter to parents, equipment list, safety procedures, etc.

Develop an Environmental Education Teaching Unit

Plan fieldtrips to one or two different types of environments; for example, (rocky shore, sandy beach, mudflat); (pond, bog, forest); (seashore, harbour front, pulp mill). Include key concepts, measurable outcomes, and 6 detailed lesson plans, equipment list, safety procedures, etc. See additional handout.

Other. Please submit a written proposal (1 to 2 pages), and discuss this with your instructor as early as possible.

Grading:

		Points
Assignment #1	Inquiry With Marine Organisms	15
Assignment #2	Swan Lake Ecology Study	15
Assignment #3	Mount Douglas Forestry Study	15
Assignment #4	Environmental Education Teaching Unit	35
	Final Exam	<u>20</u>
		100 pts.

Evaluation:

≥ 96	A+	[Exceptional, Outstanding, Excellent performance, normally achieved by a minority of the students. These grades indicate a student who has an insightful grasp of theory and practice.]
93-95	A	
90-92	A-	
87-89	B+	[Very good, good performance, normally achieved by a sizable percentage of selected students. These grades indicate a good grasp of theory and practice or excellent grasp in one area balanced with satisfactory.]
83-86	B	
80-82	B-	

- 4 -

76-79	C+	(Satisfactory performance. These grades indicate a satisfactory performance level of theory and practice.)
70-75	C	
60-69	D	(Marginally satisfactory performance. This grade is a passing grade but carries a high degree of uncertainty.)
≤ 59	F	(Unsatisfactory performance at this time. This grade indicates a level of performance inappropriate for the teaching profession.)

Tentative Course Outline

Week 1
Sept. 6-8

Introduction to Course

Week 2
Sept. 13-15

- Overview of Canadian Environmental Education Curricula:

Project Wild	ENCORE	Salmonids
Project Learning Tree	PEP	Energy Education
Project Wet and Wild	EYE	
- Overview of selected U.S. Environmental Education Curricula:

ESSENCE	OBIS	Project ORCA
Project FOR SEA	Alaska Marine Ed. Project	
- "Sharing Nature with Children" Activities
- "ESSENCE" Activities
- Sensory Awareness Activities
- Using Field guides: Seashore

Fieldtrip to a Rocky Shore: TBA

Week 3
Sept. 20-22

Plankton Study
Marine Inquiries

Week 4
Sept. 27-29

Marine Inquiries
Slide Presentation: Exploring Beaches With Kids
Using Field Guides: Trees, Shrubs, & Flowers

Week 5
Oct. 4-6

Fieldtrip to Mount Douglas Park

- The Forest Community
 - Vertical Zonation on a Mountain
 - Climax Forest Community.
- Slide Presentation: The Forest Community

Week 6
Oct. 11-13

October 11 - Thanksgiving (no class)
Ethnobotany - Plant walk with Dr. Nancy Turner

- 5 -

Week 7
Oct. 18-20

Aquatic Communities
• Fieldtrip to Swan Lake Nature Centre
Pond Flora and Fauna
Life Cycles
Pond Zonation
Ponds Through the Seasons

Week 8
Oct. 25-27

Pond Organisms
Microscopes in the Classroom
The Bog Ecosystem
Bog Succession

Week 9
Nov. 1-3

"Project Wild" Activities
• Ecological Principles
• Activities for Teaching the Concepts
Habitat
Life Cycle
Adaptation
Predator-prey

Week 10
Nov. 8-10

Reading Break (No Class, Wed. 10th)

Week 11
Nov. 15-17

"Project Wild" (continued)
• Activities for Teaching the Concepts
Energy Flow
Population Change
Food Chain
Food Web
Interdependence
• Overview of Global Environmental Issues

Week 12
Nov. 22-24

• Fieldtrip to Mount Douglas Park: Acclimatization Activities
Blind Walk
Sound Map
Creative Movement
Becoming One With Nature
Camera Game
• Planning and Organizing Fieldtrips
Residential vs. Day Trips
Involving Parents
Safety and Equipment
Outdoor Survival Skills
Edible Incredibles
Legal Liability
Lost in the Woods: NFB Film

Week 13
Nov. 29-
Dec. 1

Seminar: Course Readings

Week 14
Dec. 6

Seminar: Course Readings
Curriculum Project Due

Final Exam TBA

GS/kbb
1993-09-01

UNIVERSITY OF VICTORIA
 ED-E 473: ADVANCED METHODS IN ENVIRONMENTAL EDUCATION/OR
 ENVIRONMENTAL ISSUES EDUCATION

1.5 units
 January-April, 1994

Instructor: Dr. Gloria Snively
 Dept. of Social & Natural Sciences
 Faculty of Education
 University of Victoria
 Telephone: 721-7779

This course is designed to familiarize the educator with a range of issues and teaching methods related to environmental education. The course will cover some of the topics outlined in Ed-E 373 such as goals for environmental education, teaching strategies, and program development. In addition, the course will explore regional, national, and international environmental and resource management issues as a focus for program planning and curriculum development. The research on students' beliefs, values, and opinions towards current conflict issues will be reviewed. Selected fieldtrips.

Topic Outline

- develop a theoretical rationale for environmental education
- develop a conceptual structure for a resource management curriculum
- review of specific ecological concepts: habitat, food chain, food web, energy flow, limiting factors, stability, population, species diversity, interrelatedness, community, pollution conservation
- economic concepts: resource, resource management, scarcity, benefit, cost
- socio-political concepts: culture, change, conflict, stewardship, progress, belief, value, environmental ethics
- students' prior beliefs about environmental concepts and opinions towards specific resource issues
- the relationship between students' beliefs, values, and opinions
- regional, national, bi-national, multi-national environmental conflicts
- historical roots relevant to theories of environmental education
- teaching strategies for exploring resource management and global issues: role-playing, simulation, concept mapping, document analysis, critical thinking, design-in, etc.
- the use of analogies, models, and metaphors for understanding global issues, and for conflict resolution
- possible B.C. case study topics: aquaculture, management of migratory animals, water pollution, marine parks, indigenous cultures, cross-boundary conflicts, clear-cut logging, offshore oil transport, pulp-mill pollution
- possible global issues: greenhouse effect, ozone depletion, PCB's, nuclear wastes, war, destruction of tropical rain forests, Law of the Sea Convention, plastics in the environment, acid rain, drift-net fishing, the fur trade
- fieldtrip possibilities: pulp mill, Victoria Harbour, small town, city, government buildings
- guest speaker possibilities: politicians, corporate representatives, biologists, fisheries/forestry management officials, indigenous persons, lawyers

Assignments

Selected readings in environmental education and resource management. Students are expected to participate and contribute in all phases of class discussion.

Assignment #1: Group Presentation

Case Study/Role-play: Within a group of 5 to 8 partners, choose an environmental conflict issue of concern to students at the grade level you wish to teach. Develop a role-play to help students arrive at a defensible position towards the issue of interest. The role-play should encourage students to collect and interpret information, predict consequences, develop alternative solutions, and problem solve for resolving resource conflicts. Develop a handout for members of the class. Include key concepts, measurable outcomes, one detailed lesson plan, and appropriate resource materials.

OR

Guided Fantasy Presentation: Within a group of 3 or 4 partners, develop a guided fantasy to help students appreciate the natural environment, learn ecological concepts, and explore an environmental issue. Produce a tape recording (if appropriate a set of slides) and a handout for members of the class. Include key concepts, measurable outcomes, a guided fantasy script, and one detailed lesson plan.

Presentation	10 points
Written Report	10 points

Assignment # 2 Metaphorical Poster and Lesson

Design a metaphorical poster or logo to help students (and or adults) explore an environmental issue of local or global significance. Write a detailed lesson plan that includes concepts, measurable outcomes, materials and activities.

Poster/Logo	5 points
Lesson Plan	5 points

Assignment #3: Literature Review

Choose one of the following:

Analysis of a book or three related articles: Lead a discussion based on an environmentally related book, or three articles, of your choice - presentation length about 15 minutes. The discussion should focus on such things as identification of the author's stance and assumptions, the relationship of the reading to current issues in environmental education, and identifying implications for curriculum development and instruction. The written part will be limited to ten double spaced typed pages.

30 points

OR

Review of the Research Literature: Identify an environmental issue of concern to students at the grade level you wish to teach. Locate and analyze research literature related to students' beliefs, opinions, and values towards the issue of interest. Write a paper and lead a class discussion leading to implications for teaching and developing curricula.

Assignment #3: Curriculum Development

Choose an environmental conflict issue of concern to students at the grade level you wish to teach. Develop a set of teaching activities to help students identify their own beliefs and values towards the conflict issue of interest, and the beliefs and values of others. Develop at least one teaching strategy explored in this course such as role-playing, guided fantasy, design-in, document analysis, case study, concept mapping, cooperative learning, metaphor or simulation. Include 20 measurable outcomes, 10 to 12 key concepts, 6 detailed lesson plans, and evaluative instruments.

Concepts and Measurable Outcomes	10
4 lesson Plans	20
Evaluation Instrument	<u>10</u>
	40

OR

Other. Please submit a written proposal (two pages), and discuss this with your instructor as early as possible.

	Grading	Points
Assignment #1	Group Presentation	20
Assignment #2	Metaphorical Poster/Lesson Plan	10
Assignment #3	Analysis of a Book or Articles	30
Assignment #4	Curriculum Development	40

Evaluation:

>90	A+	70-74	B	50-54	D
85-89	A	65-69	B-	<49	F
80-84	A-	60-64	C+		
75-79	B+	55-59	C		

A+, A, A- (Exceptional, Outstanding, Excellent performance, normally achieved by a minority of the students. These grades indicate a student who has an insightful grasp of theory and practice.)

B+, B, B- (Very good, good performance, normally achieved by a sizable percentage of selected fourth year students. These grades indicate a good grasp of theory and practice or excellent grasp in one area balanced with satisfactory grasp in the other area.)

C+, C (satisfactory performance. These grades indicate a satisfactory performance level of theory and practice and appropriate to entry in the teaching profession.)

D (marginally satisfactory performance. This grade is a passing grade and can be used to enter the teaching profession, but carries a high degree of uncertainty.)

F (Unsatisfactory performance at this time. This grade indicates a level of performance inappropriate for entry into the teaching performance.)

ED-E 473

Course Outline

- Week 1**
- Overview of course
 - Historical Roots of Environmental Education
 - Comparison of Canadian and U.S. Environmental Curricula
 - The Need for Environmental Education
- Week 2**
- Overview of Current B.C. Environmental Issues
 - Possible Topics:
 - Mining in Strathcona Park
 - Seals vs. Salmon Fisherman
 - Offshore Oil Exploration & Transportation
 - Killer Whales in the Vancouver Aquarium
 - Dwindling Fisheries
 - Salmon Farming vs. Local Residents
 - Clear-cut Logging
 - Overview of Bi-Natural & Global Environmental Issues
 - Acid Rain/Greenhouse Effect
 - Nuclear War
 - Plastics in the Environment
 - Destruction of Tropical Rain Forest
 - Harp Seal Issue
 - Driftnet Fishing
 - P.C.B.'s
 - Species Extinction
 - Possible Films:
 - Driftnet Fishing - The Japanese Viewpoint
 - Driftnet Fishing - Sea Shepherds
 - Kyuquot Wilderness
 - Clayoquot Sound
 - Carmanah Valley
 - Oil Spill in Prince William Sound, Alaska
 - Battle Over the Trees
 - Critical Thinking Activity
- Week 3**
- Strategies for Conflict Resolution
 - Simulations and Role Plays
 - The Case Study
 - Cooperative Learning
 - Guided Fantasy
 - Assignment # 1 Due
 - Student Role Play Presentations
- Week 4**
- Strategies for Conflict Resolution
 - Document Analysis Activity:
 - Standard Oil
 - McDonalds
 - MacMillan Bloedel
 - Fisheries & Oceans
 - Green Plan
 - Facts and Falsehoods: Project Wild
 - Analyzing Newspaper Articles

- Week 5
- Spaceship Earth: The Use of Instructional Metaphors to Explore Environmental Issues and Construct Solutions
 - The Role of Language in Concept Formation
 - Analogies, Models, Metaphors and Attitude Change
 - Visual Imagery
 - Assignment #2 Due
- Week 6
- Salmonid Enhancement Workshop
Presenters: Don Lowen
Effects of the Salmonids Program on Students' Attitudes
- Week 7
- Assignment #3 Due
 - Individual Presentations
- Week 8
- Critical Analysis of Environmental Curricula:

OBIS	Resources & Wastes
ENCORE	Project Learning Tree
Project Wild	Energy Conservation
Project Wet & Wild	PEP
ESSENCE	Vancouver Bays & Harbours
Project For Sea	Salmonids in the Classroom
Project Orca	
 - Rick Kool: Ministry of Environment
- Week 9
- Study of a Small Town
Possibilities: selected sites in Victoria: e.g., Victoria Harbour, Chinatown, Uplands, Parliaments Bldgs., Eaton's Centre
 - ESSENCE activities
 - Fifty Nifties
 - Design in With Kids
- Week 10
- The Relationship Between Students' Beliefs and Value Orientations
 - Taking Into Account Students' Orientations and Beliefs During Instruction
 - Students' Beliefs and Cultural Differences
- Week 11
- Fieldtrip: T.B.A.
Port Renfrew - zonation on a surf swept shore
Mount Doug Park - spring wildflowers
Goldstream Park - ceremony to release salmon fry (optional)
- Week 12
- Seminar: (course readings)
Environmental Ethics
Developing a Theoretical Rationale
- Week 13
- Fieldtrip: T.B.A.
Assignment #4 Due

Environmental Ed-E473 Course Readings

Environmental Philosophy

- Broadhead, J. (1989). The all alone stone manifesto. In M. Hummel (Ed.), Endangered Spaces: The Future for Canadian Wilderness. Toronto: Key Porter Books Ltd.
- Eidsvik, H. (1989). Canada in a global context. In M. Hummel (Ed.), Endangered Spaces: The Future for Canadian Wilderness. Toronto: Key Porter Books Ltd.
- Knapp, Clifford. (1989). Connecting people and planets. Clearing, (57), 3-6.
- Littlejohn, B. (1989). Wilderness and the Canadian Psyche. In M. Hummel (Ed.), Endangered spaces: The Future for Canadian Wilderness. Toronto: Key Porter Books Ltd.
- McClaren, M. (1989). What is environmental literacy?. Prime Areas, 31(2), 83-90.
- Miles, J.C. (1987). Wilderness as a learning place. The Journal of Environmental Education, 18(2), 33-47.
- Snively, G. (1989). Canadian marine and aquatic education: The challenge of the 90's. Prime Areas, 31(2), 91-98.
- Snively, G. (1989). Our innermost shore: A pedagogy for marine educators. Current: The Journal of Marine Education, 9(3).
- Defaveri, I. (1980). Education and the environmental crisis: A letter from an aging professor to a young student. Education and the Environmental Crisis.

Teachings Strategies

- Armistead, C. (1984). How useful are case studies? Training and Development Journal, February.
- Bennett, D.B. Four steps to evaluating environmental education learning experiences. The Journal of Environmental Education, 20(2), 14-22.
- Howard, J. (1980). Urban environmental education - What it is, Who does it, Who should do it, What to read. The Journal of Environmental Education, 11(4), 45-48.
- Kirk, John J. (1981). The role of science education in education for the environment. The Journal of Environmental Education, 12(2), 33-38.
- Snively, G. (1989). A case-study approach to marine and aquatic resource issues. Prime Areas, 31(2), 91-99.
- Snively, G. (1989). Spaceship earth: Exploring global issues through metaphor. Current, 10(3), 22-28.

Research Articles

- Alaimo, S. & R. Doran. Students' perception of environmental problems and sources of environmental information. The Journal of Environmental Education, 12(1), 17-22.
- Barrow, L. & J.T. Morriscy. (1989). Energy literacy of ninth-grade students: A comparison between Maine and New Brunswick. The Journal of Environmental Education, 20(2), 22-26.
- Denning, David. (1989). The computer as interpreter: Interactive software tested at a seashore natural history exhibit. Current: The Journal of Marine Education, 9(4).
- Fortner, R. & T. Teates. (1980). Baseline studies for marine education: Experiences related to marine knowledge and attitudes. The Journal of Environmental Education, 11(4), 11-20.
- Hines, J.M., Hungerford, H.R. & A.N. Tomera. (1989). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. The Journal of Environmental Education, 18(2), 33-42.
- Kellert, S.R. (1985). Attitudes towards animals: Age-related development among children. The Journal of Environmental Education, 16(3), 29-39.
- Lien, J. & H. Walters. (1985). Knowledge and attitudes of Canadian students towards the marine environment and Canadian teachers towards marine education. In Marine Parks and Conservation: Challenge and Promise. J. Lien and R. Graham (eds).
- Perdue, R. & D. Warder. (1981). Environmental education and attitude change. The Journal of Environmental Education, 12(3), 25-29.
- Sia, A.P., Hungerford, H.R. & Tomera, A.N. (1986). Selected predictors of responsible environmental behavior: An analysis. The Journal of Environmental Education, 17(2), 1-3.
- Snively, G. (1988). Teachers' perception of marine education, pre-service and inservice instructional materials, and programs in B.C. Catalyst, 32(2), 9-14.
- Snively, G. & J. Sheppy. (1991). The kids are saying, "Save our endangered oceans," Current, 10(2), 14-20.
- Staniforth, S. (1987). Planned change and environmental education: An implementation study of Salmonids in the Classroom. Unpublished master's thesis, Simon Fraser University, British Columbia.
- Stilwell, S. & M. Brody. (1985). A cross cultural analysis of student understanding of marine science and natural resource concepts related to the Western North Atlantic. College of Education, University of Maine.
- Waltham, T.J. & D.J. Bateson. (1988). The effects of the salmon enhancement program on the attitudes of primary children. Paper presented at the annual meeting of the Canadian Association for Curriculum Studies, Canadian Society for Studies in Education, Windsor, Ontario, June.

Werner, W. & R. Case. (1988). Implementing global education through graduate studies. Centre for the Study of Curriculum and Instruction, University of British Columbia, Occasional Paper #12.

Related Publications

Kay, B.H. (1987). Report of the National Task Force on Environment and Economy. The Canadian Council of Resource and Environment Ministers, September.

Kay, B.H. (1988). Water 2020: Sustainable Use for Water in the 21st Century. Science Council of Canada Report 40, Ottawa, June.

Kay, B.H. (1989). A State of the Environment Report: Pollutants in British Columbia's Marine Environment. Environment Canada, Report No. 89-1, April.

Ministry of the Environment. (1990). A framework for discussion on the environment. The Green Plan: A National Challenge. Quebec: Minister of Supply and Services, Canada.

Paden, M.E. (1991). A global overview: Trends in environment and development. Clearing, (67), January/February, 7-11.

GS/rb
5/1/94

**CRITICAL EDUCATION FOR SOCIAL CHANGE
ENVS 6150 - Tentative Course Syllabus**

Instructor: Deborah Barndt

Class time: Fridays, 9:30 A.M. - 12:30 P.M.

Location: Room 227, Lumbers Building

I. CRITICAL EDUCATION: WHY AND FOR WHAT?
Underlying theoretical frameworks

September 24 - Who are we and what are we doing here?
Introductions to ourselves, the course content
and the learning process

Catalyst: Barndt, Deborah; Amy Gottlieb and dian marino (editors).
"Reframing Resistance: Images and Stories of Hope." The Moment, Vol. 5,
No. 3, 1992.

Course texts:

Arnold, Rick; Bev Burke, Carl James, D'Arcy Martin, and Barb Thomas.
Educating for a Change. Toronto: Doris Marshall Institute for Education and
Action & Between the Lines, 1991.

Barndt, Deborah. Naming the Moment: Political Analysis for Action - A
Manual for Community Groups. Toronto: Jesuit Centre for Social Faith and
Justice, 1989.

"Be Passionately Aware": A book of readings by key theoreticians and
practioners in fields related to critical education for social change.
Students are expected to purchase this as the key resource for the course.
All articles listed below are included in either this handbook or the two
books listed above.



October 1 - It's a question of power:
Hegemonic and counter-hegemonic education

Arnold, Rick, et al. Educating for a Change. Toronto: Between the Lines,
1991, Chapter 1.

marino, dian. "Landscape for an Easily Influenced Mind: reflections on my experiences as an artist and educator. Unpublished manuscript, 1990.
Freire, Paulo. "The Process of Political Literacy." In The Politics of Education: Culture Power and Liberation. Mass: Bergin & Garvey Publishers, Inc., 1985.

Shor, Ira. "Education is Politics: Paulo Freire's Critical Pedagogy." Chapter 2 in Peter McLaren & Peter Leonard, Paulo Freire: A Critical Encounter. London: Routledge, 1993.

Simon, Roger. Gramsci's Political Thought: An Introduction. London: Lawrence & Wishart Limited, 1991, pages 7-42, 59-67.

Short essay on educational experience due.

October 8 - It's a question of context: From Goliath to David -
Popular education in capitalist & socialist contexts.

(Class to be held in the screening room no. 035, Instructional Technology Centre, Central Square basement)

Highlander Center: popular education in the belly of the beast

Film "You Gotta Move: Stories from the South"

Nicaragua: popular education in revolutionary Third world context

Slide Show: "Making Our Own History/Singing Our Own Song"

Barndt, Deborah. To Change This House: Popular Education under the Sandinistas, Chapters 1 and 4. Toronto: Between the Lines, 1990.

Horton, Myles. The Long Haul: An Autobiography, Chapters 7, 9, 11. New York: Doubleday, 1990.

October 15 - Popular education for social change:
- Naming the moment for movement-building

Panel of Toronto-based educators/organizers

Barndt, Deborah. Naming the Moment: Political Analysis for Action. Toronto: Jesuit Centre, 1989.

Arnold, Rick et al. Educating for a Change, Chapter 6. Toronto: Between the Lines, 1990.

Narayan, Uma. "Working Together Across Difference: Some Considerations on Emotions and Political Practice." Hypatia, Vol. 3, No. 2 (Summer 1988).

II. CRITICAL EDUCATION: HOW, WHERE, AND WITH WHOM?

Streams contributing to critical education for social change

Groups of 3-5 students will prepare presentation/learning activity around the stream they've selected to research. The presentations will build on the historical timeline chart reviewing the many streams feeding a critical education for social change. Critical questions will be asked at each session from the perspective of the other streams, and around the connections to critical environmental education. Attention should be paid to both content and process. Suggested readings around each stream follow; more detailed lists of both human and material resources will be available for the research teams.



October 22 - Native education

Film: "The Learning Path"

Chief Seattle. "Teach Your Children That the Earth is Our Mother." All My Relations, pages 9 and 12.

Bigelow, Bill. "Talking Back to Columbus: Teaching for Justice and Hope." Rethinking Schools, pages 38-43.

Maracle, Lee. "Racism, Sexism, and Patriarchy." In Himani Bannerji.

Returning the Gaze: Essays on Racism, Feminism, and Politics. Toronto: Sister Vision Press, 1993.

Barndt, Deborah. "Revisiting the Boats and Canoes: Popular Education around the 500 Years." In Convergence, Journal of the International Council for Adult Education, Toronto, Vol. XXV, No. 1, 1992, pages 50-59.

Rewrite of essay on educational experiences due.

October 29 - Critical pedagogy

Ellsworth, Elizabeth. "Why Doesn't This Feel Empowering? Working Through the Repressive Myths of Critical Pedagogy." Chapter 6 in Carmen Luke and Jennifer Gore. Feminisms and Critical Pedagogy. New York: Routledge, Chapman, and Hall, Inc., 1992.

Giroux, Henry. "Critical Pedagogy and Cultural Power: An Interview with Henry A. Giroux." Chapter 6 in Giroux, Henry. Border Crossings: Cultural Workers and the Politics of Education. New York: Routledge, Chapman, and Hall, Inc., 1992.

Weiler, Kathleen. "Critical Educational Theory." Chapter 1 in Women Teaching for Change: Gender, Class, and Power. South Hadley, Mass: Bergin & Garvey Publishers, Inc., 1988.

November 5 - Block week**November 12 - Feminist pedagogy**

Bannerji, Himani. "Returning the Gaze: An Introduction," in Returning the Gaze: Essays on Racism, Feminism, and Politics. Toronto: Sister Vision Press, 1993.

Kenway, Jane and Helen Modra. "Feminist Pedagogy and Emancipatory Possibilities." Chapter 8 in Luke, Carmen and Jennifer Gore. Feminisms and Critical Pedagogy. New York: Routledge, Chapman and Hall, 1992.

O'Brien, Mary. "Education and Patriarchy." In Henry Giroux and Paulo Freire (editors). Critical Pedagogy and Cultural Power. Toronto: Garamond Press, 1987.

Razack, Sherene. "Storytelling for Social Change." In Himani Bannerji (editor). Returning the Gaze: Essays on Racism, Feminism, and Politics. Toronto: Sister Vision Press, 1993.

November 19 - Anti-racist education

Lorde, Audre. "The Uses of Anger: Women Responding to Racism." In Sister/Outsider. Freedom, California: The Crossing Press, 1984.

McIntosh, Peggy. "White Privilege: Unpacking the Invisible Knapsack." In Margaret Anderson and Patricia Collins (editors), Race, Class, and Gender: An Anthology. Belmont, California: Wadsworth Publishing Company, 1992, pages 70-81.

The Moment Project. "Handbook from Anti-Racist Workshops."

Mukerherjee, Alok, and Barb Thomas. "A Glossary of Terms" and "A Working Definition of Racism." In Anti-Racist Education in Practice: Experiences at the Toronto Board of Education. Unpublished manuscript.



November 26 - Labour education

Knowing, Feeling and Doing: Labour Education Today. Issue of Our Times, Vol. 5, No. 1, February 1986. Note especially these articles:

Martin, D'Arcy. "Facing Management: Social Roots of A Union Course."

Ng, Winnie and Brenda Wall. "Linking Language and Labour."

Thomas, Barb. "Challenging Racism: Anti-Racist education is an issue for workers and their unions."

Williams, Rick. "Doing It Softly: Labour Education for Critical Thinking."



December 3 - Global and development education

Arnold, Rick; Deborah Barndt and Bev Burke. A New Weave: Popular Education in Canada and Central America. Toronto: CUSO Development Education and OISE - Adult Education Dept., 1985.

Marshall, Judith; Domingos Chigarire; Helena Francisco; Antonio Goncalves; and Leonardo Nhandumbo. A Kit of Materials for Popular Literacy Workers Based on an Exchange among Educators from Mozambique, Nicaragua, and Brazil.

III. CRITICAL EDUCATION: HERE AND NOW AND YOU

Designing strategically for educable moments

In the final sessions, students will present their "educable moments" (past or future), to get critical/collective input from other students in preparing the final paper/product. We may divide into groups to do this.

December 10 - Session(s) on applications/educable moments (possible day-long workshop)

December 17 - What have we done and where do we go from here?

Course evaluation and follow-up

Final papers/productions are due.

Course Assignments

1) Learning Log (20%)

This is to be kept from class to class, integrating ideas/concepts from our discussions into reflections on your own educational experience/practice (on the left side), and observations on the learning process of the class or in groups/research related to the course (on the right side).

I will review this after the first and second sections of the course.

2) Essay on Educational Experience (20%)

The first draft of this essay is due on Oct. 1, for the second class. It is to be a short (2-3 pages) reflection on your own educational experiences, that have brought you to a course that raises questions about "critical education for social change." Consider both formal and non-formal educational experiences, and situations where you were both a learner and an educator. Perhaps the organizing theme is "Moments of Question and Transformation;" the purpose of this exercise is to give you (and me) a first critical glance at the kinds of questions you bring to this course, grounded in your own experience.

The final draft (due Oct. 22) is to be a rewrite of the original essay but longer (4-7 pages), reflecting on your educational experiences in terms of hegemonic and counter-hegemonic principles and practices, integrating ideas from the first month of classes (readings, lectures, films, panels, discussions), reflecting a more in-depth critical analysis.

3) Group research and presentation/animation around streams of critical education (30%)

By the second class, students will form interest groups to carry out research on one of the streams contributing to critical education.

I propose using the historical timeline of the "naming the moment" process as a framework: identifying the context out of which each grew, the key concepts, who does it, with whom, why and for what (vision of social change); key critiques and creative contributions, also the key tensions/contradictions it reflects within the present conjuncture.

Your group will be responsible for a 90-minute session in October or November. Your task is to design and facilitate it, drawing upon appropriate material and human resources, integrating the review of the stream into our historical timeline using the moment process, and involving the class in an evaluation of the session.

4) Papers/productions around an "educable moment" (30%)

In this assignment, you will bring your new theoretical/practical understandings and skills into a critical analysis of an educational event/opportunity you have been part of in the past or you might be part of in the future. You will identify the context, its social change potential, and use the moment framework and/or other frameworks for assessing the possible educational strategies to be used.

If you have a different special interest you'd rather pursue for this project, please consult with me first. I encourage the development of these papers or productions to be dynamic, collective, and creative, i.e. drawing on diverse resources and forms of expression. This may be an opportunity for those of you interested in popular cultural production to experiment with photographic or video production, popular theatre or music, etc.

About Evaluation

In an academic context, "evaluation" is a highly charged concept and practice. This course will allow us to look critically at the contradictions it entails. I would also hope that we take evaluation seriously as a responsibility that is both individual and collective. To evaluate is to "give value to", to name more clearly what we're learning and why and how, to acknowledge new insights, to articulate what's missing, to raise new questions.

We will engage in evaluation on at least four levels:

- 1) in the learning logs, you will be evaluating your own learning around "critical education for social change;"
- 2) at the end of each class, we will take time to evaluate the course, how it is meeting (or not) our needs, and how we can improve upon our own educational practice within it;
- 3) the group research/presentations will involve collective evaluations both within the team and between the team and the rest of the class;
- 4) I will offer my own feedback on your work, both individual and collective, in written form on your assignments and orally in class and in individual meetings with you.

All of these will feed into the final evaluation leading to your passing or failing the course. With the pressure off from more complex grading systems, we will hopefully be able to develop an evaluation process which serves us more fully and deeply than numbers ever could.



ACADEMIC STUDIES DIVISION
ENVIRONMENTAL STUDIES 222
SUMMER 1994
COURSE OUTLINE

ENVIRONMENTAL STUDIES AND EDUCATION

Instructor: Bob Jickling, PhD
Office: A2515, Main Campus
Office Hours: TBA
Phone: (403) 668-8778
Fax: (403) 668-8828

Classes: July 4 - 18
Time: Full days
Room: 2714

COURSE DESCRIPTION

This course provides an examination of issues in the field of environmental education. Opportunities will also be provided to participate in and assess a breadth of environmental education activities and teaching methods. Field based activities will focus discussion on course topics. It is intended that, through these activities, participants will also have a meaningful personal experience in the Yukon's natural environment.

Topics investigated may include:

- *The concept of environmentalism and the breadth of its application
- *Relationships between environmentalism and curriculum
- *A critical look at environmental education goals
- *The importance, and justification, of experience
- *Inspection and evaluation of curriculum supplements
- *The role of resource persons in teaching environmental education
- *Planning for environmental education

COURSE TRANSFER

For information about the transfer of this and other Academic Studies courses contact the Dean of Academic studies.

COURSE PREREQUISITES

Admission to the Academic Studies Division.

COURSE FORMAT

The total immersion format will allow for extended discussion and field experiences. This will require students to participate as members in a small community for the duration of the course.

Effective 1/13/94
Changes may be made prior to
the start of classes

EQUIPMENT

For field activities students will be expected to provide their own personal gear. Specialized gear will generally be provided; the College has tents, backpacking stoves, and cook sets.

COSTS

Tuition and Student Fees. The fees for this 3 credit course are \$106.00 for Canadian and Alaskan residents. For non-residents the fees are \$202.00

Activity Fee. The \$150.00 activity fee, payable to the course treasurer on the first evening, covers food and accommodation costs during the first field phase of the course.

Other. Further food and accommodation costs will be up to you to manage. Meal service is not planned for College dorm residents during summer months.

ATTENDANCE

Attendance is required in all class and field activities.

ASSIGNMENTS

Assignment 1: Class presentation

Each student will be asked to give a 10 minute class presentation on a topic chosen from a selection of course readings and activities (A list of possible topics will be provided). A written summary of the presentation will also be prepared.

Assignment 2: Curriculum evaluation

Environmental education programs often appear to be varied, open to a wide range of interpretation, and evasive of categorisation. They may range from tightly structured experiences to pot-pourris of highly stimulating activities. When faced with the task of selecting or developing a model, or curriculum to follow, the teacher needs to understand how a curriculum operates and needs to be able to examine it critically. It is the purpose of the following to assist you in looking at any curriculum, although our focus here is in environmental education.

Each student will present a critique summarizing a piece of curriculum work in environmental education. The brief should examine the curricular objectives and the mode of presentation. It will also be important to consider the appropriateness of the material and its implementation strategies. A critique, if well written, should help another teacher decide whether or not to use that particular set of experiences in their own setting.

EXAMINATIONS

A final examination will be given.

Effective 1/13/94
Changes may be made prior to
the start of classes

EVALUATION

Marks will be distributed as follows:

Participation/contributions to course	20%
Assignment 1	20%
Assignment 2	30%
Final Exam	30%

REQUIRED READINGS

Evernden, Neil. (1985). The Natural Alien: Humankind and Environment. Toronto: University of Toronto.

Orr, David. (1992). Ecological Literacy: Education and the Transition to a Postmodern World. Albany: State University of New York Press

Pre-reading will be essential to get the most out of discussions during the early stages of the course and in preparation for the first assignments. The Evernden text is rich and thought-provoking, but not easy. We will consider the first two chapters and selected themes from the balance of the book. Don't worry if you don't understand it all--you won't be alone. However, having pre-read the book you will be better able to focus on selected themes; more meaning will emerge during our discussions. While we will look at selected themes within Orr's book, pre-reading of the whole book is encouraged.

Some additional materials will be provided during the course by the instructor.

This book, and the additional references, will be available from the Yukon College Bookstore and likely difficult to obtain otherwise. The Bookstore c/o Yukon College, Box 2799, Whitehorse, Yukon Y1A 5K4. Better still, phone (403) 668-8840 or fax (403) 668-8890.

SUPPLEMENTARY READINGS

Keiny, S. & Zoller, U. Eds. (1991). Conceptual issues in Environmental Education. New York: Peter Lang.

Lopez, B. (1978). Of Wolves and Men. New York: Charles Scribner's Sons.

Trelowny, J. G. (1988). Wildflowers of the Yukon, Alaska, and Northwestern Alaska. Victoria: Sono Nis Press.

This course will take a philosophical look at environmental education. Those who have a particular interest in this aspect of our analysis, may find that Conceptual issues in Environmental Education can provide interesting supplemental reading.

Additionally, this course has frequently used wolves to provide context for discussions about education and environmental issues. This is the intention again. Of Wolves and Men will provide additional background for those who have a particular interest in the natural history of these animals.

Effective 1/13/94
Changes may be made prior to
the start of classes

YUKON COLLEGE
ENVS 222: ENVIRONMENTAL STUDIES AND EDUCATION
COURSE SYLLABUS 1994 - 2

<u>DATE</u>	<u>ACTIVITY</u>	<u>READINGS & PRESENTATIONS</u>
<u>July 4</u>	Afternoon 1:00 pm start Introductions and course overview Self guided nature trail Evening Introduce Environmental readings (Due: Seminar Question #1)	*"The Historical Roots of our Ecological Crisis" * <u>Ecological Literacy</u> "The Problem of Sustainability"
<u>July 5</u>	Morning Environmental overview (Due: Seminar Question #2) Afternoon On campus Journal activity Introduce Encore activities Prepare for field camp	*The Natural Alien p 3-34 *"Deep Ecology" * <u>Ecological Literacy</u> "The Two Meanings of Sustainability" *"The Creative Journal"
<u>July 6</u>	Morning To Silver City Stop at Klunne Park Visitor's Centre. Presentation at 11:00am. Afternoon Journal activities Evening Experience and Educ. I (Due: Seminar Question #3)	*"The Natural Alien p. 14-22, 29-34, 54, 70-72, 103-108
<u>July 7</u>	At Silver City Morning Environmentalism and Curriculum (Due: Seminar Question #4) Introduce assignment Afternoon Project WILD Evening Backcountry environmental concerns in the Yukon Prepare for expedition	*"The three curricula that all schools teach" *Project WILD Supplementals *"Environmental concerns in the Yukon"
<u>July 8</u>	Depart on hike	

<u>July 9</u>	Hike Evening Experience and Educ. II (Due: Seminar Question #5)	<ul style="list-style-type: none"> *"The Natural Alien p. 14-18 *Ecological Literacy "Place and Pedagogy" "Expostulation and Reply," "The Tables Turned,"
<u>July 10</u>	Afternoon Return from hike Return to Whitehorse (Possibly late)	
<u>July 11</u>	Morning Goals I (Due: Seminar Question #6) Afternoon Introduce Assignment Inspect curricula Evening Prepare Assignment: Part One	<ul style="list-style-type: none"> *Learning for a Sustainable Future *"Why I Don't Want My Children To Be Educated For Sustainable Development" *Ecological Literacy "What is Education For?"
<u>July 12</u>	Morning Goals II (Due: Seminar Question #7) Afternoon Complete Curriculum Assignment Part One Evening Prepare for hike/canoeing	<ul style="list-style-type: none"> *"Broadening education" *"Tbilisi declaration" *"Environmental education, problem solving, and some humility please" *Ecological Literacy "Introductions" *The Natural Alien p. 25-29
<u>July 13</u>	Morning Where Do We Go From Here? (Due: Seminar Question #8) Afternoon Guest speaker (1:00 - 2:00) Complete assignments: Curriculum Assignment Part Two (Due at 4:00 pm) Evening Prepare for hike/canoeing	<ul style="list-style-type: none"> *"Environmental Education/Sustainable Societies in British Columbia Schools" *Ecological Literacy p 97-124 *"Ecological Literacy, Great Books, and Some Thoughts on Environmental Education Research"
<u>July 14</u>	Morning Depart for Aishihik Lake Visitation(s) TBA Afternoon Arrive at field camp Evening Teaching Controversial Issues (Due: Seminar Question #9)	<ul style="list-style-type: none"> *"Teaching Controversial Issues" *"The Virtues of Controversy" *Clippings

July
15 Morning
Possible visitation
or, Final Debate Preparation
Afternoon
Brood counts
Evening
Debate

*Debate supplementals

July
16 Morning
Brood count - full day activity
Evening
Educator/Resource Person Interface

July
17 Morning
Depart Aishihik field camp
Afternoon
Return to Whitehorse
Evening
Free

July
18 Morning
Review seminar
Afternoon
Final Exam (Due: Summary of Seminar
Questions, Supplemental Reading List, and
return of any other outstanding material)
Evening
Celebration

YUKON COLLEGE

ENVIRONMENTAL STUDIES AND EDUCATION 1994

ORGANIZATION OF CONTENT

Environmentalism

Introduction

White, L. "The Historical Roots of our Ecological Crisis."

Orr, D. "The Problem of Sustainability."

[Supplemental: Hardin, G. "Tragedy of the Commons."

Berman, M. Chapters 1 & 2 of The Reenchantment of the World

Moncrief, L. "The Cultural Basis for Our Environmental Crisis"

Berry, W. "The Gift of Good Land."]

Environmentalism Overview

Evernden, N. The Natural Alien. pages 3-34

Devall, B & Sessions, G. "Deep Ecology"

Orr, D. "The Two Meanings of Sustainability."

[Supplemental: Manes, C. Chapters 7-10 of Green Rage.]

Teaching in the Outdoors:

Hammond, Bill. "The creative Journal."

Madsen, K. "Environmental concerns in the Yukon."

What is Environmental Education?

Experience and Education I

Evernden, N. The Natural Alien. Pages 14-18, 29-34, 54, 70-72, 103-108

Evernden, N., "The Limits of Ecology" from The Natural Alien. pages 18-22

[Supplemental: Evernden, N. The Natural Alien. Passim]

Experience and Education II

Evernden, N. The Natural Alien. Pages 14-22

Orr, D. "Place and Pedagogy."

Wordsworth, W. "Expostulation and Reply,"
"The Tables Turned,"

[Supplemental: Evernden, N. The Natural Alien. Passim]

Environmentalism and Curriculum

With the above as background:

Eisner, E. "The Three Curricula That All Schools Teach." in The Educational Imagination.

[Supplemental: Clarke, P. "Teaching Controversial Issues."]

A Critical Look at Goals I

L. S. F. "Developing a cooperative framework for sustainable development education: 1993"

Jickling, B. "Why I don't want my children to be educated for sustainable development"

Orr, D. "What Is Education For?"

[Supplemental: S. D. E. P. "The Rationale For A Sustainable Development Education Program: April 1992"

Taylor, D. Disagreeing on the Basics: Environmental Debates Reflect Competing World Views

Slocombe, S. & Van Bers, C. "Seeking Substance in Sustainable Green Teacher #35

Development" Keiny, S. & Zoller, U. Conceptual Issues in Environmental Education. Self-selected chapters at your own discretion.]

A Critical Look at Goals II

"Broadening Education" in Our Common Future: The World Commission on Environment and Development.

UNESCO-UNEP. "The Tbilisi Declaration"

Jickling, B. "Environmental Education, Problem Solving, and Some Humility Please"

Orr, D. "Introductions"

Evernden, N. The Natural Alien. Pages 25-29 esp.p. 28

[Supplemental: Hungerford, H., Peyton, R. B., & Wilkie, R. "Goals for Curriculum Development in Environmental Education."

Jickling, B. "Environmental Education and Environmental Advocacy: The Need For a Proper Distinction."

Keiny, S. & Zoller, U. Conceptual Issues in Environmental Education. Papers contained in Section 2.1: "Problem Solving Within Environmental Education."]

Where do we go from here?

B.C. Ministry of the Environment. "Environmental Education/Sustainable Societies"

Orr, D. "Liberal Arts the Campus and the Biosphere" and "A Prerequisite to the Great Books of Allan Bloom."

Jickling, B. "Ecological Literacy, 'Great Books' and Some Thoughts on Environmental Education Research."

[Supplemental:

Hart, P. "Environmental Education in Canada: Contemporary Issues & Future Possibilities."]

Teaching Controversial Issues

Clarke, P. "Teaching Controversial Issues."

Thomashow, M. "The Virtues of Controversy."

Clippings

Teaching and Learning in Outdoor and Environmental Education

Topics:

Natural History
Aesthetics/Journal keeping
School/Resource person interface
Field experience

Knowledge and understanding of these topics will be achieved through participation in course activities, formal presentation, and discussion.

Curriculum Evaluation

Curriculum materials reviewed:

Project Wild
Operation Lifeline
Yukon Environmental Handbooks
Keepers of the Earth
Misc. other materials in accordance with interests
Curriculum evaluation exercise. A synthesis of the above themes.

YUKON COLLEGE

ENVIRONMENTAL STUDIES AND EDUCATION 1994

EVALUATION CRITERIA

The following descriptions are intended to provide you with some guidelines in the preparation of your assignments. They also indicate the criteria that will be applied in reviewing your materials and in assigning grades.

ENVS 222 ASSIGNMENT: CLASS PRESENTATION

Each student will be asked to give a 10 minute class presentation on a topic chosen from a selection of course readings and activities (A list of possible topics will be provided). A written summary of the presentation will also be prepared.

Rather than write lengthy papers, you are encouraged to present and submit assignments in a more streamlined format or "brief"— a concise summary of a position or argument. The written work should be handed in with two on-campus days of the oral presentation. This "brief" should:

1. Identify the major elements which exist in an argument, the major points of view, and the major areas of agreement or disagreement. This can be done in point form or via tables, etc.
2. Enable the audience/reader to decide whether or not it is worthwhile to investigate the question further.
3. If the presentation is to introduce a seminar it should include suggested discussion points and questions to be raised.

ENVS 222 ASSIGNMENT: THINKING ABOUT CURRICULA

Environmental education programs often appear to be varied, open to a wide range of interpretation, and evasive of categorization. They may range from tightly structured experiences to potpourris of highly stimulating activities. When faced with the task of selecting or developing a model, or curriculum to follow, the teacher needs to understand how a curriculum operates and needs to be able to examine it critically. It is the purpose of the following is to assist you in looking at any curriculum, although our focus here is in environmental education.

Each student will present a critique summarizing a piece of curriculum work in environmental education. The brief should examine the curricular objectives and the mode of presentation. It will also be important to consider the appropriateness of the material and its implementation strategies. A critique, if well written, should help another teacher decide whether or not to use that particular set of experiences in their own setting.

PARTICIPATION

Participation in the course activities and contribution to our community is always important and will contribute to the final examination.

FINAL EXAM

This exam will be held in the afternoon of the final day and will account for 30% of the grade. This exam will be closely linked to the topics discussed throughout the course, a study guide will be provided, and a review seminar is scheduled. The time provided to prepare for this exam should be viewed as an opportunity to review and consolidate ideas developed through the course.

ASSIGNMENT OF FINAL GRADES**ASSIGNMENT: CLASS PRESENTATION**

Total Possible Marks: 20

1. Completeness: 10 marks

Does the information cover a reasonable range of perspectives associated with the topic?

2. Presentation: 5 marks

Is the information presented in a clear, concise, and readable format?

3. Originality and meaning: 5 marks

Have you established a connection between your own thoughts and ideas, and/or your own experience?

Total

ASSIGNMENT: THINKING ABOUT CURRICULA

This task will be evaluated according to the following criteria.

Total Possible Marks: 30 (Part I: 15, Part II 15.)

1. Completeness: 10 marks

Does the information cover a reasonable range of perspectives associated with the evaluation of curricula?

2. Applicability and detail: 10 marks

Will your evaluation be useful to you or another person in deciding about the suitability of a particular piece of curriculum? Could a person with limited experience read your paper and find it helpful in their understanding the intent of the curriculum and its appropriateness?

3. Presentation: 5 marks

Is the information presented in a clear, concise, and readable format?

4. Originality and meaning: 5 marks

Have you established a connection between your own thoughts and ideas, and/or your own experience?

Total

PARTICIPATION

Total Possible Marks: 20

1. Attendance: 7
2. Preparation of seminar questions: 8
3. Participation in discussions and other course activities: 5
4. [Supplemental readings: max. 5]

FINAL EXAM

Total Possible Marks: 30

FINAL MARK

Total Possible Marks: 100

SUMMARY

The assignments will be given the following proportions:

Class presentation	20
Curriculum evaluation task	30
Participation in course activities	20
Final exam	30
<hr/>	
	100

Final Grade For Each Course:

A+	95-100
A	86-94
A-	80-85
B+	75-79
B	70-74
B-	65-69
C+	62-64
C	58-61
C-	55-57
D	50-54
F	under 50

YUKON COLLEGE

ENVIRONMENTAL STUDIES AND EDUCATION 1994

ENVS. 222 ASSIGNMENT: THINKING ABOUT CURRICULA

Introduction

Environmental education programs often appear to be varied, open to a wide range of interpretation, and evasive of categorization. They may range from tightly structured experiences to potpourris of highly stimulating activities. When faced with the task of selecting or developing a model, or curriculum to follow, the teacher needs to understand how a curriculum operates and needs to be able to examine it critically. It is the purpose of the following to assist you in looking at any curriculum, although our focus here is in environmental education. The assignment is presented in two parts.

PART ONE

The Three Curricula

Elliot Eisner, educator and curriculum theorist, describes three curricula which may be found in all curriculum materials (In The Educational Imagination):

- The explicit curriculum
- The implicit curriculum
- The null curriculum

The Explicit Curriculum. This refers to the stated curriculum defined by the outlined goals and objectives. This curriculum is generally reinforced throughout the guide and reflected in the evaluation of student learning.

The Implicit Curriculum. This refers to the "hidden curriculum" or the curriculum that is not openly stated but is required or indicated by the explicit curriculum. Thus, a very detailed, highly structured program with tight time allotments implies that both teachers and students need a lot of direction and control, and that learning is best accomplished in a regulated environment. The amount of scope for decision-making, for student-teacher interactions, for criticism, may all be elements of the "implicit curriculum".

The Null Curriculum. This curriculum is defined by what is not said, discussed, or included. Often it reflects basic political decisions made during the process of curriculum development. Suppose, for example, that a major

forestry corporation was to support a curriculum in forest management. If the final program made no mention of native claims and aboriginal rights, then that set of ideas would be part of the null curriculum. Most likely they would have been omitted because the sponsors decided that they were not acceptable. Many things which are not included in school programs often excite questions from students. Why don't we talk about sex/nuclear war/racial prejudice/third world/etc.? What is not said often tells more about a curriculum than what is said. In our case it will be particularly interesting to see if a particular environmental perspective is promoted, either overtly, or through a failure to include and examine alternative perspectives.

Educational Justification

Having probed the curriculum material using Eisner's three curricula, and identified some of its central features, it will be important to assess the degree to which it is educationally justified.

Is the curriculum educative or does it advocate a particular view, or attempt to initiate the student into a particular set of social norms?

Does the curriculum attempt to address a breadth of forms of knowledge or ways of understanding, or does it tend to limit itself to a particular discipline?

Does the curriculum encourage the acquisition of student understanding, critical thinking, and judgement, or does it attempt to train the student, or modify the students' behaviour in a particular fashion?

PART TWO

Organization

The work curriculum derives from the Latin root "currere", a course to be run. This implies a set or sequence of experiences, a set of "tasks" or activities, and a beginning and an end to these experiences. A broader definition of curriculum is that of all the experiences one has within a school or program--planned and un-planned. Does your curricular material provide a curriculum? Is it designed to support existing curricula? Or is it a loose collection of activities?

There are several ways of perceiving the organization of curricular materials in environmental education. To access the organizational strategy of your curriculum you might consider the following distinctions:

Disciplinary. Approaches environmental education with the view that a theoretical understanding of the body of knowledge in a given discipline, such as science, is the best way to proceed.

Multidisciplinary. Understanding and knowledge of theoretical concerns is important but must not be limited to one field but should pervade all disciplines.

Interdisciplinary. Tends to begin with a problem or issue of personal importance and looks at it in totality, requiring attention to materials found in various "discipline" areas. This may be an issue of personal, community, or global interest.

Awareness/Experience. This category is not strictly speaking parallel with the other three. As knowing through experience is not often conceived as a unique form of knowledge, or a separate discipline, some authors have attempted to draw attention to this educational need by developing curricular materials which specifically encourage students to perceive and experience their surroundings in new ways.

Teaching Strategies

While it is important to emphasize that there is no single best teaching strategy, the thoughtful curriculum will match organizational and teaching strategies with the desired goals and objectives. Are the teaching strategies appropriate for the fulfillment of the educational goals?

Provide a brief description of the teaching strategies and the characteristics of student activities. Is there a variety of strategies employed?

Do they attend to a breadth of teaching and learning styles? Do they utilize a range of learning modalities?

In your professional judgement are the teaching strategies going to appeal to teachers? Will they find the methods useful?

You may wish to elaborate on the implicit effects of the teaching strategies as described by Eisner.

Meaning in the Curriculum

Evaluating meaningfulness is difficult and tends to be more subjective. Meaning is personally constructed; what tends to be meaningful to one person may not be meaningful to another. An effective teacher will try to make something rich in meaning by constructing a lot of "hooks" which can catch on to some part of the students' existing meaning system.

It will be useful to consider the degree to which a curriculum addresses variations in learning style preferences. How does the curriculum assist students in relating to its content and processes? Are the materials appropriate to the age, intellectual development, language capacities, and cultural context of the students.

Implementation Factors

How practical is the program? Can it be used in a typical classroom by the average classroom teacher? Does it require special equipment, or a particular sort of environment? Will it entail special training of teachers? How much time does it demand? Implementation factors often mean the difference between success or failure for a program.

Do you, the potential user, like the program? Is it meaningful to you as a teacher? Does its approach suit you? Some very interesting programs fail simply because many teachers do not feel comfortable using them, even though a few teachers really like them. In addition to questions of your own style and attitude, do you think that you can succeed in convincing parents that this program is worthwhile, and that it is what their children should be learning in a school?

Summary

These are just a few ways of looking at curricula, but they may form a useful starting point for you in your work reviewing a "specimen" program in environmental education. To summarize, they are:

The Three Curricula: Explicit, Implicit, Null. What is the program attempting to achieve through its stated and unstated goals?

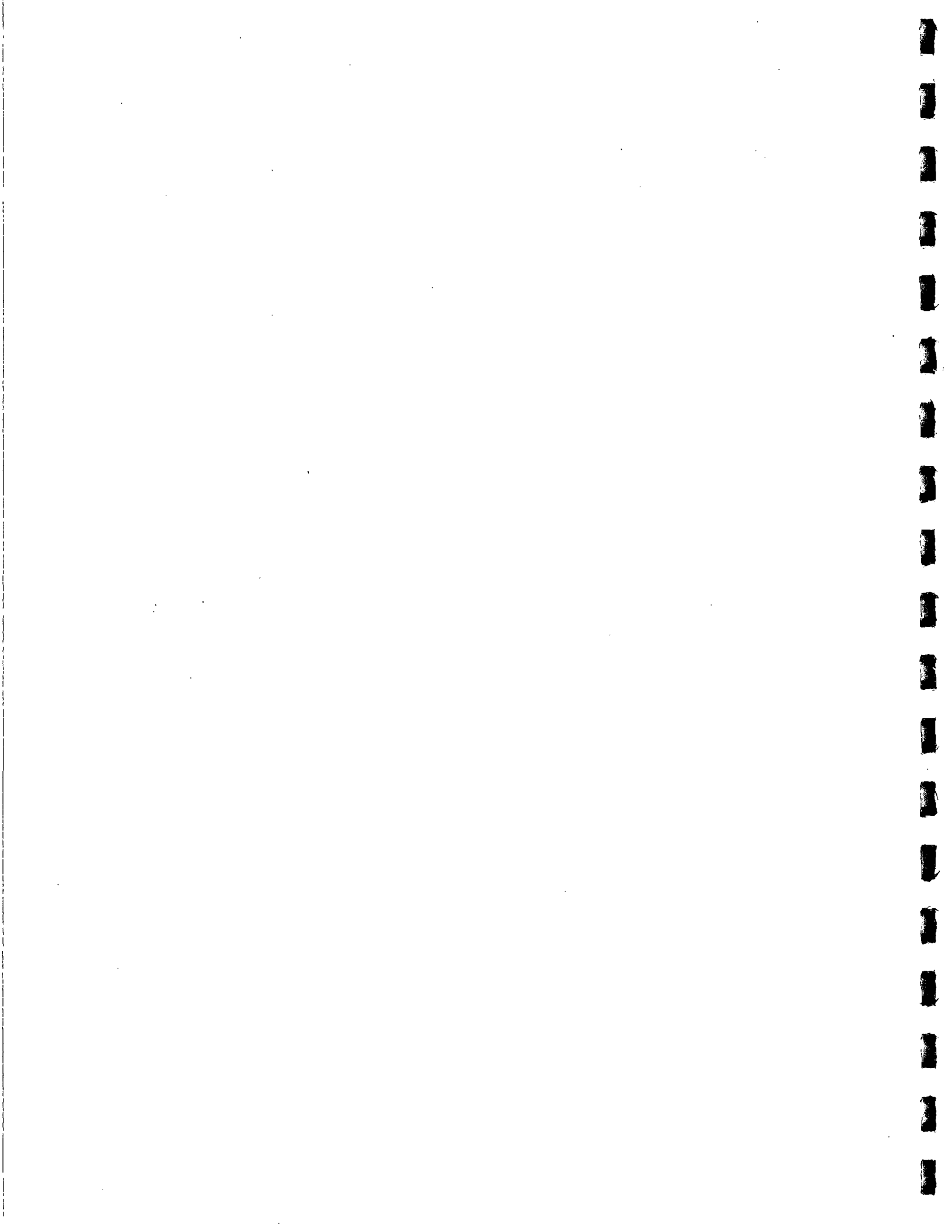
Educational Justification: To what extent is the curriculum educationally justifiable?

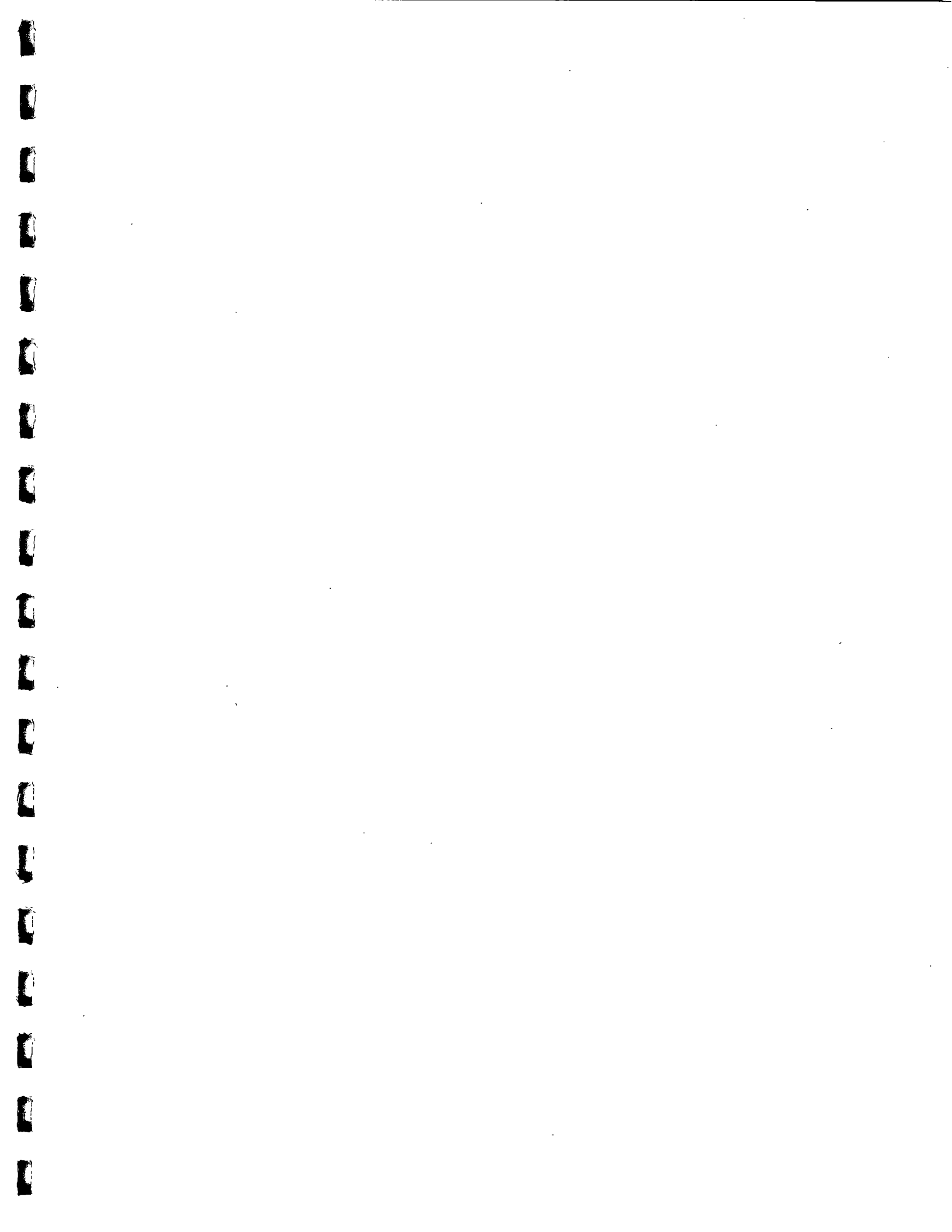
Organization: What kind of a curriculum is it? Is it highly organized and focused on knowledge in one discipline? Is it multidisciplinary, interdisciplinary, or is it concerned with awareness or experience?

Teaching Strategies: What teaching and learning strategies are employed? Is there a match between the curricular goals and the teaching and organizational strategies employed? In your professional judgement are the teaching strategies going to appeal to teachers?

Meaning in the Curriculum: Is this material meaningful in the context of the students' ages, cultures, experiences; does the program recognize the need to establish meaning and how does it try to do this?

Implementation Factors: What will be required to make this curricular material work for me in my classroom? Is it likely to gain support?





SECTION II

SELECTED ENVIRONMENTAL EDUCATION PROJECTS AND PROGRAMS AT NON ACADEMIC INSTITUTIONS IN CANADA

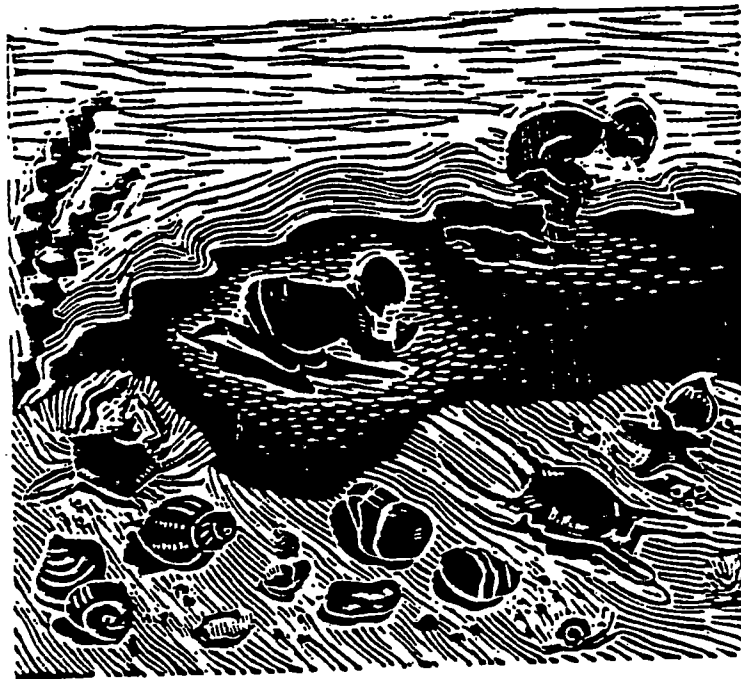
Institution	Project Name	Contact Name and Address	Brief Description	Page(s)
<p>Atlantic Centre for the Environment</p>	<p>Fisheries Education for Small Fry</p>	<p>Heather Griffin Director Newfoundland and Labrador Programs Atlantic Centre for the Environment Box 3 Nagle's Place St. John's, NF A1B 2Z2 T 709-754-5948 F 709-754-5947</p>	<p>■ Project proposal only</p>	<p>1 - 4</p>
<p>Canadian Association of School Administrators</p>	<p>Coalition of Education Leaders to Promote Environmental Education in Canada</p>	<p>Doug McCall Director of Programs and Services Canadian Association of School Administrators 2835 Country Woods Drive Surrey, BC V4A 9P9 T 604-535-6330 F 604-531-6454</p>	<p>■ A national coalition of education leaders promoting environmental education</p>	<p>5 - 12</p>
<p>Canadian Network for Environmental Education and Communication</p>	<p>EECOM Newsletter</p>	<p>Anne Camozzi P.O. Box 1514 Antigonish, NS B2G 2L8 T 902-863-5984 F 902-863-9481</p>	<p>■ National environmental education network with the goal to improve and develop greater awareness of environmental education locally, nationally and internationally.</p>	<p>13 - 24</p>

Dalhousie University Office of Instructional Development and Technology	Dalhousie Environmental Education Programme	Eileen Herteis Programme Coordinator Office of Instructional Development and Technology Dalhousie University Halifax, NS B3H 3J5 T 902-494-1622 F 902-494-2063	▪ A professional development program for faculty and teaching assistants consisting of 6 workshop to aid the introduction of environmental issues into their classes.	25 - 31
Friends of the Environment		Bonnie Shapiro Department of Curriculum and Instruction Faculty of Education Education Tower, Room 702 2500 University Drive N.W. Calgary, AB T 403-220-5639 F 403-282-8479	▪ A video project where Canadian and Costa Rican school children teach one another about environmental issues in their local areas.	N/A
Harmony Foundation	Institute for Environmental Values Education	Catherine Radcliffe Harmony Foundation 209-560 Johnson Street Victoria, BC V8W 3C6 T 604-380-3001 F 604-380-0887	▪ 8-day summer program	32 - 51
International Council for Adult Education	Environmental Education for Sustaining Societies and Global Responsibilities	Peter Basil 720 Bathurst Street Suite 500 Toronto, ON M5S 2R4 T 416-588-1211 F 416-588-5725	▪ Promoting and seeking signatures for the NGO Forum Treaty on Environmental Education at UNCED	52 56

<p>Learning for a Sustainable Future</p>	<p>Developing a Cooperative Framework for Sustainable Development Education</p>	<p>Jean Perras Learning for a Sustainable Future 45 Rideau Street Suite 303 Ottawa, ON K1N 5W8 T 613-562-2238 F 613-562-2244</p>	<ul style="list-style-type: none"> ■ A multi-stakeholder, independent non-profit organisation committed to facilitating discussion and planning around the concept of sustainable development in the Canadian School system. ■ Complete report available at IDRC. 	<p>57 - 66</p>
<p>Project EDAMAZ</p>	<p>Développement D'un Programme-Cadre de Formation des Enseignants</p>	<p>Lucie Sauvé Département des sciences de l'éducation Université du Québec à Montréal C.P. 8888 surc. A Montréal, Québec J3L 4A7 T 514-987-6992 F 514-987-4608</p>	<ul style="list-style-type: none"> ■ A distance education project involved in the in-service professional development of school teachers of the Amazonian Region in environmental education. 	<p>67 - 68</p>
<p>Transformative Learning Through Environmental Action</p>		<p>Bud Hall Ontario Institute for Studies in Education 252 Bloor Street West Toronto, ON M5S 1V6 T 416-923-6641 x2410 F 416-926-4725</p>	<ul style="list-style-type: none"> ■ A north-south collaborative project involving research teams from Toronto and Sao Paulo, Brazil to follow-up on the course of action set forth in the Treaty on "Environmental Education for Sustainable Societies and Global Responsibilities" at the NGO Forum at UNCED. 	<p>69 - 114</p>

Environment Canada	Eco-Action Initiatives	Monique Marchand Eco-Action Environmental Citizenship Environment Canada 351 Boulevard St. Joseph Hull, PQ K1A 0H3 T 613-953-1616 F 613-953-1626	Federal government initiatives targeting businesses, individuals and educators.	115 - 116
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Proposal
Fisheries Education Program
for Small Fry



Submitted to
Canadian Studies and Special Projects Directorate
Canadian Heritage

By
Heather Griffin
Director,
Newfoundland and Labrador Programs
Atlantic Centre for the Environment

April 25, 1994

Project Overview

Thousands of young children throughout Newfoundland and Labrador have been affected by the decline in our fisheries. Parents have lost jobs, families are faced with economic and social uncertainty, and no one can answer the question about when or even if the fish will come back. Efforts to explain this crisis have focused principally on adults - those whose livelihoods have been connected with the fisheries. Parents, teachers, and youth leaders confront a near educational void in trying to answer questions, discuss fears, and offer explanations to children concerning the state of the marine environment, the future of their communities, and their own relationship to the ocean.

Unfortunately there is a pervasive attitude that science is the villain in the present state of the fisheries. People have lost faith in our ability to understand and manage the ocean. And it is young people who are most influenced by these attitudes, particularly when they are expressed by adult role models at home and in their communities. This present generation of young children stands to lose a great deal. Their whole lives lie ahead of them at a time when our society is requiring more and more science and technology skills. And at a time when we require a new approach to the way we practice science in relation to resource management.

The Atlantic Centre for the Environment proposes to address this need for primary and preschool-aged children (aged 4 to 8), through an innovative inter-disciplinary educational program. The primary focus will be a children's story book, published in partnership with Breakwater Books Ltd., and written by children's author Kathleen Winter, with Heather Griffin and Sally Goddard. Accompanying songs will be written by children's songwriter Eric West; and full colour illustrations will be created by one of our Newfoundland artists. The project will be coordinated by the Atlantic Centre's Director for Newfoundland and Labrador Programs, Heather Griffin.

The total program budget is \$135,000. To date, we have raised \$110,000 from federal and provincial government agencies, a local education foundation, and through in-kind support.

The story will not be written from or with a political perspective, but rather will adopt the viewpoint of a child, providing a platform for presenting the basic story of marine ecology - the ocean as a complex and delicate system of interconnections. And this will include a look at our own relationship with the marine environment; past, present, and future. The story will address the role of science in understanding and managing the resources of the ocean. But at the same time, children will come to realize that science does not have

all the answers, that understanding the full effects of people's activities on the ocean ecosystem is tremendously complex and requires that we approach resource management decisions with caution and humility.

This story book format has been selected for a number of different reasons. It provides a non-intimidating learning medium for many adults and children. It brings these age groups together, allowing an opportunity for not only children to learn, but also perhaps for the reader to pick up a basic understanding. At the same time it may serve as a springboard for children and adults to discuss other issues, such as job loss, changes in their families and communities, etc. The story's educational potential will be enhanced through the development of a guide for teachers, parents, childcare workers and other adult facilitators. It will offer activities, field notes, discussion questions, song notation and lyrics, and other means of drawing out the main ideas in the book.

A supplementary audio cassette will also be developed to allow for a self-guided voyage through the story, and will include a reading of the complete text as well as recordings of all the songs in the book. This format has been chosen keeping in mind one of the biggest barriers to education in this province - illiteracy.

"Lots of parents now realize that the long-term solutions to environmental problems may rest with our young children, and that their health and future depend on those solutions... Children are probably our best teachers... You have only to open the door to their innate environmental sensitivity and be content to jog along proudly - behind them."

Eleanor Barrington
From "For Every Child a
Tree"

Objectives

- * To inspire and excite children's interest in the marine environment and in science in general.
- * To provide young children throughout Newfoundland and Labrador with a basic ecological understanding of the ocean environment; to develop an appreciation for the interdependencies within the marine environment.
- * To explore the past, present and future relationship of Newfoundlanders and Labradorians to the sea, through a story told from the viewpoint of a child.
- * To provide an easy-to-use teaching tool for parents, teachers, youth leaders, and scientists for explaining to children some of the reasons for the present state of our fisheries.
- * To provide a platform for children and adults to discuss their thoughts and feelings about the effects of the fisheries decline on their families and communities.

Coalition of Education Leaders to Promote Environmental Education

STATEMENT of PURPOSE

BACKGROUND

Education is indispensable in increasing our society's understanding about the environment and our interactions with it. Environmental education programs encourage environmentally sound ethics, promote related values and scientific knowledge, enable individuals to practice new skills and behaviours, encourage respect for human rights and instil an appreciation of our natural environment. Such education develops environmental citizenship and empowers individuals to take action in enhancing and sustaining our the environment. A global perspective is necessary in such educational programs so that we understand our interdependence with each other and other living things.

Environmental education can be provided in schools, colleges, universities, continuing education programs, workplaces and community settings as well as through the media.

The national organizations representing Canada's educational institutions, professionals and voluntary sector wish to ensure that environmental education is improved and expanded. As part of their general mandates to encourage educational policies, programs and services, these organizations have agreed to work together in an informal coalition to facilitate the exchange of information for educational leaders and decision makers.

MISSION

The Coalition is comprised of national educational organizations whose leadership roles require that they be involved in promoting environmental education and practices, particularly in their formative stages. Policy development and establishing on-going mechanisms to exchange information and coordinate efforts are the primary concerns of the Coalition.

MEMBERS

- *Association of Canadian Community Colleges*
- *Association of Universities and Colleges of Canada*
- *Canadian Association for Adult Education*
- *Canadian Association of Principals*
- *Canadian Association of School Administrators*
- *Canadian Association for University Continuing Education*
- *Canadian Association of University Business Officials*
- *Canadian Home and School and Parent Teachers' Federation*
- *Canadian School Boards Association*
- *Canadian Teachers' Federation*
- *Royal Society of Canada*

Beliefs

Education is the key to developing knowledge, attitudes and behaviours among Canadians that will sustain and promote environmental citizenship. As we become more aware and informed of environmental issues, the demand for effective environmental education programs will increase. Social and economic changes can be supported through educational efforts.

Members of the Coalition believe that environmental education should be based on these principles of environmental citizenship:

- The community of life and the earth that sustains it must be respected.
- All citizens need to learn more about the environment and their relationship to it.
- The earth's natural life-support systems, those that nurture the air we breathe, the water we drink and the land of which we are a part, must be conserved, protected and restored.
- Excessive consumption must be reduced and waste minimized.
- The diversity of life must be safe guarded.
- Unique ecological areas must be protected and further identified without diminishing good ecological practices in other areas.
- Ecologically sound traditions and cultural practices must be respected.
- Non-renewable resources must be conserved and active support must be given to alternative, renewable resources.
- The use of renewable resources must be sustainable, avoiding misuse and overuse.
- Sound ecological practices must be integrated into economic activities.
- The pursuit of environmental goals must be done with respect, fairness and sharing of responsibility.
- Governments, institutions, organizations and individuals must work together at the community, provincial/territorial and national levels.
- There must be cooperation and action at the international level to promote environmental citizenship.
- There must be an appreciation of the different situations in developed and undeveloped countries so that differing economic and social realities can be taken into account when planning and implementing environmental programs.
- Conservation efforts cannot create further human suffering and, consequently, environmental citizenship must promote appropriate re-allocation of resources.

PURPOSES

The goals of the Coalition are:

1. To develop and promote the concept of environmental citizenship.
2. To promote environmental education among the constituencies/memberships of the Coalition by distributing relevant information and organizing appropriate meetings.
3. To exchange information about environmental concerns relevant to educational leaders and decision-makers through regular meetings and circulation of documents.
4. To promote public policy supportive of environmental education by meeting with representatives of Environment Canada and other federal departments, the Canadian Council Ministers of the Environment (CCME), the Council of Ministers of Education Canada (CMEC) and other relevant national governmental agencies.
5. To support the development of a Canadian Association of Environmental Educators to improve environmental education programs and practices by endorsing and facilitating the creation of such an association.
6. To establish links to other, non-educational organizations concerned with environmental issues through meetings and other contacts.
7. To promote changes in the environmental practices and ethics among coalition members and within society at large.

Activities

The Coalition meets regularly to exchange information or organize activities. Members of the Coalition also exchange information through periodic telephone calls, mailings, exchanges of newsletters and a document database.

Special activities may include organizing workshops, joint public statements or meetings with government agencies.

National organizations concerned with education and the environment are entitled to send a representative to all meetings of the Coalition.

In its activities to date, the Coalition:

- has organized a seminar for national educational leaders in conjunction with the international conference ECO-Ed held in Toronto, in October, 1992.
- is developing a joint national statement
- intends to meet with the Federal Minister of the Environment to discuss the Environmental Citizenship program and its own plan of action.
- has supported the initiation of national environmental educators association.
- is developing a telephone/fax document retrieval system

EDUCATION TO PROMOTE ENVIRONMENTAL CITIZENSHIP

A JOINT DECLARATION OF CANADA'S EDUCATIONAL LEADERS

The national organizations representing all sectors of Canada's educational community have come together to make this joint public statement encouraging further efforts in education to promote environmental citizenship.

These organizations call upon their own constituencies, governments and the community at large to commit themselves to certain principles of environmental citizenship and to offer educational programs to improve awareness, knowledge, attitudes, skills and practices related to sustainable development and the protection of our environment.

These organizations pledge to work together as well as with environmental educators, other organizations and government to encourage educational programs which help to empower individuals, organizations and communities in enhancing our environment.

- *Association of Canadian Community Colleges*
- *Association of Universities and Colleges of Canada*
- *Canadian Association for Adult Education*
- *Canadian Association of Principals*
- *Canadian Association of School Administrators*
- *Canadian Association for University Continuing Education*
- *Canadian Association of University Business Officials*
- *Canadian Home and School and Parent Teachers' Federation*
- *Canadian School Boards Association*
- *Canadian Teachers' Federation*
- *Royal Society of Canada*

The Principles of ENVIRONMENTAL CITIZENSHIP

The following principles are recommended as the basis for developing educational programs.

- The community of life and the earth that sustains it must be respected.
- All citizens need to learn more about the environment and their relationship to it.
- The earth's natural life-support systems, those that nurture the air we breathe, the water we drink and the land of which we are a part must be conserved, protected and restored.
- Excessive consumption must be reduced and waste minimized.
- The diversity of life must be safe guarded.
- Unique ecological areas must be protected and further identified without diminishing good ecological practices in other areas.
- Ecologically sound traditions and cultural practices must be respected.
- Non-renewable resources must be conserved and active support must be given to alternative, renewable resources.
- The use of renewable resources must be sustainable, avoiding misuse and overuse.
- Sound ecological practices must be integrated into economic activities.
- The pursuit of environmental goals must be done with respect, fairness and sharing of responsibility.
- Governments, institutions, organizations and individuals must work together at the community, provincial/territorial and national level in taking action.
- There must be cooperation and action at the international level to promote environmental citizenship.
- There must be an appreciation of the different situations in developed and undeveloped countries so that differing economic and social realities can be taken into account when planning and implementing environmental programs.
- Conservation efforts cannot create further human suffering and consequently environmental citizenship must promote appropriate re-allocation of resources.

SOCIAL AND ECONOMIC CHANGE

Emphasis must be placed on changing the environmental practices of citizens, institutions, cooperatives, governments and organizations. The approach used must be both multi-disciplinary, involving many sectors, and interdisciplinary, where different professions or organizations work together. Underlying values about fundamental social and economic issues must be addressed. As citizens, acting as individuals, or collectively through our organizations or communities, we must accept our responsibilities to promote change.

THE ROLE OF EDUCATION

Education is one of the strategies we can use to promote social and economic change. Such education can occur in formal settings such as schools, colleges or universities. It can also occur in non-formal settings such as workplaces, community centres and the media.

Education is much more than raising awareness and providing information. Education enables the learner to find meaning and understanding, to acquire new attitudes and beliefs and to practice new behaviors.

THE NEED FOR CHANGE

Canadian educational institutions and professionals have responded to the issues associated with the environment in many innovative ways. Curricula have been developed, local activities organized and teaching practices have been adapted. The record is a good one.

Nevertheless, there is a need for further expansion and improvement of the education opportunities provided to Canadians to promote environmental citizenship.

Educational institutions cannot create or maintain social or economic change without the support, cooperation and involvement of all sectors of society. It is therefore critical that improvements or expansions of environmental educational programs be done as part of a community-wide or societal effort.

Further, in this age of rapidly expanding information, it is not possible or effective only to add environmental information to already over-crowded curricula and programs. Knowledge about the environment can be presented in a variety of subjects, disciplines and programs.

A holistic approach emphasizing the ethics and empowerment necessary to sustain the development of our planet is required. This approach needs to be integrated with what exists already in education systems so that the necessary improvements and expansion of environmental education can be achieved.

ENVIRONMENTAL EDUCATION

It is not necessary to develop a detailed definition of environmental education within this national statement involving several levels of the educational community. Indeed, each level or sector of the educational community should have or has already developed its particular definition. As well, each jurisdiction and every institution should define their own goals for environmental education appropriate to their circumstance or clientele.

However, a general understanding of environmental education has been developed for the purposes of this joint statement and national coalition.

Education is indispensable in increasing our society's understanding about the environment and our interactions with it. Environmental education programs encourage environmentally sound ethics, promote related values and scientific knowledge, enable individuals to practice new skills and behaviours, encourage respect for human rights and instil an appreciation of our natural environment. Such education develops environmental citizenship and empowers individuals to take action to enhance the environment. A global perspective is necessary in such educational programs so that we understand our interdependence with each other and other living things.

It is also possible to describe some general features of effective educational programs and policies which promote environmental citizenship:

- a global perspective on environmental issues should be used to help us understand our interdependence with each other and other living things.
- education on the environment and sustainable development should be delivered through a variety of disciplines, subjects and programs
- instruction should focus on environmental ethics and empowering individuals to take action
- instruction and research about the environment offered by educational institutions should be inextricably linked to adopting sound environmental practices and policies as well as working with the community to create or maintain social support.
- partnerships with other organizations, professionals and community volunteers should be emphasized in the development, implementation and evaluation of policies and programs.
- the complexity of environmental issues should be recognized from the outset.
- an inclusionary approach should be used to mobilize as many different sectors within society as possible.

AN ACTION PLAN ON ENVIRONMENTAL EDUCATION IN CANADA

In order to encourage the development of environmental education, the signatories to this Joint Declaration have agreed to work together and separately on the following actions:

1. The national organizations undertake to adopt their own environmental citizenship principles and change their own environmental practices
2. The national organizations commit themselves to adopting a statement or policy supportive of environmental education for environmental citizenship as it applies to their constituency or membership.
3. The national organizations commit themselves to circulating this Joint Declaration, their respective policy statements and other materials to encourage each of their members or constituencies to develop their own policies and programs in environmental education.
4. The national organizations have established an informal coalition among themselves to facilitate the exchanges of information and documents relevant to policy-makers and leaders of Canada's education systems.
5. The national organizations declare their support for the creation of a national environmental educators' association to promote effective programs, research and teaching practice.
6. The national organizations urge the federal and provincial/territorial governments to develop and publish policies and long-term action plans to support environmental education in consultation with environmental and educational organizations.
7. The national organizations invite the Canadian Council of Ministers of the Environment (CCME), the Council of Ministers of Education Canada (CMEC), Environment Canada, the environmental non-governmental organizations and other concerned national organizations to establish mechanisms to share information freely and easily about environmental education.



EECOM Newsletter

EECOM: THE CANADIAN NETWORK FOR ENVIRONMENTAL EDUCATION AND COMMUNICATION

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EECOM: A Vision for a Different World

by Anne Camozzi, EECOM Chair

Welcome to the second EECOM newsletter. For those of you who've recently become members, I send a warm welcome and special thanks for supporting us in this grassroots endeavour.

EECOM's vision is to help create a world where environmental education is a part of everyone's life; a world where environmental citizenship is second nature; a world where adults and children alike share a common understanding of their relationship to their environment. As an organization, EECOM's vision is to be sustainable, friendly and deeply dedicated to environmental education and your needs as educators. That means sharing laughter and tears, successes and failures; working together, learning together and having fun together.

Environmental education is more than learning about nature, although experiencing nature is often the "hook" that draws people into true education experiences. Environmental education is about facilitating learning experiences that help people grow in their understanding of the environment, gain new skills, think new thoughts and become critical problem-solvers propelled into action. Environmental education is about lifelong learning... learning that excites, challenges and motivates.

Those of us who call ourselves environmental educators should hold our heads high. The work that we are undertaking is of utmost importance to this and future generations. We also need, however, to examine ourselves constantly to ensure that we are also engaged in lifelong learning experiences. EECOM has happened so that we can nurture and learn from each other. EECOM is here so that we can lis-

ten to each other and exchange ideas and information. The only way a grassroots organization like ours will be successful is through your commitment and willingness to dialogue.

We urge all of you to become involved in regional EE networks in your province or territory where the true work of EECOM will be accomplished. We exist nationally to unite, to share, to provide professional development and to raise the level of consciousness about what environmental education is and about its importance.

If you have any ideas, suggestions or thoughts about EECOM please call me or any other members of the steering committee (see *Meet The Committee for telephone numbers*). ☎

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Become an EECOM member! Just fill out and return the membership form found on the back page.

Designed and edited by Jan Patterson, FEESA

EECOM - What Is It?

For 35 educators, it's been a year of fine-tuning agreements for the newly-formed national environment education network called *EECOM: The Canadian Network for Environmental Education and Communication*.

According to the mission statement, "EECOM enables all involved in educating Canadians about the environment to

- work together in ways that nurture environmentally informed and responsible individuals, organizations and communities;
- improve the quality and effectiveness of their services."

The Network's goals are as follows:

1. To encourage communication and information exchange among Canadians involved in environmental education;
2. To improve environmental education in Canada;
3. To develop a greater awareness of environmental education in Canada;
4. To facilitate discussion of environmental education issues in local, national and international contexts; and
5. To strengthen and expand the network to make it more effective. ♣

Meet the EECOM Committee

(listed in alphabetical order with telephone numbers)

Robert Martin Beliveau (514-495-9000)

Glen Blouin (613-232-1815) is a forest educator and the executive director of the Canadian Forestry Association, a non-profit national organization devoted to forest education.

Mark Burch (204-726-6653) is the coordinator of the sustainable development program at Assiniboine College in Manitoba. He is actively involved in the *Green Schools* initiative of the Association for Canadian Community Colleges (ACCC).

Anne Camozzi, EECOM Chair, (902-863-5984) is a non-formal environmental educator from Nova Scotia. She has her own environmental education consulting company and specializes in the design and facilitation of adult environmental education programs

Merry Chellas, formerly with the Petroleum Communications Foundation is currently on sabbatical in Sweden.

Susan Gesner (416-314-2162) is with the Ontario Ministry of Natural Resources. She has been active in all forms of environmental education but has had a large role in forest education and was responsible for co-developing the *Focus on Forests* program.

Grant Gardner (709-737-8155) is an associate professor of biology at Memorial University in Newfoundland.

Ann Jarnet (819-953-1596) is a policy analyst with Environment Canada; working with the educational community and youth.

Paul Hart (306-585-4309) is professor of education at the University of Regina in Saskatchewan.

Chuck Hopkins (416-762-7001) is a school superintendent for the Toronto Board of Education. Chuck is well known in national and international environmental education and was responsible for organizing the ECO-ED conference held in Toronto in October 1992.

Bob Jickling (403-668-8778) is an instructor at Yukon College in Whitehorse with an interest in environmental education research.

Rick Kool (604-356-2077) is currently seconded to the BC Ministry of Environment, Lands and Parks as an environmental education coordinator.

Susan Kurbis (604-737-2258) is executive director of the Environmental Youth Alliance which represents thousands of Canadian youth.

Michelle LeClair (902-962-2365) is a high school teacher from Prince Edward Island.

Tom Marr-Laing (403-542-6272) is the executive manager of the Pembina Institute and Co-Chair of the Canadian Environmental Network (CEN) Education Caucus. Tom was responsible for the latest publication of *Who's Who in*

Across Canada: The Regional Reports

Look for more information on other provinces in the next newsletter

British Columbia is on the move

Environmental education keeps on moving out to the west coast. Given the kind of winter that the rest of Canada had, I'm surprised we haven't seen more of you moving out this way.

Related to our interest in electronic communications was a recent workshop, sponsored by Environment Canada and organized by the BC Environmental Network. The focus of the gathering was to present to environmental communicators the wide range of on-line resources available, ranging from local bulletin boards to national and international access via Internet. Organizations making presentations included Environment Canada, Fraser Basin Management Board, Greenpeace, Deep Cove BBS, EarthCare BBS, The Web, West Coast Environmental Law Foundation and the BC Ministry of Environment, Lands and Parks and Victoria FreeNet.

The Environmental Educators Provincial Specialist Association (EEPSA) recently held their spring AGM on Vancouver Island, in association with First Nations educators and the Global Education educators.

committee cont'd from page two...

Environmental Education in Canada.

Jim Martin (403-421-1497) is the executive director of FEESA, An Environmental Education Society, based in Alberta.

Jim Petrie (506-452-8921) is the executive director of the *Global Education* program in New Brunswick.

Scott Slocombe (519-884-1970, x: 2781) is an assistant professor of geography at Sir Wilfred Laurier University. He specializes in the study of sustainable development. Scott is also a board member of the NAAEE.

Damian Solomon (613-232-1505) is assistant director of educational development services at the Canadian Teachers Federation and active in encouraging and supporting the Global Education Program.

David White (604-479-8271) is a teacher in Victoria, British Columbia. ♣

At the end of April, the Ministry of Environment, Lands and Parks co-sponsored, with the Royal Society of Canada and the BC Environmental Network, a full-day workshop for teachers on **Global Change and Canadians**. This coincided with the release of the teacher's guide *Global Change and Canadians* created by our 'own' Simon Fraser University faculty Dr. Milt McClaren and Enid Kristjanson.

Working with our associates in the Ministry of Education, a team of educators is creating a curriculum framework for environmental education. Building on the work of the Interministry Working Group's discussion paper on EE, this project is the next step towards the creation of an EE curriculum document for British Columbia. Work on this will be complete this summer, with the next phases to begin in the fall.

Environment Canada, the Vancouver Public Aquarium and the Ministry of Environment, Lands and Parks are planning a student collaboration with high schools in Vancouver and Hong Kong throughout July. The focus of the project will be a comparative study of the two harbours.

Finally, the Ministry of Environment, Lands and Parks is happy to release four new environmental education learning resources (but with more on the way). They are:

- For senior secondary students, *the Teachers Guide to the State of the Environment Report for British Columbia* provides the means for the asking of four questions: What is happening to the environment? Why is it happening? Why is it significant? What are we doing about it? This guide was created out of teacher and student interest in the SOE report released in May 1993.
- *Backyard Biodiversity and Beyond* is a resource designed for intermediate grades. It helps young people explore the richness of life on earth, focusing first on their own locality, then on the biodiversity of British Columbia and finally with a look at global

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biodiversity.

- **Augmenting *Backyard Biodiversity and Beyond, Wildlife Trees in British Columbia: Discovering Animal Inns*** is a new package designed to complement Project WILD, our very popular and successful environmental education program. Wildlife trees provide habitat for over 90 species of plants and animals and their preservation is an important mean of protecting our biodiversity.
- Adding to an already strong program sponsored by the Environmental Protection Division, the ***EcoEd: Household Hazardous Products*** program is a module that introduces elementary school-aged students to the problems associated with a variety of substances in daily use around the house and school. This program is supported by Green Team, a group of young people who visit schools and turn classes of children into teachers who work on behalf of the environment.

More materials are in the hopper, but that's it for now!

Alberta in a time of change

Change is the most common word in Alberta these days. Since our report in the first issue of *EECOM Newsletter*, change has definitely left its mark on not only how we are doing education in the province but in how we are thinking about education. In many ways, the changes happening have created feelings in educators of confusion, anger and perhaps betrayal of what they've committed themselves to. On the other hand, the changes occurring have also created an environment where fundamental beliefs of educators and of the society they serve about what education is and what it should be are being openly examined. And so, on the roller coaster travelling from exasperation to exhilaration here's the report.

Issues

Key concepts in Alberta right now are:

- reduction in government spending;
- promotion of partnership;
- development of cooperative programming and services;
- strategic planning.

Environmental education in the province has not escaped any of these concepts. In the reduction of government spending environmental education is being squeezed in three ways.

The first is the reduction in services offered by the government itself. The most poignant example of this is the cutting of the Energy Efficiency Branch of Alberta Energy. Supporting a significant education program for both the schools and the general public, the Energy Efficiency Branch is best known to environmental educators through their programs from grades K-6 which originated in the late Seventies and have continued to be widely recognized and in demand by educators. Though the Branch was cut and all staff laid off there is a bit of a silver lining (OK, not necessarily silver, but creative). The Branch staff organized a not-for-profit society with the intent of requesting the resources (education kits, etc.) from Alberta Energy, and continuing the programs on a private basis. As yet, no decision has been made and several other private sources are said to be interested in the resources. We should know whether this innovative idea will receive support or not in the next month.

Government Cuts

All other government departments have taken substantial budget reductions with environmental education support areas also being affected. All other major program areas are intact including those in Alberta Environmental Protection, the major government support area for environmental education in the province. These reductions will be passed onto the non-government area through reduced grants, availability of service support and various in-kind support. Environmental education, however, has been given strong verbal commitments from senior government offices.

With less government funding available the big area of focus is on developing new sources of support for environmental education. *Partnership* is the current catch-word and relates to the need for support from the non-government areas, mainly business and industry. The concept of partnership tends to be interpreted as sponsorships but many environmental educators see the difference as a level of commitment, through time, from the supporting organization. Successful partnerships are being developed

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and will be used as examples for others. Two of the great concerns about partnerships with the private sector relate to the concept of bias in the programs and services supported and the financial health of some of the key industry areas in Alberta.

Both concerns will be the focus of much speculation and debate in the province over the coming months. An excellent example of this growing partnership is between the Environmental Resource Centre and TransAlta Utilities Corporation in support of the *Destination Conservation* program.

Turning Point

Reduced access to traditional sources of support can be the basis for growth in opposing responses. With fewer resources, an environment of competition can soon develop so that some organizations succeed while others are defeated and disappear. While the competition factor is a natural outgrowth of increased demand and decreased supply, the situation in Alberta seems to be a healthy one. The willingness by most organizations to cooperate through increased communications, dialogue and even sharing resources and programs seems to be on the rise. Witness the growth in the involvement of groups in the province's environmental education network, *Wavelength*. Recently, the network met in Edmonton and Calgary to discuss a common future for all environmental educators in the province. A sense of "we're in this together" emerged from both of these meetings.

Finally, with the demands for accountability, a "business-like" approach to educational management and the ever popular "efficiency and effectiveness", environmental educators are learning more and more about how to plan "strategically". Long-term planning (three to five years), project and organizational scheduling, identification of performance indicators, reporting and demonstration of increased commitments to proportion of funding for program delivery over operational costs are all part of the new order in environmental education. Though frustrating, these demands are paying dividends in requiring the environmental education community to really examine what they are doing and where they are going.

Alberta's environmental education com-

munity is changing but remains healthy and strong. From a slightly murky present, the province will emerge into a bright future.

Saskatchewan is sowing the seeds

With the current economic climate continuing to be a factor in everyday life, the Saskatchewan Outdoor & Environmental Education Association (SOEEA) and its growing membership have been able to demonstrate cooperation, networking and partnerships through its involvement in formal and nonformal environmental education in the 1990s. These range from advisory and financial to inservice/PD/training support. For example:

- *Out to Learn* (Second Edition, 1991) is a collaborative publication of SOEEA and Saskatchewan Education. It provides guidelines and standards for outdoor environmental education. Contact Ken Boyd at (306) 822-2957 for more information.
- SOEEA has helped to influence the direction of the new core *Science Curriculum*. The emphasis is on Science-Technology-Society-Environment (STSE) Interrelationships, one of the Dimensions of Scientific Literacy. Through integration of environmental concepts, topics and issues into the science curriculum, teachers and students are doing EE on a regular basis from K-12. Contact Saskatchewan Education, Training & Employment at (306) 787-6053 for more information.
- Judging from the large numbers of teachers taking the inservice workshop, *Project WILD* is well underway, thanks to Saskatchewan Environment & Resource Management (SERM). Many of the activities and supplements correlate with the core curriculum. For more information contact Project WILD at 306-787-2314.
- Planning for *ASSIST: The Science Summer Institute for Saskatchewan Teachers*, sponsored by the Saskatchewan Science Teachers' Society, is well underway. This year's theme is *Water Quality*. For more information contact Dr. Dan Beveridge, University of Regina at (306) 770-4817.

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- The Saskatchewan Environmental Society (SES), with the support of SOEEA, developed two science units: *Exploring the Boreal Forest* (1992) and *Exploring the Grasslands* (1994). Saskatchewan Education has distributed a free copy to each school with grades five and six. For more information contact: SES at (306) 665-1915.
- SERM is busy working on a *Saskatchewan Environmental Strategy* based heavily on the roundtable process and *Conservation Strategy* report of a few years ago.

Manitoba gets the word out

EECOM members within Manitoba continue to promote the Network among regional environmental educators. As a follow-up from the EECOM/CASH Conference held in Montreal in March, four EECOM members will be meeting in Portage La Prairie with members of the Association for School Health (ASH) to continue with project planning of the *Healthy School Environments* program. Participation in EECOM has also been promoted through workshops on Environmental Citizenship being offered by the Association of Canadian Community Colleges and delivered by Manitoba members of EECOM.

Ontario looks ahead

Ontario is a-buzz with new initiatives and programs. Here are just a few:

- The Ontario Ministry of Natural Resources (OMNR) is working closely with Mushkegowuk Education, the education arm of 7 First Nations on the Hudson Bay Lowlands, to develop an environmental studies curriculum program for students and communities. Susan Gesner and Nancy Wilson of OMNR, along with the education staff from Mushkegowuk, have been visiting some of the coastal communities to speak with teachers, elders and community members to draft a conceptual framework for the learning program. The program will incorporate the unique aspects of this important wetland and provide learning opportunities which focus on the

traditional ecological knowledge.

- OMNR is also working with the Canadian Wildlife Federation (CWF) to draft a framework for a national learning program on responsible stewardship and compliance. This program will look more closely at wildlife values to encourage learners to adopt responsible attitudes and constructive actions to live in harmony with the environment.
 - Ontario has an *Inter-Ministerial Council for Environmental Education*, made up of government representatives who have an interest in environmental education and Ontario Teachers Federation Global Education representatives. They're looking to expand their membership to increase provincial networking.
- Contact Susan Gesner (see telephone number in the *Meet the committee* article) for upcoming Ontario programs.

Nova Scotia is on the green route

On January 29, 1994, a small number of environmental educators came together in Dartmouth to propose a structure for *Green Routes - The Environmental Educators Communications Network* of Nova Scotia. Four sub-committees were struck to carry out the simple, yet extremely important mission that *Green Routes* will take on in Nova Scotia. *Green Routes* plans to build a strong network regionally and to share resources nationally with EECOM. They describe the organization as a communication container for resources, individual and organizational profiles, sharing stories, activities, plans, ideas, evaluations and techniques.

For more information on *Green Routes*, contact Frank Gallant or Carter Cox at 477-6979 or write 152 Pinehave Road, Halifax, Nova Scotia B3P 14G. We're also interested in hearing from other environmental educators in Atlantic Canada who are also setting up networks.

Yukon springs to action

As winter ends, people in the Yukon look forward to signs of spring, one of which is the *Summer Environmental Education* program. A

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sure harbinger of the seasonal changes occurs every April as thousands of migratory waterfowl, including trumpeter and tundra swans, congregate at M'Clintock Bay south of Whitehorse. The opening, this spring, of *Swan Haven Interpretive Centre* will enhance the viewing and interpretation of this natural spectacle. The Centre is a combined effort of Yukon Renewable Resources, Yukon Girl Guides and Ducks Unlimited. Other summer projects include:

- **Yukon Youth Conservation Corps (Y2C2).** This employment and training program offers conservation work experience to youth aged 16-22. Projects are proposed by community groups and carried out throughout the territory.

- **Conservation Action Team.** This unique adventure and environmental summer camp program, provides grades 7-10 students one to two weeks of hands-on activities to help them learn about Yukon's environmental issues.
- **Yukon College's Summer Institute in Environmental Studies and Education** is designed for teachers, environmental interpreters and others who wish to examine this field of study while exploring the Yukon's magnificent natural heritage. This year's dates are July 4-19. Contact Bob Jickling, Box 2799, Whitehorse, Yukon, Y1A 5K4. ♣

The KEY Foundation - Helping Teachers With the ABCs

by Bob Killam

Educators want ABCs - Accurate, Balanced and Current information on environmental issues. To help them do that is the *Knowledge of Environment for Youth Foundation*, more commonly known as the KEY Foundation.

Through the KEY Foundation, teachers, environmentalists and other experts have access to accurate teachable information on complex environmental issues. The result? A well-informed generation of students who link the relationship between society and the environment.

The Foundation uses three approaches to provide these environmental ABCs. They are:

- **Summer Conferences** incorporating the theme of society and environment help create an information and human network. Through presentations by experts, spirited debates and special site visits, participants develop a balanced and more accurate perspective on local and global environmental issues.

Three conferences are planned for this summer: the Regina conference will emphasize agricultural issues; the North Bay confer-

ence will focus on forest issues; the Kingston conference will center on economic activity-citizenship and environmental management. Canadian educators from primary and secondary schools are encouraged to apply.

- **An Environmental Literacy Series** produced for use in the classroom. Written by teachers and reviewed by experts from diverse backgrounds, the Environmental Literacy Series includes units on the *Chemistry of Petrochemicals* and the *Biology of Chemical Use in Agriculture*.
- **A newsletter called *Keynotes*.** This quarterly publication is distributed free through KEY's growing teacher and resource network. The content is concise, up-to-date environmental information with special attention on listing resources available to teachers.

For more information on the KEY Foundation and its resources, contact (705) 722-6711. ♣

The Mountain Town with a Vision

by Jenny Feick, BSc (Hon)

In an attempt to try to break away from a "boom and bust" economy and move with purpose into the 21st century, Revelstoke, a small city in the interior of British Columbia, has become the centre of a sustainable development research project.

The Mountain Town with a Vision Research Project examines sustainable development in action by exploring Revelstoke's links between environmental attitudes, values, lifestyle choices and community land-use decisions. By formulating and applying a vision statement that seeks to balance environmental, social and economic values, it is hoped Revelstoke can achieve a sustainable economy.

In 1993, Dr. Albert Einsiedel of the University of Alberta and I began to evaluate the process the community uses to develop and achieve its vision. Assisted by 27 volunteers from the Earthwatch Centre for Field Research, we explored relationships between the vision and the knowledge, understanding, commitment and actions of Revelstoke's citizens. The study provides information on factors related to changing attitudes, values and behaviours about sustainability . . . quality of life.

Phase two of the research project, which will proceed this year if funding is secured, will examine how Revelstoke carries out its vision. This phase will also investigate community perceptions of protected areas and local land management agencies and their policies. A key element will involve workshops on sustainable communities and envi-

ronmental citizenship, to help people in applying these visionary principles at the individual and community levels:

Working in the field of heritage interpretation and in national parks for 16 years, made me realize that *people* make the decisions that will decide the fate of wildlife, the future of protected areas and the health of ecosystems. Without understanding what it is that affects human values, attitudes and behaviour related to the environment, how can we as environmental educators, raise public consciousness so society makes changes necessary for planetary health?

Through this project, we hope to develop methods applicable to other communities and organizations seeking to set a vision for the future and community indicators for quality of life, sustainable living and environmental citizenship.

Jenny L. Feick is the principal investigator of the Mountain Town with a Vision research project. For more information on the project contact her by telephone or FAX at (403) 249-8226 or through Internet/DOCS at feick.acs.ucalgary.ca.

Earthwatch is a tax-exempt, non-profit institution based in Boston Massachusetts that sponsors scholarly field research by finding paying volunteers to help scientists on over a thousand research expeditions throughout the world. Its mission is to improve human understanding of the planet, the diversity of its inhabitants, and the processes that affect quality of life on earth. It offers scholarships for teachers and students to participate in projects. For more information, contact Earthwatch, 680 Mount Auburn Street Box 403, Watertown, Massachusetts, USA 02272-9104 Tel: (617) 92608200, FAX: (617) 92608532.

Information Wanted.

Shayne Mann, a high school geography and environmental studies teacher, is seeking information for research for his Master's degree. His research emphasis is on developing evaluation tools for assessing the effectiveness of environmental education programs in building environmental ethics in students. If you can help Shayne, contact him at: 20 White Owl Crescent, Brantford, Ontario N3P 1A3 Fax: (519) 442-1997.

Early childhood environmental education programs are needed for the newly established organization *Environmental Education for Preschoolers (EEP)*. Contact Dr. Ruth Wilson, head of the EEP, at:

Department of Special Education
Bowling Green State University
Bowling Green, Ohio
USA 43403
Tel: (419) 372-7278 FAX: (419) 372-8265.

Linking Canadian Teachers

With a new century just six years away, tapping into the information highway is crucial to the future of business. To help address education's need for increased access to resources, SchoolNet was born.

This cooperative initiative of Canada's provincial, territorial and federal governments, educators, universities and colleges, and industry aims to link all of Canada's 16,000 plus schools to the electronic information highway.

By electronically linking Canadian schools, SchoolNet hopes to:

- *enhance* educational opportunities and achievements in elementary and secondary schools across Canada by making national and international education resources available to Canadian teachers and students no matter where they are located;
- *foster* significant improvements in learning performance by facilitating the development and electronic delivery of the most advanced and proven educational techniques through new software and access to electronically-based resources;
- *stimulate* learning to produce a school graduate population with a strong command of information and telecommunications technologies;
- *identify* and develop new educationally relevant services from government, industry, universities and colleges and facilitate their delivery;
- *build* shared learning experiences among teachers and students;
- *stimulate* the Canadian information technology, software and multimedia businesses by providing new market opportunities.

Services offered through SchoolNet include:

- **Platform to Internet:** SchoolNet provides its users with a user-friendly front end interface to Internet, the largest network in the world.
- **Resource Manual:** The 100 best science, engineering and technology-based resources.
- **SchoolNet White pages:** A directory of e-mail addresses of all SchoolNet participants
- **Electronic Newsfeeds:** SchoolNet participants have access to direct, up-to-the minute electronic newsfeeds from the *Globe and Mail (Classroom Edition)* and *Southam News*.
- **Announcements:** To keep SchoolNet users updated, announcements regarding national events and programs, project revisions, etc. are posted on the system.
- **Scavenger Hunts:** SchoolNet participants are invited to compete in electronic scavenger hunts to help them learn about the system.
- **Government Program Information:** Participants have access to a wealth of government information.
- **Career Selection Guide:** *Job Future* provides students with a career selection guide which lists everything from educational requirements to projected demand.
- **Electronic Innovators:** Over 400 scientists and engineers are on-line to provide expert advice to teachers and students.

For more information on joining the education electronic highway, contact your provincial education branch.

Resources

Here's your chance to help students explore the soils, plants and animals right in their own neighbourhood. *VINE*, a program operated by the North American Association for Environmental Education (NAEE), is an urban environmental education program for 8-11 year olds. It is purely volunteer-led as high school students, parents and other adults receive training, then each lead a group of six children. The emphasis is on city kids and the basic ecology of their neighbourhood. For more information contact: NAAEE-VINE Network, Suite 400, 1255-23rd Street NW, Washington, DC, USA 20037.

Leaders in environmental education have forged a new networking organization, the *Global Network of Environmental Education Centres (GNEEC)*. The new network has been established to: provide opportunities and resources for joint environmental education programming, act as a collective voice for environmental education and enhance recognition of environmental education as an important international institution. For more information contact the Global Network of Environmental Education Centers, 7010 Little River Turnpike, Suite 290, Annandale, Virginia, USA 22003.

Want to know more about forestry issues, but aren't sure about the objectivity of the sources? *The Canadian Forestry Association, (CFA)*, an independent, non profit, charitable organization, publishes a series of books on current controversial forest issues. Each publication contains 20-30 articles, with perspectives from contributors as diverse as the Sierra Club and the Canadian Pulp and Paper Association. The publications are available at a cost from the CFA, 185 Somerset Street W, Suite 203, Ottawa, Ontario K2P 0J2.

Teachers, save time and money seeking environmental education or environmental sciences and education materials. *EELink* connects users to the Internet, a network of thousands of computers at non-profit, university and government agencies. The system works

by connecting the user to a variety of resources. Users search and read documents on-line. Once the user locates something, they download it to their own computer or retrieve it via e-mail. This means you can get the original text of an article or activity, tailor it to your specific needs and use it right away. For more information contact the NCEET, School of Natural Resources & Environment, University of Michigan, Ann Arbor, MI USA 48109 (313) 763-1312.♣

Publications

Interested in finding out more on the atmosphere, its affects and how it is affected, then turn to the *Network Newsletter*. Compiled and published by the Environmental and Societal Impacts Group of the National Center for Atmospheric Reserach in Colorado, the quarterly newsletter covers topics on all aspects of our climate. For more information contact: Network Newsletter, Environmental and Societal Impacts Group, NCAR, Box 3000, Boulder, CO USA 80307-3000

For the latest issues on the contributions environmentalists are making today, turn to the quarterly journal *Alternatives*. Articles by labour representatives, researchers, native people and activists offer a hard-hitting, sometimes controversial, yet always insightful analysis of the environmental movement in Canada. For more information contact Alternatives Journal, c/o Faculty of Environmental Studies, University of Waterloo, Waterloo, Ontario N2L 3G1, Tel: (519) 885-1211 FAX: (519) 746-0292.

Teaching global change through environmental education is the focus of *Connect*, the newsletter published by UNESCO-UNEP. Published worldwide, articles focus on topics such as the effects of the human population increase, water pollution, loss of biodiversity and deforestation. For more information, contact Connect, Environmental Education Unite, UNESCO, 7 place de Fontenoy, 75352 Paris 07 SP, France.♣



EECOM

The Canadian Network for Environmental Education and Communication

Station B, P.O. Box 948
Ottawa, Ontario K1P 5P9

Plug into EECOM - become a member NOW!

Register your resources and activities with EECOM. Learn from knowing what environmental educators across Canada are doing and what materials are available. Benefits of membership in EECOM include:

- voting privileges
 - discounts on EECOM publications and meeting registrations
 - subscription to the quarterly newsletter
- and much more

ANNUAL MEMBERSHIP FEES:

Organizations: To ensure that organizations of all sizes can participate in EECOM, organizational memberships are assessed on the basis of each group's annual budget.

Budget	Fee	Please check:
Up to \$4,999	\$ 30	_____
\$5,000-\$29,999	\$ 40	_____
\$30,000-\$99,999	\$ 75	_____
\$100,000-\$499,999	\$150	_____
\$500,000-\$999,999	\$250	_____
\$1 million +	\$500	_____
Individuals:	\$ 30	_____

Donations: EECOM greatly needs start-up funds. The organization is incorporated as a non-profit society and application has been made for charitable status. Please consider adding a donation to your membership cheque.

Name: _____

Title: _____

Organization: _____

Address: _____

City: _____ Province/Territory: _____

Postal Code: _____ Phone: _____

FAX: _____ E-Mail: _____

Membership Fee: \$ _____ Donation: \$ _____ Total: \$ _____

Please complete and return this form with your cheque made payable to EECOM. Mail to above address. Your responses to the questionnaire on the reverse of this sheet will assist EECOM in building a Canada-wide network of environmental educators.



EECOM

Registration Form

I am involved in environmental education through (please describe):

The target audience for my environmental education activities is _____

I want to be an active member of EECOM. I can contribute in the following areas:

Electronic networking _____	Promoting networking _____
Fundraising _____	Database development _____
National Conference _____	International linkages _____
Regional activities _____	Linkages with aboriginal educators _____
Newsletter _____	Research in environmental education _____
Other (please specify) _____	

/my organization has/have the following strengths in environmental education:

/my organization produce(s) the following environmental education resources/publications:

I would like information on the following areas of environmental education and communication:

I hope future issues of EECOM's newsletter will include information on:

I want to work on the following issues/topics:

Please add these people to EECOM's mailing list:

If you are not already listed in Who's Who in Canadian Environmental Education, this information will be used to update the directory. Please indicate here if you do not wish to be listed: ___ EECOM will also distribute copies of An Environmental Educator's Guide to Internet to members who express an interest in electronic communication. Please indicate here if you do want to receive a copy: _____.

Registration

Name: _____

Department: _____

University: _____

Phone: _____

Special Environmental Interest:

Please register me for:

Session 1 Environmental History and Law

Session 2 The Environment and Health

Further information about sessions 3 - 6 will be sent to you after Christmas.

Please send me more information about sessions 3 - 6.



**Dalhousie
Environmental
Education
Program**

It will make a world of difference to your lunch hour

25

**Teaching Environmental Issues
in the Classroom**

A program for Dalhousie Faculty and Teaching Assistants

offered by

School for Resource & Environmental Studies
Dalhousie University Environment Committee
Office of Instructional Development & Technology
Coordinator for Sustainable Development



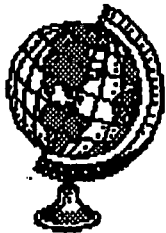
Never before has there been a greater need for our understanding of and commitment to the health and welfare of this planet and its inhabitants.

When and Where

Plan to attend the Dalhousie Environmental Education Program (DEEP) and help bring environmental issues into Dalhousie's classrooms. DEEP is a professional development series consisting of six workshops, held every two weeks beginning Wednesday, January 19th, 11:30 - 1:00 p.m. in the Council Chambers, Student Union Building. The rest of the sessions will be held at the same location on February 2nd and 16th, and March 2nd, 16th, and 30th.

The workshops will feature guest lectures, videos, informative literature, and discussion groups in which participants develop techniques for introducing various issues into their own classes.

Speakers and panels will include Dalhousie faculty and special guests.



Making Connections Between the Environment and your Discipline

Session 1 January 19th

Introduction and Environmental History and Law

Presenters:

- Fay Cohen, School for Resource and Environmental Studies
- David VanderZwaag, Faculty of Law

Session 2 February 2nd

The Environment and Health

Presenters:

- David Janigan, Department of Pathology
- Judith Guernsey, Department of Community Health and Epidemiology

Future sessions will address topics such as:

- The Humanities' View of the Environment
- Environment, Gender, and Development
- Interconnecting the Science and Social Science Environment
- Global Change

Discussion and participation are key, so please join us!



Don't have time? Still unsure? Then come to the first session on January 19th and find out more.

Come to all six sessions or choose the ones that interest you.

To register, complete the form on the reverse and return it to the Office of Instructional Development and Technology, or call 494-1622.

For more information about the sessions, please call Professor Fay Cohen, course coordinator, or Carolyn Sedgwick, course assistant at 494-3632.

Coffee and tea provided. Bring your own lunch and mug.



Registration

Name: _____

Department: _____

University: _____

Phone: _____

Please register me for:

Session 3 A View of Earth

Session 4 Music and the Environment

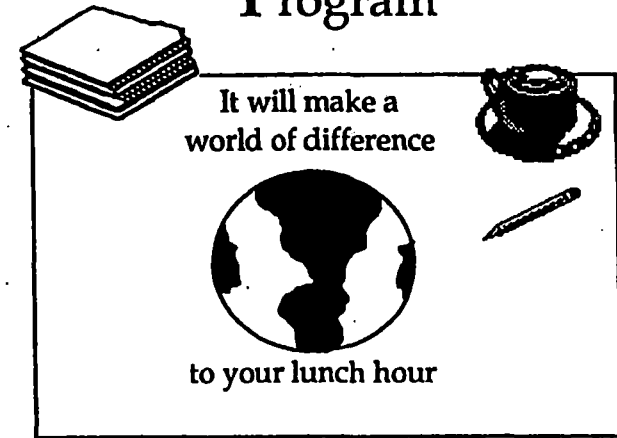
Session 5 Climate Change and Its
Implications

Session 6 Environmental Security

Return this form to the Office of Instructional Development and Technology in the Killam Library or call 494-1622 to register by phone.



Dalhousie Environmental Education Program



Sessions 3 - 6

Teaching Environmental Issues in the Classroom

A program for Dalhousie Faculty and
Teaching Assistants

offered by

School for Resource & Environmental Studies
Dalhousie University Environment Committee
Office of Instructional Development & Technology
Coordinator for Sustainable Development

Never before has there been a greater need for our understanding of and commitment to the health and welfare of this planet and its inhabitants.

The Dalhousie Environmental Education Program (DEEP) is a six-part workshop series. It is designed to help Dalhousie professors and teaching assistants bring environmental issues into their classrooms and laboratories.

When and Where

The sessions take place every second week from 11:30 to 1:00 p.m. in the Council Chambers, Student Union Building.

Sessions 1 and 2 were very well received; sessions 3-6 are scheduled for February 16th, and March 2nd, 16th, and 30th. So even if you missed the first two sessions, you can still participate in the rest of the series.

The workshops will feature guest lectures, videos, informative literature, and discussion groups in which participants develop techniques for introducing various issues into their own classes.

Speakers and panels will include Dalhousie faculty and special guests.

Making Connections Between the Environment and your Discipline

Session 3 February 16th

A View of Earth

Presenter

- Edith Angelopoulos, Department of Biology

Session 4 March 2nd

Music and the Environment

Presenter

- David Schroeder, Department of Music

Session 5 March 16th

Climate Change and Its Implications

Presenter

- Owen Hertzman, Department of Oceanography

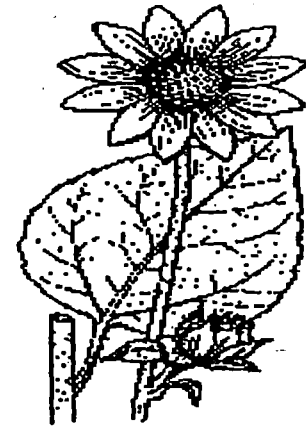
Session 6 March 30th

"Environmental Security": Panel and Group Discussion

Presenters

- Robert Boardman, Department of Political Science
- Tania Li, Department of Sociology and Social Anthropology

Discussion and participation are key, so please join us!



Come to all the sessions or choose the ones that interest you.

To register, complete the form on the reverse and return it to the Office of Instructional Development and Technology, or call 494-1622.

For more information about the sessions, please call Professor Fay Cohen, course coordinator, or Carolyn Sedgwick, course assistant at 494-3632.

Coffee and tea provided. Bring your own lunch and mug.






Dalhousie University

Office of Instructional Development and Technology
Halifax, Nova Scotia
Canada B3H 3J5
(902) 494-1622

Memo to: Dalhousie Environmental Education Program (DEEP), Series Presenters
and Organizers

From: Eileen M. Herteis, Programme Coordinator 
Office of Instructional Development and Technology

Date: April 18, 1994

Re: Summary of the first DEEP Series

The enclosed report outlines the participation and summarizes the reactions to the first Dalhousie Environmental Education Program series.

It is gratifying to see the number of participants who attended more than one session and to reflect upon the diversity of topics covered in the first series. The organizers should be proud of their accomplishments.

In the coming weeks, I will be inviting series presenters to contribute to *Focus*, the OI.D.T.'s teaching and learning bulletin, a description of how they bring environmental issues into their classrooms. I will also send a general mailing across campus requesting that professors submit outlines of courses with an environmental component for inclusion in a Dalhousie inventory or compendium.

I am happy to reiterate the support of the Office of Instructional Development and Technology for the activities of DEEP. We will be happy to cooperate with the organizers and presenters in the same way for future workshops in the series.

/emh

enclosure

c.c. Dr. Howard C. Clark
Dr. Deborah Hobson
Members, Senate Committee on Instructional Development

THE DALHOUSIE ENVIRONMENTAL EDUCATION PROGRAM

The first Dalhousie Environmental Education Program (DEEP), a six-part workshop series, was presented from January to March, 1994. It is hoped that this program will be an annual activity at Dalhousie.

DEEP was designed to help Dalhousie faculty and teaching assistants bring environmental issues into their classrooms and laboratories. The program was organized by the School for Resource and Environmental Studies (SRES) in partnership with the Office of Instructional Development and Technology (OIDT), the Dalhousie University Environment Committee, and the Coordinator for Sustainable Development. Dr. Fay Cohen and Carolyn Sedgwick from SRES planned the program, while the OIDT handled the publicity and administration.

The organizers designed the program and chose speakers to reflect the diversity of current environmental approaches at Dalhousie and to reach a broad audience. The sessions were advertised by brochure - two campus-wide mailings, in the Dalhousie News, by poster, and on e-mail. While the sessions were fairly well attended, the organizers would like to encourage increased participation at the next DEEP series.

Program

The six workshops presented in the inaugural series covered a wide range of topics :

Environmental History and Law (January 19) - 19 participants
Presenters: Fay Cohen (SRES) and David VanderZwaag (Law)

The Environment and Health (February 2) - 20 participants
Presenters: David Janigan (Pathology) and Judith Guernsey (Community Health and Epidemiology)

A View of Earth (February 16) - 9 participants
Presenter: Edith Angelopoulos (Biology)

Music and the Environment (March 2) - 13 participants
Presenters: David Schroeder and Emily Doolittle (Music)

Climate Change and Its Implications (March 16) - 11 participants
Presenter: Owen Hertzman (Oceanography)

Environmental Security (March 30) - 10 participants
Presenters: Tania Li (Sociology & Social Anthropology), Barry Lesser (Economics), and Martin Willison (Biology).

Attendance

Of the 91 total attendances at these sessions, many were repeats: one participant attended all 6 sessions; one attended 5; one, 4; six, 3; and eleven, 2. This is gratifying

as the organizers were hoping that the majority of participants would attend a number of the sessions. The highest participation levels were from the Department of Biology (21 attendances) and the School for Resource and Environmental Studies (14 attendances).

Participants came from four departments in FASS (German, Political Science, Sociology and Social Anthropology, Music); six departments in Science (Biology, Chemistry, Psychology, Oceanography, Engineering, Earth Sciences); three schools in Health Professions (Nursing, Physiotherapy, Occupational Therapy); the School of Education, and Henson College. Eric McKee, Vice President (Student Services) attended two of the sessions, as did Mike Murphy from Physical Plant.

Participants' Responses

Individual sessions and the DEEP program as a whole were well received by participants:

. . . I am a teaching assistant and so do not have control over the material covered in class, but would still like to convey these issues to my students. I would like some ideas of how to do this. One of the points brought up was that the majority of people don't know the horrible things that are going on to damage our environment. I would like to see a discussion of how this information can be communicated

I enjoyed today's discussion and am anxious to attend the next lecture. It is both exciting and encouraging to see such interdisciplinary interaction.

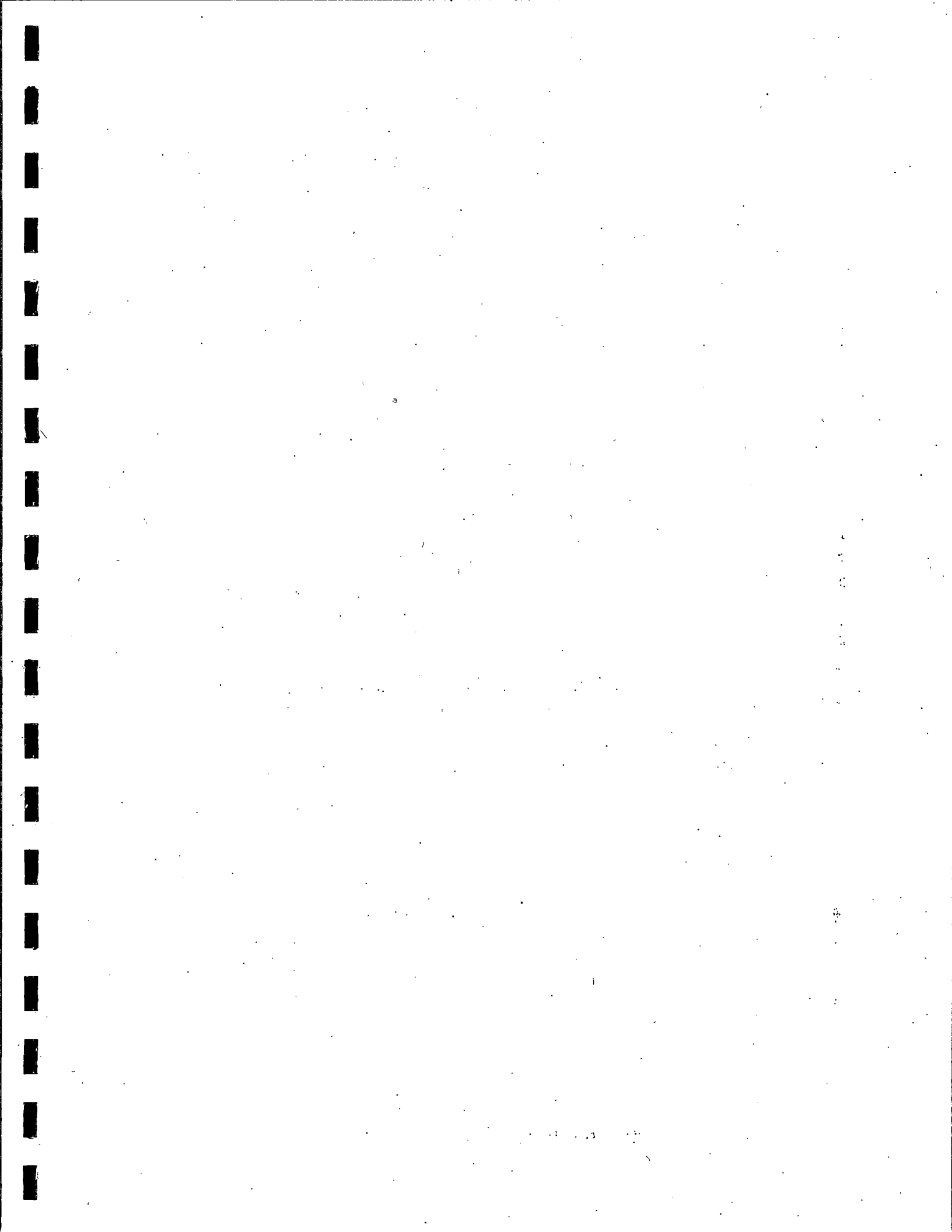
Great presentation, particularly good for non-scientists since it provided not a humanist view but the "biodiversity" view much needed in our society.

Superb session. The classroom applications for any discipline were immediately obvious. Thank you.

Once again DEEP has provided a wonderful lecture. I was fascinated by this session and would love to find out more about it. I am truly enjoying my involvement with DEEP.

Future Initiatives

Several initiatives are planned to build upon the foundation of the first DEEP series. The OI DT is planning to incorporate environmental issues into its annual Orientation to Teaching at Dalhousie session for new faculty and at its Orientation session for Teaching Assistants. The September/October edition of *Focus on University Teaching and Learning*, the OI DT's regular bulletin will be devoted to teaching environmental issues. Finally, the OI DT has undertaken to compile a list of Dalhousie classes which contain an environmental component. A campus-wide mailing will invite teachers to submit relevant course outlines.





The Institute For
Environmental
 values education

learning for action

JULY 9-16 '94
VICTORIA
BRITISH COLUMBIA

In affiliation with
Lester B. Pearson College
 of the Pacific

thinking globally...teaching locally

Teaching for positive action. Creating a better world. If this is important to you, join progressive educators from Canada and around the world for Harmony Foundation's 1994 Institute for Environmental Values Education. Our world is changing, and the education we provide to students in our schools and communities must be responsive to change and the need for global cooperation. Here, you will make the links between sustainability, education, local and global realities, values and action.

"No topic is more important to the teaching profession than this one; environmental values demands high levels of cooperation, support, and leadership." 1993 PARTICIPANT

PERSONAL AND PROFESSIONAL DEVELOPMENT

The Institute is an 8-day international professional development opportunity for all educators. Here, you will be challenged to examine values, consider the relationship between values and action, and develop positive approaches to conflict resolution and teaching. Dynamic interaction between participants and resource people is encouraged through sessions on themes including:

*environmental values • global issues • biodiversity
 community action • personal commitment*

Sessions are led by people of diverse backgrounds:

*environmentalists • educators • policy-makers • activists
 philosophers • business people • artists • musicians*

Within and outside sessions, participants and session leaders share their experience and enthusiasm in an exploration of new ideas and learning techniques through engaging case studies, artistic expression, panels, presentations, consensus building and more.

VALUES INTO ACTION

With relevant new skills and perspectives in environment and global education, international cooperation and community action, you will return to your community with motivation and an educational experience with lasting benefits for all. Moreover, you will become part of an on-going international network actively teaching to create the new values and critical thinking which leads to positive change for the environment.

"The Institute was a life-changing experience. Making personal connections with others across Canada and the world creates partnerships, interdependence, and cooperation." 1992 PARTICIPANT

MAKING CONNECTIONS

In our diverse global village, where a renaissance in environmental awareness and action is essential, everyone needs to understand the relationships amongst:

*environmental values • education
 global issues • teaching
 personal action • community cooperation
 international cooperation*

We will encourage you to apply your learning to a project in your community.

create a better world

Values define behaviour. Educators have daily and long term opportunities to foster environmental values which lead to the environmentally sound practices essential for a sustainable world. Since 1990, the Institute has attracted leading educators from across Canada and the world:

*Bangladesh • Brazil • Britain • Costa Rica
 Czech Republic • Ethiopia • Ecuador
 Guatemala • India • Israel • Kenya
 Nepal • Nigeria • Pakistan • Peru
 Philippines • Russia
 Republic of Seychelles • Thailand
 United States*

Living and working with participants representing a diversity of cultural perspectives will enrich your personal understanding of global issues and education.

RENEWED OPTIMISM

"The Institute demonstrated that thoughtful, committed people do change the world." 1992 PARTICIPANT


Harmony

Harmony Foundation, 209-560 Johnson Street, Victoria, British Columbia,
 Canada, V8W 3C6. Telephone: (604) 380-3001 Fax: (604) 380-0887



REQUEST FORM

Please send more information and an application form for the 1994 Institute for Environmental Education to:

The Institute For
Environmental
values education

Name: _____ Organization: _____

Address: _____

Postal Code: _____

Telephone (day) _____ (evening) _____ (fax) _____

Please include Harmony's Publication Order Form

Where did you see this flyer? _____

Please mail to: **Harmony Foundation, 209-560 Johnson Street, Victoria, British Columbia, Canada, V8W 3C6. Telephone: (604) 380-3001 Fax: (604) 380-0887**

please photocopy this form

At the Institute, you will discover new ideas and encouragement for your own efforts while meeting other dedicated people motivating action in their schools and communities.

I'M READY! HOW DO I SIGN UP?

Fill out the request form for an application and mail it to the Institute.

HARMONY: EXCELLENCE IN EDUCATION

The Institute for Environmental Values Education is a program of Harmony Foundation of Canada, a charity dedicated to environmental learning and positive action. Our innovative work has earned an United Nations' Environment Programme Global 500 Award (1993) and a 1994 Commonwealth Foundation Fellowship.

As the Institute expands, look to Harmony for new programs and workshops offering learning for action and environmental leadership.

HARMONY'S TRAINING RESOURCES

Through practical training resources such as our ECommunity and Greenworks programs, you can develop the skills for sustainable development in your community or your workplace.

HARMONY'S EDUCATIONAL RESOURCES

Our wide range of publications help individuals, families, children, businesses, and communities practice positive environmental actions. An order form is available by checking the box on the Request Form.

OUR SUPPORTERS

The Institute's success and standards depend on the support of our many partners. We would like to especially thank our sponsors for their generous contributions and their shared commitment to excellence, leadership and innovation in environmental and global education.

BENEFACTORS OF THE INSTITUTE

- Royal Bank of Canada
- Canadian International Development Agency: Management for Change Program
- Environment Canada
- The J.W. McConnell Family Foundation
- Ontario Hydro
- Robert Bateman* Household*
- The Helen McCrae Peacock Foundation*

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- The CRB Foundation
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- Placer Dome Canada Limited

*through core support to Harmony Foundation.

For a complete list, or if you wish to join this distinguished group, please contact Harmony.

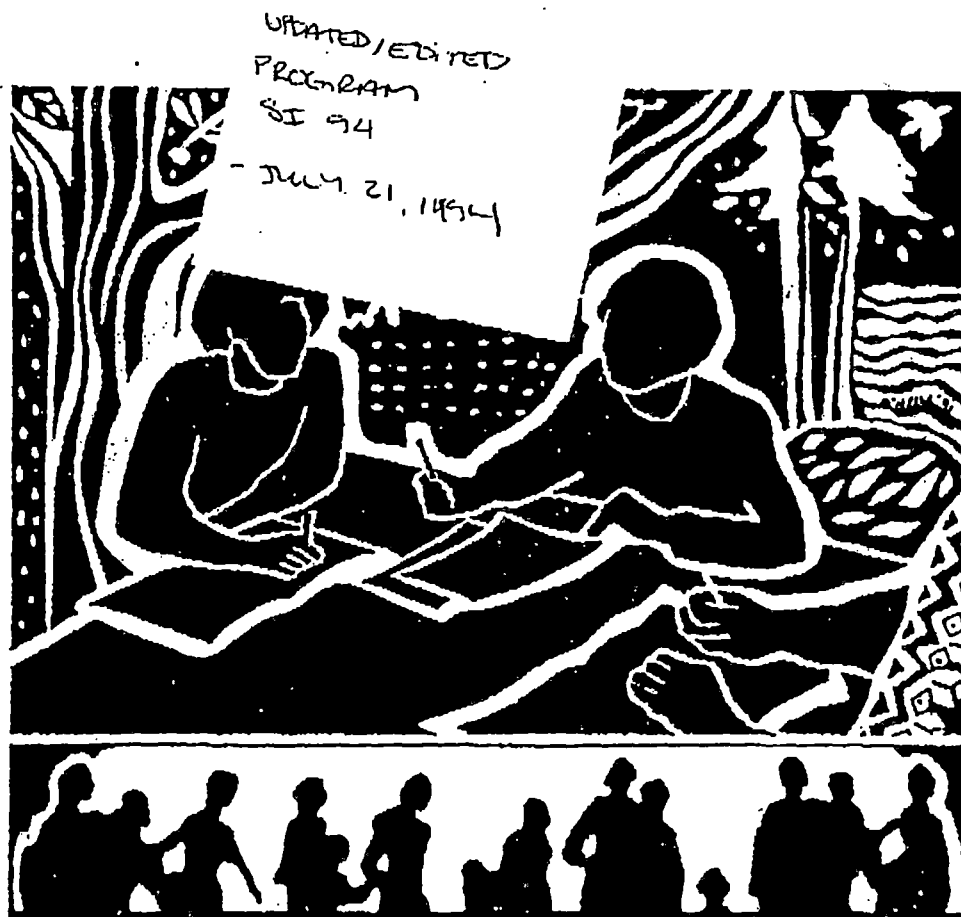


Harmony

Harmony is the registered trademark of Harmony Foundation of Canada



The Institute for Environmental Values Education



Summer Program July 9-16th, 1994

*Lester B. Pearson College of the Pacific
Victoria, British Columbia*



Harmony Foundation is grateful for the generous support towards the 1994 Institute for Environmental Values Education

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Ontario Hydro
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International Institute for Sustainable Development

Harmony Foundation greatly appreciates the continued support of those organizations and individuals who share our commitment to the principles of leadership, innovation and excellence in environmental education.

Benefactors

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Environment Canada's Environmental Citizenship Program
Environment Canada's Environmental Partners Fund
The J.W. McConnell Family Foundation
Helen McCrea Peacock Foundation
Ontario Hydro
Ontario Ministry of the Environment
Royal Bank of Canada

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General Motors of Canada Limited
Lever, Division of U.L. Canada Inc.
Rio Algom Limited
Systemhouse Canada Inc.
Thomas J. Lipton Inc.
Westin Hotels and Resorts
Unilever Canada Inc.
The Viebir Family Foundation
Panarco Foundation

Saturday, July 09, 1994

10:00 AM Transportation to Pearson College from Downtown Victoria

11:00 - 12:00 Participants arrive at Pearson College and register

12:00 - 1:30 **LUNCH WILL NOT BE PROVIDED** - light refreshments only

2:00 - 2:30 Welcoming remarks and introduction
Michael Bloomfield Founder and Executive Director, Harmony Foundation
Logistics
Katharine Ratcliffe Acting Institute Coordinator

2:30 - 3:30 Team Building and Icebreakers

3:30 - 4:30 The rest of the afternoon will be set aside for participants to gather in their three working groups with their facilitators, to meet group members, and begin work on group and individual goals for the remainder of the Institute.

5:30 - 6:30 **SUPPER**

7:00 - 9:30 ***Exploring Environmental Values***

The Institute challenges participants to examine their own values and those of others, and to think about the relationship between values and actions. This session provides a framework for participants to address environmental values and their effect on our decisions. In a Thanksgiving address entitled *Tracking the Roots of Peace* Jake Swamp will explore a diverse range of issues. Jake stresses self esteem, cultural revival and survival, ways of working with the natural world, multi-cultural respect, strategies for peace and the importance of working with the children. He emphasizes how we can work with nature and with each other to solve our problems and build a better future.

Session Leader: Tekaronianekon Jake Swamp, Tree of Peace Society and Mohawk Nation

Sunday, July 10, 1994

7:00 AM *Keepers of the Earth: Sunrise Tree Planting*

Traditional cultures often have different views of the relationship between humans and the rest of nature. There are many world views which see the relationship between humans and the earth in a more holistic way. These perspectives are helpful and important both in appreciating the values of a nature based society and contrasting them with those that most of the participants will share. Respect for other cultural perspectives is the basis upon which the cooperation necessary in overcoming global environmental and developmental problems is built.

Jake will continue to share his work with participants, through storytelling and the planting of a Tree of Peace.

"Everyone is invited to join us in planting a Tree of Peace to breathe life into the body of Mother Earth. Since the original message was delivered in the United Nations, 100 nations and world organizations have responded. Well over 100 million trees have been planted, and we encourage you to plant trees for the future of the children...seven generations to come".

Session Leader: Tekaronianekon - Jake Swamp Sub-Chief, Wolf Clan of the Mohawk Nation and Founder of the Tree of Peace Society

7:30 - 8:30 BREAKFAST

9:00 - 12:00 *Learning From Our Local Environments*

Participants will attend all of the following three sessions on either the morning of: Sunday (10), Tuesday (12), or Thursday (14).

Session I : Discovering Local Biodiversity

Biological diversity is not homogeneously distributed in our planet; the highest diversity of species is found in tropical regions. High biodiversity is not a characteristic exclusive to pristine ecosystems, but is also linked to traditional land-use practices in rural and forested regions. One of the ways to achieve the conservation of biodiversity is to establish networks of protected areas. However, the conservation models established in developed countries are not directly applicable to developing countries due to cultural, demographic and socio-economic differences. Successful models attempt to take into account regional differences by incorporating preservation, development, research, training, and local participation into one unified conservation scheme. In this workshop, participants will discuss biodiversity, the importance of conservation, and various ways to achieve this goal, while emphasizing the role of education, community involvement and international cooperation.

Session Leader: Richard Kool, Environmental Education Coordinator, BC Ministry of Environment Lands & Parks

9:00 - 12:00 *Session II: Nature's Gift*

General interest in natural plants and their importance has grown considerably in recent years. Plants give us gifts: air, food, shelter, clothing and medicine. They are an essential part of local biodiversity and the global ecosystem without which other forms of life would not survive. Carol's vast professional knowledge, compelling stories and warm sense of humour will guide participants on an exploration of Pearson College's environment and the magic of plants.

Session Leader: Carol McGrath, Herbalist and Educator

9:00 - 12:00 *Session III: Race Rocks Marine Ecosystem*

Note: (requires earlier start for this session, due to travel 8:30 am sharp)

The Pacific Coast of Canada has a rich, inspiring and increasingly threatened marine ecology. Gary Fletcher will lead a nature expedition to Race Rocks on the ship *Second Nature*. Participants will study the local ecology and join in a lively, on-site discussion about the importance and means to protect marine environments.

Session Leader: Gary Fletcher, Educator, Pearson College

12:00 - 1:30 LUNCH

1:30 - 4:30 *Our Ecological Footprints (or Discussion of Completion Projects)*

Living in cities and towns, it is easy to forget how far reaching our effects are on the environment around us; we often forget how many resources are needed to support us and we forget where those resources come from. In this fun, interactive session, Bill Rees, will use role playing and group interaction to help us learn about the "footprints" we leave on the earth, how to lighten the load that we put on the planet, and how to have joy doing it.

Session Leader: Bill Rees, Educator, University of British Columbia

5:30 - 6:30 SUPPER

6:30 - 9:00 *Discussion of Completion Projects (or Our Ecological Footprints)*

PM A great momentum for action is created at the Institute. When participants return to their own communities and teaching programs they begin, or continue to work on, some educational activity or resource based on issues raised at the Institute and relevant to their teaching. In this way, they share their Institute experience with others--students, colleagues and community members--and the Institute becomes a program with long-term benefits for many people. Time will be spent outlining the purpose and goal of completion projects, and discussing specific ideas with participants.

Session Leader: Michael Bloomfield with group Facilitators

Note: brief session - remainder free time

Monday, July 11, 1994

7:30 - 8:30 **BREAKFAST**

Artistic Expression

The arts are a valuable medium through which we can explore and appreciate nature and important social concerns. The Institute offers participants sessions on artistic expression designed to develop their skill in expressing and teaching positive environmental values through an artistic form. Two sessions will be offered.

9:00 - 12:00 *Using Improvisational Theatre in Education-*

Following an hour of active learning, participants will divide into small groups to improvise presentations which will be made to the entire group in the third hour.

Themes will be taken from North American and international environmental issues, making this cross-cultural session compelling and relevant. The participants will be actively involved!

Session Leader: Johnson Moretti, Canadian Improv Games

12:00 - 1:30 **LUNCH**

2:00 - 5:00 *An Artist in Nature*

Robert Bateman is a world renowned Wildlife Artist and naturalist. He has travelled the world as artist and environmentalist, using his tremendous ability to make people appreciate and respect nature and understand the need for action. Following his presentation Bob will involve participants in an informal session of questions and answers.

Session Leader: Robert Bateman, Honorary Chairman, Harmony Foundation
 "If we know and understand the nature around us we are more likely to respect and value it and be responsible citizens of our planet."

6:00 pm SUPPER followed by Cultural Evening Arranged by Participants

Tuesday, July 12, 1994

7:30 - 8:30 BREAKFAST

9:00 - 12:00 *Learning From Our Local Environments* (see Sunday am July 10)

12:00 - 1:30 LUNCH

1:30 - 4:00 *One World, Global Perspectives on Environment & Development Issues Overview*

Environmental problems are not unique to any one area or culture, but affect individuals and communities throughout the world. The panel serves as an introduction to global concerns, environmental and human, and the need for a cooperative world effort in overcoming environment and development problems.

Some topics for discussion are:

- global responsibility and cooperation for the environment;
- economic and social inequities between rich and poor nations in relation to environmental values and actions;
- international control mechanisms and institutional responses

This session will also emphasize current international cooperation on environment and development opportunities to expand it through local and global action.

Session Chair: Naresh Singh, International Institute for Sustainable Development,
Panellists: David Munro, formerly IUCN, World Conservation Strategy, UNEP
Sissie Matela, Lesotho
Bernard Darroux, Commonwealth of Dominica

5:30 - 6:30 SUPPER

7:00 - 9:00
PM

Working Group Sessions on Specific Global Issues

Following the overview which introduces the global issues component of the program, participants, in their working groups, attend three half-day sessions on specific global issues.

Session I: Uprooting Poverty

Based on his wide experience in education and community at the Caribbean Environmental Health Institute, and most recently at the International Institute for Sustainable Development (IISD), Naresh Singh will involve participants in an examination of the root causes of poverty, the impact on the environment, and socioeconomic circumstances inhabitants of many countries face. Naresh uses various means to empower people so that they are actively involved in addressing these problems and creating a better life for themselves.

Session Leader: Naresh Singh, Director of the Poverty and Empowerment Program for IISD

Session II: Institution Building and Empowerment

Empowerment of the rural poor and proper environmental management are inseparable. Using an interactive approach, Stephen will involve participants in an examination of the relevance of poverty to the 60 - 70% of the world's population living in developing countries and case studies from the Eastern region of Ghana which demonstrate the effectiveness of local empowerment through cooperation and education.

Session Leader: Stephen Osel-Amakye, Ghana

Session III: Education & Cooperation: Building a Positive Community

Bernard is a respected community leader and teacher who has initiated and coordinated change and community involvement. Bernard will involve participants in an exploration of the effectiveness of community education and cooperation based on his extensive experience within his own community, as coordinator of a variety of development projects, and internationally, as a delegate to the United Nations Small Islands Development Strategy Conference in Barbados this year.

Session Leader: Bernard Darroux, Commonwealth of Dominica

Wednesday July 13, 1994

7:30 - 8:30 BREAKFAST

9:00 - 12:00 Global Working Group Session in the morning and afternoon as described above

1:30 - 4:30 same

5:30 - 6:30 SUPPER

Evening free time/Optional Spontaneous Presentations

Thursday 14, 1994

7:30 - 8:30 BREAKFAST

9:00 - 12:00 *Learning From our Local Environments* (see Sunday am July 10)

12:00 - 1:30 LUNCH

1:30 - 4:00 *Community Involvement in Environmental Solutions - Overview*

Global environmental issues are often addressed at a community level. It is important for people to appreciate or value their local environment, to understand the threats to this environment and to learn how they can effectively work within their community to protect it. The overview stresses the importance of individuals in their communities (not necessarily defined geographically) working together on environmental problems and opportunities and will examine:

- the relationship between education, public involvement, activism and social change;
- the role of the educator in promoting/initiating voluntary action and involvement in the community;
- grounds well expressions of environmental values through actions;
- models for organized public action on the environment; and
- community involvement as an avenue for environmental action and participation in the democratic process.

Session Chair: Michael Bloomfield

Panellists: Sione Lepa, Tonga
R. Macharia Gathuku, Kenya
Karla Acosta Chan, Mexico
Shimon Golan, Israel

5:30 - 6:30 SUPPER

Working Group Sessions on Specific Community Issues

Following the overview to community environmental issues, participants, in their working groups, attend three half-day sessions on specific aspects of community involvement. These working group sessions will function as did the global working group sessions, and will provide examples of community cooperation, community action and appreciation of local environments.

7:00 - 9:00 *Session I: Creating Sustainability*

PM To create is to bring something into being; it is fundamentally different than problem solving. In a dynamic workshop, participants will examine their own approaches to producing results and experiment with the creating approach. They will apply the creative process to conceiving, clarifying and planning action steps for a project which they can undertake back in their own home, their classroom or school, or in their community.

This workshop will explore the limitation of problem-solving as it pertains to environmental issues and offer a simple, yet powerful, alternative for environmentalists and environmentally concerned teachers who want to create real and lasting results--in their own lives, their classrooms and their communities

Session Leader: Bruce Elkin, Earthways Institute

Session II: School as Community

Teachers have an opportunity each school day to activate and work with a large segment of their community -- their students. At a time when young people are very involved and concerned about their environment, they can be powerful actors in the community. How do teachers work best with their students, and reach the parents of those students, to make effective change in their environment -- within the school and beyond, to the community?

Chris Adam has been involved in environmental education for over ten years. Reflecting on society's needs, his work has evolved from promoting a respect for nature to consulting on and developing innovative educational programs. Chris is a repeat session leader at the Institute, and some of the comments from past participants tell why: "This is a most effective session. I was totally moved". "Chris' presentation made me see things full circle". "A very touching and inspiring session - the kind of session that sticks to your guts for a while." "Chris certainly helped us to understand environmental education 'through the eyes of a child'. Head-heart-hand."

Session Leader: Chris Adam, A-D Naturalists

Session III: The "Children" of Kibarani

Macharia will involve educators in thinking through the situation of the "children" of Kibarani. Kibarani is an extensive municipal garbage dump in Mombasa town and it is the only home to one hundred garbage pickers who spend their lives in filth, sorting out the waste to sell. Macharia will share the plans developed by the Society for Protection of Environment in Kenya (SPEK) to rehabilitate Kibarani. Participants will be involved in a challenging discussion of this issue, its underlying causes and what can be done locally and globally to improve the situation.

Session Leader: Macharia Gathuku, Kenya

5:30 - 6:30 SUPPER

7:00 - 9:00 Workshop Group Sessions as described above

Friday July 15, 1994

7:30 - 8:30 BREAKFAST

9:00 - 12:00 Community Working Group Session as described above

12:00 - 1:30 LUNCH

1:30 - 4:30 Community Working Group Session as described above

5:30 - 6:30 SUPPER

8:00 PM Celebration and dance, with music incorporating themes of social justice and environment.

Saturday July 16, 1994

8:00 - 9:00 BREAKFAST

9:30 GROUP PHOTO!

10:00 - 11:30 *Personal Action for the Environment*

Ultimately, it is individuals who take action--on their own or in organizations. Individuals can become involved in environment and development solutions through voluntary participation in communities and by changing their behaviour in their daily lives. From time to time, we all come into contact with individuals who motivate others through their dedication, enthusiasm and commitment to a cause or issue.

Session Leader: Victoria's Raging Grannies

11:30 - 12:30 LUNCH

1:00 PM Participants depart

**Institute for Environmental Values Education-1994 Summer Program
July 9th-16th at Pearson College, Victoria, B.C.**

SESSION LEADERS

Jake Swamp: Sub-Chief of the Wolf Clan for the Mohawk Nation, Director of the Tree of Peace Society. Jake will be doing a tree planting ceremony as well as leading the Environmental Values session.

Gary Fletcher: He is an educator at Pearson College, and he is an active community environment leader, he will lead a Local Environment Session studying Marine Ecology at Race Rocks Marine Reserve.

Richard Kool: the environmental education coordinator for the B.C. Ministry of Environment Lands & Parks, he will lead a Local Environment Session on discovering local biodiversity.

Carol McGrath: Herbalist and educator, she will lead a Local Environment Session, entitled, Gifts of Nature.

Johnson Moretti: an accomplished actor and comedian who teaches students and educators how to use improvisational theatre, he will lead the Improv Environmental Theatre Session.

Bill Rees: Professor of Planning and Resource Ecology, School of Community and Regional Planning at the University of British Columbia, he will lead a session on the influence of our lives on our environment entitled Our Ecological Footprints.

Robert Bateman: an accomplished and appreciated wildlife artist and naturalist, and an active voice for environmental values, he will be leading the Artist in Nature Session.

Naresh Singh: Program Director of the Poverty and Empowerment branch of the International Institute for Sustainable Development, he will Chair the Global Issues Panel Session and will lead a Working Group Session on Global Issues: Poverty & Empowerment.

Bruce Elkin: consults and teaches about, creativity, environment, community development and future design. he will lead a Sustainable Communities Working Group Session about creating the future we want.

Michael Bloomfield: Michael is the Founder and Executive Director of the Harmony Foundation. He holds post secondary degrees in nutrition and wildlife biology and has broad experience with environmental and international issues. Through the Foundation he pursues his interest in environmental thought and practices, and his commitment to action oriented education as crucial to real environmental progress and meaningful global cooperation. Michael's efforts have been recognized by the United Nations Environment Program's Global 500 Award (1992), and the Commonwealth Foundation Fellowship. (1994)

Raging Grannies: In 1987, a group of women protesters who noticed that people listened to satirical songs, joined together to form the Raging Grannies. These women are all concerned that there be a world where their grandchildren, and all grandchildren, are able to live in. The Raging Grannies use satire and humour to joggle people out of their way of thinking, and to make people think about the issues that are affecting us today. They are sure to inspire us all to find new ways of getting the message across in their Personal Action Session which will close the Institute.

Stephen Osei-Amayke: Stephen is the Deputy Regional Programme Officer for the Greater Accra Region in Ghana. He is also a member of the Environment Protection Council where he is involved in environmental education programs, and a founding member and National President of the Green Topics International Group, an environmental NGO. Stephen will lead a session on specific Global Issues.

Sissie Matela: Sissie has a background in Soil Science and excellent international experience. She is currently working with the Lesotho Highlands Development Authority monitoring the environmental impacts of construction contracts for a major water transfer project. In past years, Sissie has been an educator who trained others about agriculture, resource conservation, and health and sanitation. Sissie will be a panellist for the Panel Session, "One World, Global Perspectives on Environment & Development Issues."

Sione Lepa: Sione is actively involved in environmental education and awareness campaigns for communities in Tonga. As well, Sione is a Park Ranger with the Environmental Planning Section of the Ministry of Lands, Survey and Natural Resources part of which involves hosting an environmental program on the local radio station. He will be a panellist for the One World, Global Perspectives on Environment & Development Issues.

David Munro: David has worked for the Canadian Wildlife Service as Chief Ornithologist, for Environment Canada as the Director-General, for the United Nations Environment Programme in Nairobi as the Assistant Executive Director, and as the Director General for the International Union for the Conservation of Nature and Natural Resources in Switzerland. David will be a panellist for the session, "One World, Global Perspectives on Environment and Development Issues."

R. Macharia Gathuku: Coordinator of the Society for Protection of Environment in Kenya (SPEK) which is one of the most active community oriented local NGOs in Kenya, R. Macharia Gathuku is also an instructor of Environmental Studies to Diploma Level students at the Kenya Polytechnic in Nairobi. He will be a panellist for the session on Community Involvement in Environmental Solutions.

Bernard Darroux: A primary school teacher for over thirty years, Bernard has primarily taught agriculture in both his school and community. He is also involved in numerous projects that involve taking care of the environment in and around his community and school. His village in Dominica is one of the leading communities where self-help projects are undertaken. Bernard will be a panellist for the Community Involvement in Environmental Solutions Session.

Miriam Langenbach: Miriam is the Coordinator of the Program de Videos Ecologicos (PVE)-- Ecological Video Program--a pioneer program which works with video and group dynamics on ecological themes. She also is an instructor at the Pontificia Universidade Catolica in Rio de Janeiro where she teaches a course called "Psychology Applied to Environment." Miriam will be a panellist for the Community Involvement in Environmental Solutions Session.

Shimon Golan: Shimon is a teacher, biologist and naturalist who works as the Education and Information Coordinator in the Environmental Towns Association, Haifa, Israel. Combining his experience as environmentalist and educator Shimon develops programs and materials for schools and communities on various topics. He will be a panellist for the Community Involvement in Environmental Solutions Session.

FACILITATORS and HARMONY FOUNDATION STAFF

Helen Dewar: Her experiences in environmental education have included both classroom and community education. She previously worked for a private consulting firm in Ontario for four years, she developed and implemented a public education program on waste management for the Regional Municipality of Waterloo, designed environmental curriculum supplements on a variety of topics for seven major school boards in Ontario, and consulted with business and industry on environmental efficiency strategies. Helen has recently moved to British Columbia where she continues to work in the education field.

Chris Adam: Is an educator at the college level in community recreation and leadership training, and is president of an environmental education consulting firm. His energies are currently focused on further developing educational programs that bridge the arts and sciences, while addressing the values that shape our attitudes towards the natural world. Chris believes that we must collectively regain, or develop anew, an emotional and spiritual relationship with nature. Chris is a past participant and has been a repeat presenter at the environmental values education institute. This year he is a group facilitator.

Diane Burroughes: Diane was an educator in the college system for 8 years and is not coordinating as ESL program for the Vancouver School Board and is a vocational counsellor and facilitator with the YWCA Career services. She is also an experiential team leader in outdoor and adventure programs for corporate and public sector groups. She has a strong interest in cross-culture issues with an emphasis on Global, Women, and Environmental studies. On the other side, she is a Piscean, wears shoe size 6 1/2, (kicks like a mule) and is an emergent artist. Diane was an institute participant at the first program in 1990 and joins us for the third consecutive time as a group facilitator.

Katharine Ratcliffe: Katharine is a recent graduate in Environmental Science and Chemistry. Her University program involved opportunities to study both in Puerto Rico and New Zealand. Upon her return from New Zealand, where she studied Natural History, Conservation, Government Restructuring, swam with dolphins, watched wales, Kiwis,...she joined the Harmony staff at the end of May 1994.

Skye Herrmann: Skye has been involved with environmental issues for a number of years through work her with various organizations. This, in addition to her world travel, have brought about a desire to contribute to the environmental education field. She is currently on Education student at the University of Victoria, and she has joined the Harmony Foundation to assist with the Coordination of the Institute.

Summer Institute 1994--International Participants

- Karla Acosta Chan:** ♦ Designs programs, and is an environmental education instructor at the Mexican Foundation for Environmental Education, which is the leading environmental education organization in Mexico.
♦ Mexico City, Mexico
- Bernard Darroux:** ♦ Primary and Junior Secondary School teacher for over 30 years
♦ Elected Chairman of the Community Animation Committee (CAC) which is an amalgamation of leaders of all existing groups in his community
♦ delegate at the UN Small Islands Development Strategy Conference in Barbados, Spring 1994
♦ Petite Savanne, Commonwealth of Dominica
- Macharia Gathuku:** ♦ Coordinator of the Society for Protection of Environment in Kenya (SPEK); SPEK is one of the most active NGOs in Kenya.
♦ Instructor at Kenya Polytechnic in Nairobi; he teaches Environmental Studies to diploma level students.
♦ Nairobi, Kenya
- Shimon Golan:** ♦ Environmental Education Coordinator for the Environmental Town Association--Haifa District
♦ Prior to above, he was an instructor at Sde Boker College, a large educational and research institute which is a pioneer in environmental education in Israel.
♦ Initiated a national project for organizing students studying on a scholarship, and training them for instruction at environmental schools.
♦ Tivon, Israel
- Yehuda Katz:** ♦ Currently he is training 120 guides for the Society for the Protection of Nature in Israel's Field Schools
♦ was Field School Manager from 1989-92 for the Society for the Protection of Nature in Israel.
♦ B.A., B.Ed.
♦ Makabim, Israel
- Frans Kranenberger:** ♦ Biology teacher at Rijnlands Lyceum Oegstgeest--a Dutch national school where he teaches the International Baccalaureate (IB) Biology program, and the Environmental Systems program.
♦ Involved with the development of environmental education within the new Dutch national curriculum for secondary education.
♦ Amsterdam, The Netherlands
- Miriam Langenbach:** ♦ Coordinator of the Ecological Video Program (PVE) for the Pontificia Catholic University in Rio de Janeiro. PVE is a pioneer program which works with video and group dynamics on ecological themes.
♦ Teaches the "Psychology Applied to Environment" course at the Pontificia Catholic University.
♦ Rio de Janeiro, Brazil

Sione Lepa:

- ◆ National Park Ranger for the Ministry of Lands, Survey and Natural Resources -- the only environmental organization in Tonga -- it has him managing the protected areas as well as implementing various environmental education activities.
- ◆ Hosts an environmental program on local radio in Tonga.
- ◆ Nuku'alofa, Tonga Is.

Sissie Matela:

- ◆ Environment Officer with the Lesotho Highlands Development Authority which involves environmental education campaigns for different sectors of the population, environmental impact assessments, establishing environmental reserves.
- ◆ Lecturer in Soil Science at the National University of Lesotho, 1990-91.
- ◆ Extensive international experience through her participation in numerous workshops--workshops in Lesotho, Bostwana, South Africa, the USA, and Finland.
- ◆ Maseru, Lesotho

Kelvin Moon:

- ◆ Deputy Chief Examiner for International Baccalaureate Environmental Systems Program.
- ◆ Currently teaching full-time at St. Clare's, Oxford which is and International Baccalaureate school.
- ◆ Oxford, United Kingdom

Stephen Osei-Amakye:

- ◆ Deputy Regional Programme Officer for the Greater Accra Region, which is currently involved in the implementation of the World Bank/EPC Ghana Environmental Management Project.
- ◆ Founding member and National President of the Green Topics International Group, which is an environmental NGO.
- ◆ Accra, Ghana



ENVIRONMENTAL EDUCATION

For Sustainable Societies and Global Responsibility



(This treaty, as in education, is a dynamic process and should therefore promote reflection, debate and amendments.)

We signatories, people from all parts of the globe, are devoted to protecting life on earth and recognize the central role of education in shaping values and social action. We commit ourselves to a process of educational transformation aimed at involving ourselves, our communities and nations in creating equitable and sustainable societies. In so doing we seek to bring new hope to our small, troubled, but still beautiful planet.

1

Introduction

We consider that environmental education for equitable sustainability is a continuous learning process based on respect for all life. Such education affirms values and actions which contribute to human and social transformation and ecological preservation. It fosters ecologically sound and equitable societies that live together in interdependence and diversity. This requires individual and collective responsibility at the local, national and planetary level.

We consider that preparing ourselves for the required changes depends on advancing collective understanding of the systemic nature of the

crises that threaten the world's future. The root causes of such problems as increasing poverty, environmental deterioration and communal violence can be found in the dominant socio-economic system. This system is based on over-production and over-consumption for some and under-consumption and inadequate conditions to produce for the great majority.

We consider that inherent in the crisis are an erosion of basic values, and the alienation and non-participation of almost all individuals in the building of their own future. It is of fundamental importance that the

world's communities design and work out their own alternatives to existing policies. Such alternatives include the abolition of those programmes of development, adjustment and economic reform which maintain the existing growth model with its devastating effects on the environment and its diverse species, including the human one.

We consider that environmental education should urgently bring about change in the quality of life and a greater consciousness of personal conduct, as well as harmony among human beings and between them and other forms of life.

2

Some Principles of Environmental Education for Equitable and Sustainable Societies

1. Education is the right of all; we are all learners and educators.
2. Environmental education, whether formal, non-formal or informal, should be grounded in critical and innovative thinking in any place or time, promoting the transformation and construction of society.
3. Environmental education is both individual and collective. It aims to develop local and global citizenship with respect for self-determination and the sovereignty of nations.
4. Environmental education is not neutral but is value-based. It is an act for social transformation.
5. Environmental education must involve a holistic approach and thus an inter-disciplinary focus in the relation between human beings, nature and the universe.
6. Environmental education must stimulate solidarity, equality, and respect for human rights involving democratic strategies and an open climate of cultural interchange.
7. Environmental education should treat critical global issues, their causes and inter-relationships in a systemic approach and within their social and historical contexts. Fundamental issues in relation to de-

velopment and the environment, such as population, health, peace, human rights, democracy, hunger, degradation of flora and fauna, should be perceived in this manner.

8. Environmental education must facilitate equal partnerships in the processes of decision-making at all levels and stages.
9. Environmental education must recover, recognize, respect, reflect and utilize indigenous history and local cultures, as well as promote cultural, linguistic and ecological diversity. This implies acknowledging the historical perspective of native peoples as a way to change ethnocentric approaches, as well as the encouragement of bilingual education.
10. Environmental education should empower all peoples and promote

opportunities for grassroots democratic change and participation. This means that communities must regain control of their own destiny.

11. Environmental education values all different form of knowledge. Knowledge is diverse, cumulative and socially produced and should not be patented or monopolized.
12. Environmental education must be designed to enable people to manage conflicts in just and humane ways.
13. Environmental education must stimulate dialogue and cooperation among individuals and institutions in order to create new lifestyles which are based on meeting everyone's basic needs regardless of ethnic, gender, age, religious, class, physical or mental differences.
14. Environmental education requires

a democratization of the mass media and its commitment to the interests of all sectors of society. Communication is an inalienable right and the mass media must be transformed into one of the main channels of education, not only by disseminating information on an egalitarian basis, but also through the exchange of means, values and experiences.

15. Environmental education must integrate knowledge, skills, values, attitudes and actions. It should convert every opportunity into an educational experience for sustainable societies.
16. Education must help develop an ethical awareness of all forms of life with which humans share this planet, respect all life cycles and impose limits on humans' exploitation of other forms of life.

3

Plan of Action

The organizations that sign this Treaty will implement policies to:

1. Turn the declarations of this Treaty and other Treaties produced by the Conference of Citizens' Groups during the RIO 92 process, into documents for use in formal education systems and in education programmes of social movements and social organizations.
2. Work on environmental education for sustainable societies together with groups that draft other Treaties approved during RIO 92.
3. Make comparative studies of the treaties of citizens' groups and those produced by the United Nations Conference on Environment and Development (UNCED) and use the conclusions in educational activities.
4. Work on the principles of this Treaty from the perspective of local situations, necessarily relating them to the state of the planet, creating a consciousness for transformation.

5. Promote knowledge, policies, methods, and practices in all areas of formal, informal and non-formal environmental education and for all age groups.
6. Promote and support training for environmental conservation, preservation and management, as part of the exercise of local and planetary citizenship.
7. Encourage individuals and groups to take positions, and institutions to make policies, that constantly review the coherence between what is said and what is done, as well as the values of our cultures, traditions and history.
8. Circulate information about people's wisdom and memory, and support and inform about appropriate initiatives and technologies in relation to the use of natural resources.
9. Promote gender co-responsibility in relation to production, reproduction and the maintenance of life.

10. Stimulate and support the creation and strengthening of ecologically responsible producers' and consumers' associations, and commercial networks, that provide ecologically sound alternatives.
11. Sensitize populations so that they establish Peoples' Councils for Environmental Management and Ecological Action to research, discuss, inform and decide on environmental problems and policies.
12. Create educational, judicial, organizational and political conditions to guarantee that governments allocate a significant part of their budgets to education and the environment.
13. Promote partnership and cooperation among NGOs, social movements, and the UN agencies (UNESCO, UNEP, FAO, and others) at national, regional and international levels to jointly set priorities for action in education, environment and development.

6

Resources

All signatories of this Treaty are committed to:

1. Allocating a significant part of their resources to the development of educational programmes related to an improvement of the environment and quality of life.
2. Demanding that governments allocate a significant percentage of Gross National Product to supporting programmes of environmental education
3. Proposing economic policies that stimulate business to develop and apply appropriate technology and create environmental education programmes for the community, and as part of personnel training.
4. Encouraging funding agencies to prioritize and allocate significant resources to environmental education and ensure its presence in projects they approve wherever possible.
5. Contributing to the formation of a cooperative and decentralized global banking system for NGOs and social movements that will use part of its resources for educational programmes and at the same time be an exemplary exercise in using financial resources.

Background to the Treaty

The aim of the Treaty on Environmental Education for Sustainable Societies and Global Responsibility is to elicit the commitment of all active and interested people to a series of principles.

The process that led to the drafting of this Treaty can be described in the following stages:

I.

The elaboration of a Charter on Environmental Education in four languages, with the subsequent collection and systematization of comments improving and modifying it from five continents between August 1991 and March 1992.

II.

In March 1992, the then Charter on Environmental Education was introduced at the 4th Preparatory Committee (PrepCom) in New York where it was re-drafted by the NGO Education Working Group, which ex-

panded it not only in terms of its concepts but also in its format and the composition of the group responsible for its development. It thus took on the characteristics of a Treaty, an international agreement to be signed by individuals and organizations concerned with education.

Guidelines were given by the NGO Coordination Group for UNCED for the drafting of documents that contained the following sections: Introduction, Principles, Plan of Action, Coordination and Monitoring Mechanisms, Groups to be Involved, and Resources. The first two sections were discussed in New York.

III.

In April/May 1992 the texts drafted in New York were once again circulated internationally, thereby complet-

ing the drafts of the other four sections.

Finally this text was translated into four languages and printed for discussion in the Journey on Environmental Education in the context of RIO/92.

IV.

During the Journey in June 1992 a last stage in the drafting of the text led to a final version after 14 hours of discussion in plenary sessions and workshops, and many hours of incorporating and editing the additional proposals into the text. This version was then translated into the four languages adopted by the International NGO Forum.

The official launch of the Treaty took place on 7 June 1992, during an Eco-Carnival Parade with the participation of 2000 children from the Samba School, Flowers for

Tomorrow, Brazil.

On 9 June the Treaty was presented to the plenary session of the International NGO Forum, after which the group met to discuss specific points which still required consensus. Some additional comments were made in the plenary and are included in an annex, reflecting the start of a new stage of implementing the Treaty which began in Rio. The process then also started to collect the signatures of those supporting and committed to the implementation of the Treaty.

V.

On 12 June the Treaty was accepted in a plenary meeting by the International Forum of NGOs and Social Movements.

An international commission was set up to implement the treaty.

For further information please contact:

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14. Promote the creation and strengthening of national, regional and international networks for joint action between organizations of the South, North, East and West with a planetary perspective (e.g. foreign debt, human rights, peace, global warming, population, contaminated products).

15. Ensure that the media becomes an educational instrument for the preservation and conservation of natural resources presenting a plurality of views and reliable and contextualized information; and stimulate the broadcasting of programmes generated by local communities.

16. Promote an understanding of the causes

of consumerist behavior and act to change practices and the systems that maintain them.

17. Search for self-managed, economically and ecologically appropriate alternatives of production which contribute to an improvement in the quality of life.

18. Act to eradicate sexism, racism and any other prejudices, as well as contribute to the promotion of cultural diversity, territorial rights and self-determination.

19. Mobilize formal and non-formal institutions of higher education in support of teaching, research and extension towards the community

in environmental education, and the creation, in each University, of interdisciplinary centres for the environment.

20. Strengthen social organizations and movements in order to enhance the exercise of citizenship and an improvement in the quality of life and the environment.

21. Assure that ecological organizations popularize their activities and that communities incorporate ecological issues in everyday life.

22. Establish criteria for the approval of education projects for sustainable societies, discussing social priorities with funding agencies.

4

Coordination, Monitoring and Evaluation Systems

All signatories of this Treaty agree to:

1. Distribute and promote the Treaty on Environmental Education for Sustainable Societies and Global Responsibility in all countries, through joint campaigns by NGOs, social movements and others.

2. Stimulate and create organizations and groups of NGOs and social movements to initiate, implement, follow, and evaluate the elements of this Treaty.

3. Produce materials to publicise this Treaty and its unfolding into educational action, in the form of texts, educational materials, courses, research, cultural events, media programmes, fairs of popular creativity, electronic mail, and other means.

4. Form an international coordination group to give continuity to the proposals in this Treaty.

5. Stimulate, create and develop networks of environmental educators.

6. Ensure the 1st Planetary Meeting of Environmental Education for Sustainable Societies is held within three years.

7. Coordinate action to support social movements which are working for improving the quality of life, extending effective international solidarity.

8. Foster links between NGOs and social movements to review their strategies and programmes on environment and education.

5

Groups to be Involved

This Treaty is aimed at:

1. Organizations of social movements—ecologist, women's, youth, ethnic, farmers', union, neighbourhood, artistic groups, and others.

2. NGOs committed to grassroots social movements.

3. Professional educators interested in establishing programmes related to environmental issues in formal education systems and other educational activities.

4. Those responsible for the mass media who are ready to accept the challenge of openness and democracy, thus initiating a new concept of mass communication.

5. Scientists and scientific institutions that take ethical positions and are sympathetic to the work of social movements and organizations.

6. Religious groups interested in working with social organizations and movements.

7. Local and national governments able to act in tune and in partnership with the aims of this Treaty.

8. Business people committed to working within a rationale of recovery, conservation and improvement of the environment and the quality of life.

9. Alternative communities that experience new lifestyles in harmony with the principles and aims of this Treaty.



Treaty on Environmental Education for Sustainable Societies and Global Responsibility

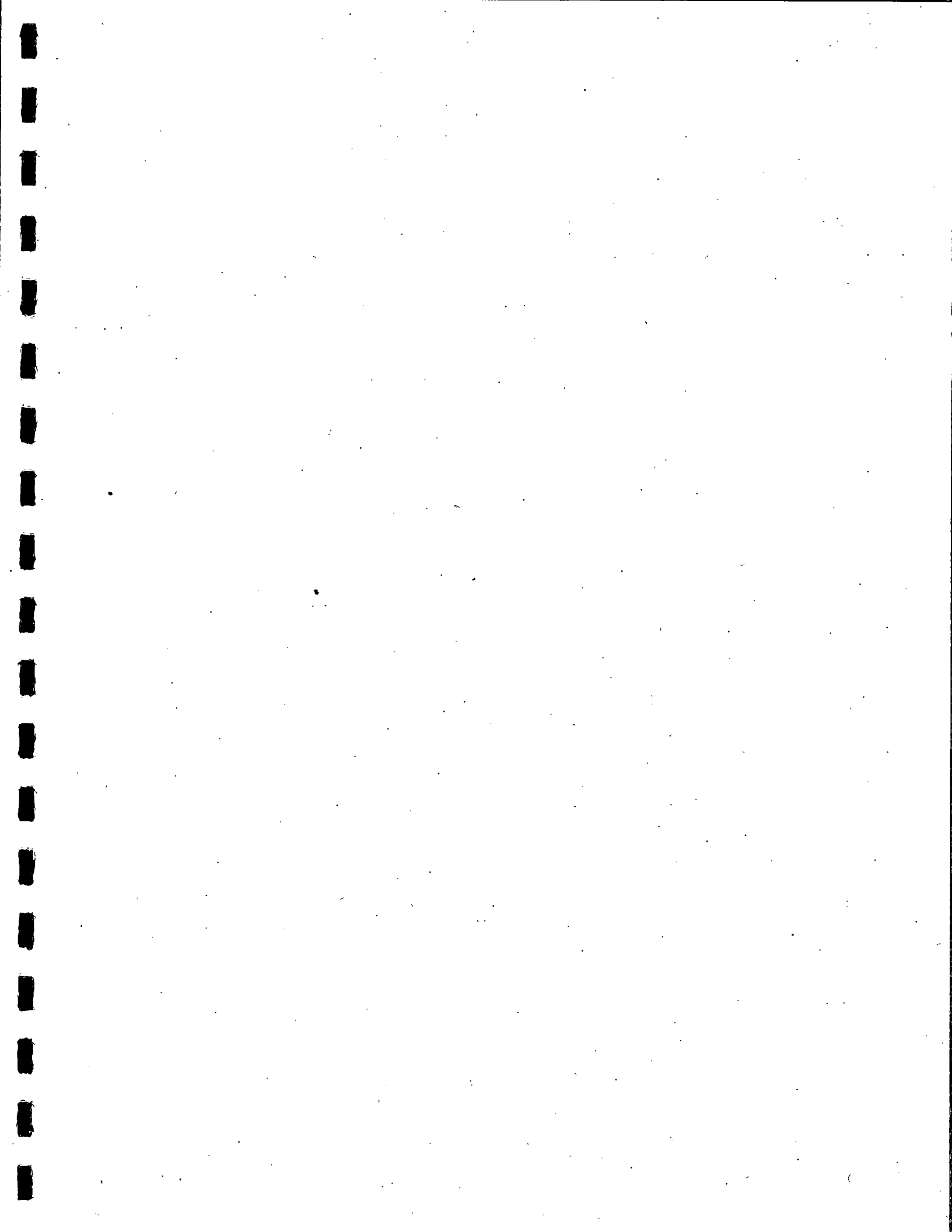
Name			
Organization			
Address			
Telephone			
Fax			
E-mail			
<input type="checkbox"/> Answering for organization		<input type="checkbox"/> Answering as individual	
<input type="checkbox"/> I agree to participate in the implementation of the Treaty on Environmental Education for Sustainable Societies and Global Responsibility.		<input type="checkbox"/> I would like to collaborate on the implementation of the Treaty, but I would like to modify some of the language it presently contains.	
<input type="checkbox"/> I agree to participate in future actions for the distribution of the Treaty.		<input type="checkbox"/> I am not prepared to sign the Treaty, but I would like to receive more information on the Treaty and its development.	
<input type="checkbox"/> I am prepared to carry out the following actions related to the implementation of the Treaty on Environmental Education for Sustainable Societies and Global Responsibility.			
Signature			Date

Please send your response to:

Moema L. Viezzer / Tratado de Educación Ambiental
REDE MULHER
Caixa Postal 1803 CEP 0505-970 Sao Paulo SP Brasil
Tel: 011 873 2803; Fax: 011 62-7050; E-mail: ax:rmulher

This questionnaire is being distributed by:

NAME OF ORGANIZATION/GROUP



DEVELOPING
A COOPERATIVE
FRAMEWORK
for
SUSTAINABLE
DEVELOPMENT
EDUCATION

Learning for a Sustainable Future


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DEVELOPING
A COOPERATIVE
FRAMEWORK
for
SUSTAINABLE
DEVELOPMENT
EDUCATION

INTRODUCTION

We accept, as a working premise, the definition of sustainable development to be development that meets the needs of present generations without compromising the ability of future generations to meet their own needs. It implies that the global community must urgently work towards finding a sustainable relationship between ecological preservation and economic development.

Sustainable development is not a "quick-fix" for complex and interrelated environmental crises, it is a context for rethinking traditional assumptions about human interactions with the planet and with each other. It implies profound change in political, economic and social structures, policies, attitudes and behaviour, and new areas of cooperation and partnership. Sustainable development is a global framework for cooperation within which each country can develop its own strategies for the 21st century.

The primary goal of "Learning for a Sustainable Future" is to facilitate, within each province and territory, the discussion and planning necessary to integrate concepts and principles of sustainable development in all subject matters through the participation of educators (teachers, trustees, superintendents, principals, departments of education officials) and education partner-groups involved with students at the elementary and secondary levels.

The role of "Learning for a Sustainable Future" is to:

1. facilitate meetings, financially and otherwise of different stakeholders to begin the necessary complex discussions with each province and territory on sustainable development and its implications for education, and to consider appropriate recommendations for education of provincial Round Tables on the Environment and the Economy;
2. develop some contexts to advance the discussion - such as *Developing a Cooperative Framework for Sustainable Development Education* and to coordinate and disseminate the widening responses and emerging consensus;
3. offer support for aspects of implementation - such as teacher education and cross-curricular teaching strategies - through the provision of funding or the development of workshop materials, etc.; once provinces and territories have developed programs;
4. develop, as part of the implementation process, partnerships among business, government and foundations to gather intellectual and financial support for the programs;
5. identify successful existing initiatives, support and disseminate models of innovation in curriculum planning, classroom strategies, materials development, community projects, etc. to serve as examples that would help educators and students to understand sustainable development and to use their own creativity in implementing it.

"Learning for a Sustainable Future" grew out of the work of the Sub-Committee on Communication and Education of the National Round Table on the Environment and the Economy. Today, it is a multi-stakeholder, independent, non-profit organization committed to facilitating discussion and planning around the concept and the principles of sustainable development in the Canadian school system. The Board of Directors is made up of representatives from education, government as well as the corporate and non-profit sectors.

INTRODUCTION

To assure ourselves of initial support, we have consulted with: departments of education and environment from across the country, the Council of Ministers of Education, Canada and the Canadian Council of Ministers of Environment, several federations of teachers, trustees, superintendents, provincial and territorial round tables on the environment and the economy, business organizations, as well as with national and provincial organizations involved in education in general, in environmental education, global education and development education. All have shown great interest and desire to get involved in one way or another. Our consultations confirmed our belief that the planning processes should include representatives from as many stakeholders as possible.

The Program's approach reflects the reality that Canada's provinces and territories will find their own rationale and choose methods most appropriate to implement their own programs for sustainable development education. As the complexity of the undertaking becomes clearer, our role as facilitator of the initial stages of discussion and planning has been welcomed as useful and appropriate. Ultimately, we hope that formal education systems will refer to our broad recommendations and principles in determining the most appropriate ways to incorporate the issues and challenges of sustainability into their policies, guidelines, programs, training, etc..

The consultation phase should be completed by the end of 1993. We expect the planning process in all provinces and territories to be underway by early 1994. Programs approved by the provinces and territories could then begin to be implemented by the end of that year.

In several provinces, the program development phase is already underway. To date, we have co-hosted stakeholders' meetings in cooperation with departments of education, provincial round tables and global education projects of teachers' federations in British Columbia, Alberta, Manitoba, Québec, New Brunswick, Nova Scotia and Newfoundland.

These meetings brought together teachers, trustees, school administrators, provincial government officials (education, environment, natural resources, industry, health), environmental organizations, business associations and representatives of faculties of education. The result was unanimous agreement on the need for commitment to future action.

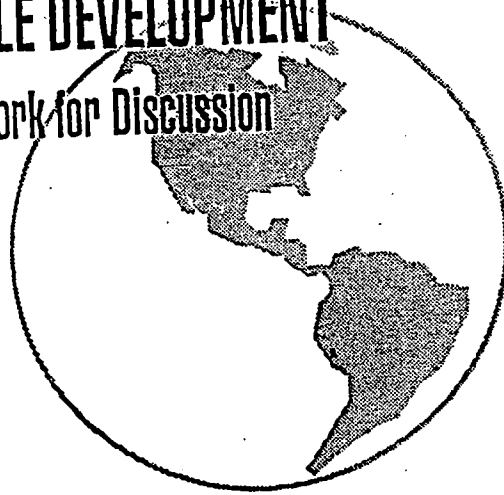
During the next school year, we expect to hold teaching strategy advisory seminars with key educators. We will seek out their help in planning and executing local workshops where that is part of the provincial or territorial program. With these seminars, we also expect to set the stage for provincial and territorial as well as local networks on sustainable development education. We do not expect to create new legal entities to support this endeavour but to work in collaboration with existing networks and organizations. We hope to produce a guide for teachers and others on ideas for teaching skills and encouraging values. We will present some outlines of suggested content at these advisory seminars and will be asking for advice.

Finally, we have developed this *Cooperative Framework for Sustainable Development Education* for discussion on the implications of sustainable development education and have disseminated over 650 draft documents across the country to key stakeholders. We have received thoughtful and generally supportive commentaries and suggestions from more than 100 respondents which have been incorporated into the final document.

PART ONE

SUSTAINABLE DEVELOPMENT

A Framework for Discussion



EDUCATION for a Sustainable Future: The Knowledge, Skills and Values needed

Like the society it serves and will shape, today's education is in transition, searching to identify elements of change, to preserve the cornerstones of traditional values and to test tentative and optimistic assumptions about the world of future generations. It is time to reflect, to remember, to set contexts and to develop viable plans so that the transition can be made as smoothly as possible into a more sustainable 21st century. The clearest, most urgent and riveting context that education has ever been presented with is that of its contribution to the survival of society and its planetary environment, and beyond that, its contribution towards a sustainable future.

This perception of the future suggests what knowledge, skills and values are central to education for sustainable development.

This framework document is an attempt to set out a context in which learning relevant to the challenge facing educators can be viewed. It is in no way intended to impose a model for curriculum planning, rather it is a perspective for reflection on the implications of education for a sustainable future and for curriculum approaches to attain it.

In this context, a solid foundation of the basic skills of literacy, numeracy, geographic perceptions and methodologies for scientific inquiry is needed. It has never been more crucial to have a literate and trained population.

We believe the framework incorporates the idea that change will continue to take place all over the world and that we must constantly reassess the knowledge, skills and values that students must learn.

Knowledge Needed:

- 1 The planet earth as a finite system and the elements that constitute the planetary environment.

Our society is currently undergoing far-reaching changes in the structure of families, in the composition of the population, and in the nature of the economy. Other trends, such as the information explosion, the impact of new technologies, changes in the workplace, the increasing fragility of the environment, and concerns about changes in the values and institutions that have formerly been a source of stability in our society all dictate a review of traditional models and approaches in education. Responding successfully to these changes and to changes in the student population - including the influx of adults who are returning to continue their education - requires new ways of thinking about and organizing curriculum.

The Common Curriculum, Grades 1-9, February 1993
Ontario Ministry of Education and Training

- 2 The resources of the earth, particularly soil, water, minerals, etc., their distribution and their role in supporting living organisms.
- 3 The nature of ecosystems and biomes, their health and their interdependence within the biosphere.

EDUCATION FOR A SUSTAINABLE FUTURE: THE KNOWLEDGE, SKILLS AND VALUES NEEDED

- 4 The dependence of humans on the environmental resources for life and sustenance.
 - 5 The sustainable relationship of native societies to the environment.
 - 6 The implications of resource distribution in determining the nature of societies and the rate and character of economic development.
 - 7 Characteristics of the development of human societies including nomadic, hunter-gatherer, agricultural, industrial and post-industrial, and the impact of each on the natural environment.
 - 8 The role of science and technology in the development of societies and the impact of these technologies on the environment.
 - 9 Philosophies and patterns of economic activity and their different impacts on the environment, societies and cultures.
 - 10 The process of urbanization and the implications of de-ruralization.
 - 11 The interconnectedness of present world political, economic, environmental and social issues.
 - 12 Aspects of differing perspectives and philosophies concerning the ecological and human environments.
 - 13 Cooperative international and national efforts to find solutions to common global issues, and to implement strategies for a more sustainable future.
 - 14 The implications for the global community of the political, economic and socio-cultural changes needed for a more sustainable future.
 - 15 Processes of planning, policy-making and action for sustainability by governments, businesses, non-governmental organizations and the general public.
- Skills Needed:**
- 1 Frame appropriate questions to guide relevant study and research.
 - 2 Define such fundamental concepts as environment, community, development and technology, and apply definitions to local, national and global experience.
 - 3 Use a range of resources and technologies in addressing questions.
 - 4 Assess the nature of bias and evaluate different points of view.
 - 5 Develop hypotheses based on balanced information, critical analysis and careful synthesis, and test them against new information and personal experience and beliefs.
 - 6 Communicate information and viewpoints effectively.
 - 7 Work towards negotiated consensus and cooperative resolution of conflict.
 - 8 Develop cooperative strategies for appropriate action to change present relationships between ecological preservation and economic development.

EDUCATION FOR A SUSTAINABLE FUTURE: THE KNOWLEDGE, SKILLS AND VALUES NEEDED

Values Needed:

- 1 An appreciation of the resilience, fragility and beauty of nature and the interdependence and equal importance of all life forms.
- 2 An appreciation of the dependence of human life on the resources of a finite planet.
- 3 An appreciation of the role of human ingenuity and individual creativity in ensuring survival and the search for appropriate and sustainable progress.
- 4 An appreciation of the power of human beings to modify the environment.
- 5 A sense of self-worth and rootedness in one's own culture and community.
- 6 A respect for other cultures and a recognition of the interdependence of the human community.
- 7 A global perspective and loyalty to the world community.
- 8 A concern for disparities and injustices, a commitment to human rights, and to the peaceful resolution of conflict.
- 9 An appreciation of the challenges faced by the human community in defining the processes needed for sustainability and in implementing the changes needed.
- 10 A sense of balance in deciding among conflicting priorities.
- 11 Personal acceptance of a sustainable lifestyle and a commitment to participation in change.
- 12 A realistic appreciation of the urgency of challenges facing the global community and the complexities that demand long-term planning for building a sustainable future.
- 13 A sense of hope and a positive personal and social perspective on the future.*
- 14 An appreciation of the importance and worth of individual responsibility and action.

DOCUMENT DE TRAVAIL

**ÉDUCATION RELATIVE A L'ENVIRONNEMENT
EN RÉGION AMAZONIENNE**

PROJET EDAMAZ

**DÉVELOPPEMENT D'UN
PROGRAMME-CADRE
DE FORMATION DES ENSEIGNANTS**

Ce projet est piloté par
L'INSTITUT DES SCIENCES DE L'ENVIRONNEMENT
Université du Québec à Montréal

Organismes associés:
ASSOCIATION DES UNIVERSITES AMAZONIENNES (UNAMAZ)
ORGANISATION UNIVERSITAIRE INTERAMERICAINE (OUI)
CONSORTIUM-RED D'ÉDUCATION A DISTANCE (CREAD)

Juin 1994

THE EDAMAZ PROJECT

The EDAMAZ distance education project concerns the in-service professional development of school teachers of the Amazonian region in Environmental Education (EE). In this project, school is considered to be the focal point of the pedagogical dynamic of environmental education within a community, and teachers must acquire competencies to become actors in this dynamic.

The EDAMAZ professional development program in EE is community-based. It also adopts the following principles: autonomy of educational agents, cooperation between the learners, pertinence of learning activities with regard to the characteristics of the specific environment of each region, practical orientation, and critical approach of environmental and social realities. The project involves five main phases: an initial preparation phase, program development, pilot projects, program improvement, and the dissemination of the results of the program.

This project is co-directed by the Institut des sciences de l'environnement of the Université du Québec à Montréal (ISE), CREAD, Association of Amazonic Universities (UNAMAZ), and IOHE. Three universities from UNAMAZ are now directly cooperating in this project. They are the Universidad Gabriel René Moreno (Bolivia), Profesora Aura Teresa Barba, coordinator; Universidad Federal do Mato Grosso (Brazil), Profesora Michele Sato, coordinator; and Universidad de la Amazonian (Colombia), Profesora Clara Lucía Higuera, coordinator.

Dr. Lucie Sauvé from the Université du Québec à Montréal will be responsible for the pedagogical and research aspect of the project. Dr. Jean-François Léonard, director of ISE, and Dr. Armando Villarroel, executive director of CREAD, will be responsible for the overall project, especially the administrative part of it. The Amazonian partners who will be implementing the project are qualified professionals with significant institutional support.

The initial phase of the project concluded with a three-week visit by Dr. Sauvé to the three institutions directly involved in the project. The second phase is expected to start shortly. → *a workshop in*

FOR INFORMATION CONTACT: *Page 6*
Dr. Lucie Sauvé *27-30*
Université du Québec à *June*
Montréal *1994*
C.P. 8888, sucr. A
Montréal, Québec J3L 4A7
Canada
telephone (514) 987-6992
fax (514) 987-4608

Expected Results

A deeper understanding of the role of transformative learning as it pertains to environmental action.



Identification of criteria for success in transformative learning through environmental action, and ways of working within this context.



Evaluation of selected regional initiatives which centre learning process around food production-dissemination-consumption and the maintenance of biodiversity.



Publication of a book based on the process and outcomes of the workshop, the case studies and the conceptual working papers (in english and portuguese).



Production of a video based on the above.

.....
For further information or to become part of the global survey please contact:

Budd Hall

Transformative Learning Centre
Ontario Institute for Studies in Education
252 Bloor St. West - Toronto, Ontario M5S 1V6
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E-Mail: ES050043 @ ORION.YORKU.CA

Illustration: ISIS International
.....

TRANSFORM  TRANSFORM

**Transformative
learning
through
environmental
action project**

An international study

The Project

This research project is supported by the International Development Research Centre (IDRC) located in Ottawa, Canada, and is a joint project of CEMINA, a Brazilian women and environment NGO, the Faculty of Environmental Studies at York University and the Transformative Learning Centre of Ontario Institute for Studies in Education (OISE), both in Canada.

The studies focuses on environmental action in the context of production, dissemination and consumption of food and maintenance of biodiversity. It is formed by the Citizen's Treaty on Environmental Education of Sustainable Societies and Global Responsibility coming out of the UNCED/Global Forum process. The study understands transformative learning as a process of learning, whether informal or non-formal education, which begins with the daily lived experiences of women and men living in communities and is linked to changing the root causes of environmental destruction or damage. It is also concerned with knowing ourselves as a mammalian species trying to live more lightly, cooperatively and creatively in the biosphere. Learning implies dynamic, life-long processes of discovering and re-discovering what we know about nature, and how we live and teach and learn from one another within our differing environments.

.....

Key Objectives

General

Work collectively to establish criteria and guidelines for strengthening transformative learning in the context of environmental action.

Specific

1. To analyse the role of transformative learning in the case studies focusing on the learning process through environmental action as defined through the content, methodology and learning materials.
 2. To evaluate the potential for transformative learning implicit in the materials used for environmental education, in concrete initiatives in different regions which connect food production-dissemination-consumption and the maintenance of biodiversity.
 3. To learn about and articulate regional initiatives in transformative education through environmental action.
 4. To give visibility to a wide variety of initiatives.
 5. To disseminate the learning experiences from this project through the case studies, the survey, the working papers and the electronic network in cooperation with other interested networks and organizations.
-

Major Activities

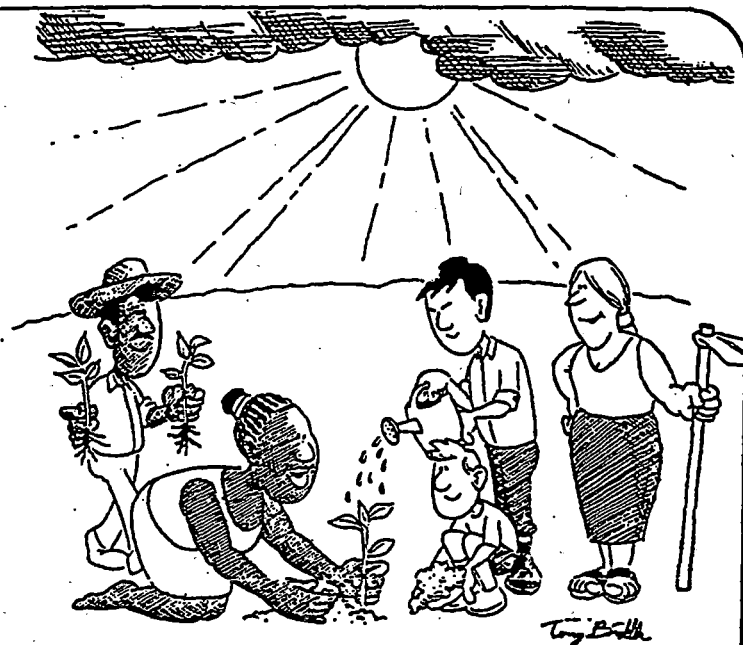
1. Develop various conceptual working papers dealing with the central concepts of transformative learning through environmental action as seen through a gendered approach to environment and linked to the specific focus on food production-dissemination-consumption and biodiversity.
2. Identify various case studies from the different regions of world which focus on transformative learning.
3. Undertake an international survey of transformative education initiatives.
4. Compile a major annotated bibliography of scholarly materials, articles, popular writings, government policies which discuss the key concepts of the study/project.
5. Organize a collaborative workshop for the analysis of how transformative learning works for the authors of the case studies and project team members.
6. Document the setting-up and use of an electronic computer-based network for project administration, conceptual development and information sharing.

TRANSFORMATIVE LEARNING

THROUGH

ENVIRONMENTAL ACTION

An international survey



GREETINGS We cordially invite you to fill out this survey and return it to us for inclusion in an international directory of organizations engaged in transformative environmental education work. We wish to validate and celebrate transformative learning in the context of agricultural practices that honour the land and its peoples. Such a directory will enable us to begin sharing information and linking the thousands of emerging efforts in the global grassroots movement creating a more sustainable future for the planet.

WE ARE part of a north-south collaborative research project, *Transformative Learning Through Environmental Action*, undertaken by three research teams, one in São Paulo, Brazil and two in Toronto, Canada. The project is funded by the International Development Research Council of Canada.

This project is our concrete effort following up on the course of action set forth in the Treaty on "Environmental Education for Sustainable Societies and Global Responsibility", an historic document created by unprecedented international consensus within the global NGO community. The treaty was finalized and released at the NGOs' Forum at UNCED in São Paulo, Brazil in 1992. We believe in and support the values and principles contained within that document. We have attached a copy of the treaty and a treaty action form for you.

TRANSFORMATIVE LEARNING for environmental action, we believe, happens through formal and/or non-formal education which begins with the daily lived experiences of people and is linked to changing the root causes of environmental damage and destruction. It is concerned with knowing ourselves as a mammalian species trying to live more lightly, cooperatively, and creatively in the biosphere. This implies a life-long process of discovering and rediscovering what we know about nature, and how we live, teach and learn from one another within and across our differing environments. Some key characteristics of transformative learning are that it:

- encourages collective and social learning
- is based in specific languages, cultures and bioregions
- supports indigenous, local solutions to problems
- leads to action for social change by redressing power inequalities with respect to race, gender and class





OUR THEME is environmental learning practices which are directly involved in food production, distribution and consumption. This project seeks to research efforts that are building a more sustainable agriculture, and/or are validating, strengthening and propagating existing sustainable systems. We are using the idea of biodiversity (e.g. seeds, the food grown, the meals eaten, the farming techniques, etc) as a guiding concept for successful agricultural and community practices.

In addition to this survey and directory we are also conducting research which includes: analysis of seven case studies from different regions of the world, an International Case Study Reflection workshop and a series of conceptual working papers.



PLEASE CONSIDER Participating in our work. All of the information we gather in this survey will be in the public domain, and will be presented in the form of an international directory of organizations. Each participating organization will be sent a copy upon request. If you decide to answer, you have the right to be as candid or as discrete as you wish about your organization's identity and the work it does. Since the nature of this project is to celebrate and validate successes in environmental learning projects, we encourage you to be as candid as possible in your answers, and those who wish to be in the directory must identify themselves and their locations.

The following survey contains questions on the nature of your organization and its relation to transformative learning and environmental action. If you need more space for your answers than we have provided, please feel free to use additional paper.

WHO ARE YOU?

Organization name (in full): _____

Address: _____

Telephone: _____ Fax: _____

E-Mail: _____

Languages spoken: _____

Number of staff: _____ Number of members (if you are a membership organisation): _____

Staff positions (contact people):

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Mission Statement or Statement of Purpose: _____

LAND AND CLIMATE

Your specific location. Latitude: _____ Longitude: _____

Climate (general description): _____

Mean annual rainfall: _____ Mean annual temperature: _____

Seasonal temperatures: _____

Topography: _____

Vegetation: _____

Wildlife: _____

Domesticated animals: _____

Soil conditions: _____

Growing season (length; specific months): _____

FOOD

Foods grown for domestic consumption: _____

Foods grown for export: _____

What percentage of total food production is consumed domestically?: _____

What percentage of total food production is exported?: _____

How is food distributed in your country: (state, private, other)?: _____

What are the staple foods in your bioregion?: _____

PROJECT INFORMATION

(please concentrate on projects that have to do with learning and food production)

Specific objectives: _____

Brief description of project/s: _____

Type(s) of funding: _____

Duration of project: _____

Constituencies served:

women

age (specify) _____

class (specify) _____

specific ethnic group (please identify) _____

other: _____

Describe briefly your project's relevance to environmental problems in your local area: _____

Your project's connections to global concerns: _____

YOUR PRACTICE OF ENVIRONMENTAL LEARNING

Describe the characteristics of education within your environmental practices: _____

What criteria are important in evaluating the success of your education work?: _____

What kinds of skills, training, material resources and/or other forms of support do you need most to further your environmental learning work (from non-governmental organizations, peoples' organizations, social movements, global networks)?:

FUTURE VISIONS

What kind of environmental projects do you envision and/or plan for the future?: _____

Please return the completed survey (and any other information you wish to include) to:
Transformative Learning Project, Faculty of Environmental Studies, York University
4700 Keele Street, North York, Ontario, CANADA, M3J 1P3

or fax to: (416) 736-5679

Please send my organization a copy of the international directory when it is finished.

TRANSFORMATIVE LEARNING THROUGH ENVIRONMENTAL ACTION

RESEARCH PROJECT

ANNOTATED BIBLIOGRAPHY TRANSFORMATIVE LEARNING THROUGH ENVIRONMENTAL ACTION RESEARCH PROJECT

As of
June 30, 1994

CEMINA AND REDE MULHER, BRAZIL
TRANSFORMATIVE LEARNING CENTRE, ONTARIO INSTITUTE FOR STUDIES IN EDUCATION, CANADA
FACULTY OF ENVIRONMENTAL STUDIES, YORK UNIVERSITY, CANADA

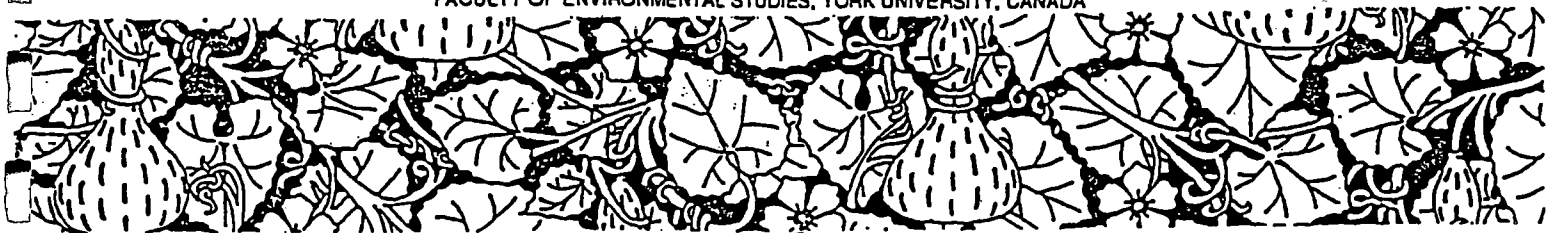


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TRANSFORMATIVE LEARNING THROUGH ENVIRONMENTAL ACTION
RESEARCH PROJECT**

Part A: Education

Women and Education

Red Mujer y CEAAL Seminar report "Seminario Sobre Educación Popular y Feminismo, Uruguay, October 1988

This report compiles key elements of discussions at a 1988 popular education and feminism seminar in Uruguay. Chapter one profiles some organizations and programs vis a vis the principle characteristics of women educators' work experience within them; gives a synthesis of some of the key theories of the place and role of women; and outlines methodologies which woman use in the popular education work. Chapter two evaluates the seminar's first session, then looks at pedagogical processes used with women's groups, describes personal feminist discoveries, and outlines some of the problems and obstacles which women face in doing popular education. This chapter concludes with an evaluation and reflections on the whole seminar.

Be N'Diaye, Soukeyna and Karimou Moussoulimou "Theory and Practice of Popular Education" in Voices Rising, (1) 1993

This report from the workshop of the women's program of the International Council for Adult Education held in Cape Town, South Africa gives suggestions how to run popular education workshops with an emphasis on gender issues. Suggestions include: establish a theoretical base which looks at the sexual division of labour; discuss with participants how and where male and female roles in society are learned; encourage people to talk about and feel comfortable with sexuality; and look at women's rights and roles in politics and structures. The report also outlines popular education, how it can empower women, and what the differences are between popular education and community education.

Weiler, Kathleen (1988) Women Teaching for Change: Gender, Class and Power. South Hadley: Begin & Garvey Publishers, Inc.

Women Teaching for Change challenges accepted critical educational and feminist theories, and reveals the day-to-day struggles and achievements of feminist teachers who encourage their students to become more politically conscious and aware of social forces which shape their lives. Chapter one "Critical Education Theory" looks at the role of schools as apparatuses of social reproduction and advocates awareness about the "relationship of schools to the wider society and to recognize the realities of class and gender relationships in terms of power and control." This chapter outlines the ways in which schools have promoted stereotypes of women, excluded them from history textbooks and steered women towards some courses and curricula and away from others. Chapter two uses a feminist analysis to look at gender and schooling, and Chapter three builds upon the work of feminist theorists who have created a feminist methodology and epistemology. Chapter four looks at the power of sexist practices and ideology to influence college and career choices for women. Chapter five "The Struggle for a

Critical Pedagogy" looks at the structural and institutional forces which hinder putting feminist ideals into practice. The final chapter looks at the issues of gender, race and class within the feminist classroom as a place to become conscious of the "realities of various forms of oppression and the realities of intersecting and conflicting forms of power."

Bishop, Anne (1988) "Cartoons and Soap Operas: Popular Education in a Nova Scotia Fish Plant" in Convergence 21(4): pp 27-32.

Bishop describes oppressive working conditions in the Nova Scotia fish plant in which the employees were underpaid women working long hours in unhealthy, unsafe conditions. The seasonal job was the only opportunity for paid work in the region for most of the women. Two workers began forming a chapter of the fish processor's union in the plant and, despite intimidation from the company owners, most of the employees approved the idea in an official vote. The author describes how, after this action, owners made working conditions worse and used various tactics to make the employees suspicious of and disappointed with the union. She also reflects on how difficult it was for the union to meet with women in the plant since meetings were not allowed on company premises and after work women had no time because of family responsibilities at home as wives and mothers. One chapter outlines the various steps taken which began by circulating a newsletter to the women which contained single-panel cartoons to characterize the relationship between the owners and the workers by an ongoing "soap opera"-type story about women working in a fish plant - a format very familiar to the women who regularly watched the television soaps during off-season. These measures encouraged everyone to discuss the conditions of their oppression as they related to the stories and cartoons. In the true Freirian tradition, their education eventually lead to action - first of all through support for the union, and then, as the plant went bankrupt and closed, they organized to form worker co-ops to give themselves employment.

Liz Mackenzie, (1992) Our Own Feet: Taking Steps to Challenge Women's Oppression, a handbook on gender and popular education workshops. Cape Town: CACE Publications.

This handbook focuses on the steps taken by women who challenge gender oppression and how they worked together to build solidarity with one another. It is a learning tool for community, adult and popular educators, organizers, facilitators and teachers. The handbook is based on three workshops held by the Centre for Adult and Continuing Education (CACE). The topics respectively addressed include: (1) some background understanding of terms used; (2) reports from the Talking Gender workshops, highlighting the everyday experiences of women living in southern Africa; and (3) exercises to help develop understanding and strategies for action. Chapter one outlines key concepts and terms regarding gender, and chapter two gives examples of where and how women's oppression happens around the world. Chapter three introduces popular education and its main principles. Chapters four and five offer practical ideas, and guidelines to facilitate workshops. Chapters six through nine provide background information on group building, exercises and activities for workshops.

Gaskell Jane and Arlene McLaren (1987) Women and Education, Calgary: Detselig Enterprises Ltd.

This publication is a compilation of various women writers who explore the relationship

between feminist research and education. The preface notes that although feminism has meant different things to different people, it has always insisted on the importance of gender: "Men and women do not live in 'separate but equal' spheres. What women do is valued and rewarded less than what men do." The book is divided into four major sections, whose themes draw attention to how feminist work has changed how we view education. Section one examines the study of teachers and mothers, those who are ultimately responsible for much of children's education, stressing the distinctive contributions of these people as women. The second section contrasts educational achievements of men and women, particularly, how schools perpetuate gender inequality through regulating access to skills, credentials, and ultimately the labour market. Section three examines "what counts as knowledge" and how women's experiences have been excluded from and misrepresented in curriculum. Section four focuses on adult women's non-formal education and training, and outlines future directions to promote gender equality in all learning institutions.

Transformative Learning/Popular Education

Núñez, Carlos (1985) *Educación para Transformar, Transformar para Educar*, Guadalajara: IMDEC

In this publication, Núñez explores the dialectical thought difference between what he terms the natural reality that humans can change and transform and the social reality (economic, political, cultural and ideological) which can be revolutionary and transformed by humans because it is a reality that s/he produces. He argues that the dialectic "is not a method of reduction, but of reproduction of the conscience and organization and struggle with the people pushing for necessary changes in order to occupy a protagonist's place in the building of a new society and new self." To Núñez, popular education means a new political and historic human ethic which is an integral part to the "humanization movement of a world in crisis." Chapters focus on: popular education as a key expression of the popular process and as a liberating force; the methodologies of popular education and working from the grassroots; and also the pedagogical and didactic aspects of popular education. Núñez also defines the role of the facilitator or educator within the process as well as the language of popular education because language is a manifestation of culture. (In Spanish)

Carpenter, Christine "The Experience of Spinal Cord Injury as Transformative Learning" in Proceedings of the 11th Annual Conference of CASAE. Saskatoon: University of Saskatchewan, 1992

Carpenter is a physiotherapist working with people with spinal cord injuries. She looks at such injuries as "a significant life event" which involves "a whole range of uniquely personal, social and economic factors." The author outlines a qualitative research approach chosen as the most appropriate to explore the "individual conceptions of the phenomenon of spinal cord injury." Carpenter groups the findings of her research into three themes: rediscovering self, redefining disability and establishing a new identity. This innovative process of learning, she believes, is premised on the adult's ability to make meaning of an experience. Furthermore, she believes that an integral part of self-reflective learning is action and "[a]ction resulting from self-reflective learning is emancipatory." The author outlines the three domains of learning. The first is

instrumental learning or task-oriented problem solving; the second is communicative learning which is grounded in social interaction and communication with others; and the third is transformative learning which demands the total engagement of people as integrated wholes. "Transformative learning is concerned with the development of self-knowledge through critical reflection...[which] differentiates transformative learning from other types of learning."

Hope, Anne and Sally Timmel (1984) Training for Transformation: Community Workers Handbook. Gweru: Mambo Press

This three-part handbook provides practitioners, educators and community workers with some tools to help people shape their own lives. Specifically, it looks at different methods of training for social transformation, combining reflection and action in a clear and simple manner. Part One discusses the theory of Paul Freire on developing critical awareness and how to put this theory into practice. Part Two focuses on the skills necessary for participatory education, the need for people to gain self-confidence and to value their own thinking. Part Three deals with the social analysis necessary to develop critical awareness and long-term planning and the steps needed for building solidarity in peoples' movements.

Jesuit Centre for Social Faith and Justice (1989) Naming the Moment: Political Analysis for Action. Toronto: Jesuit Centre for Social Faith and Justice

This manual provides community organizations with a methodology to analyze their actions in order to achieve social change in their particular fields. Chapter one elaborates on the process of political analysis for action called "naming the moment", here defined as "a rigorous examination of the balance of social forces in a given moment that can help us, acting in ways to advance our long and short term goals." Chapter two reviews the history of the concept and situates the practice in current social movements in Canada. The methodology is described in detail and supported by two case studies in chapters three and four. The final chapter suggests various ways in which groups and communities can integrate the naming the moment process into the daily of life of their organization. It also emphasizes the importance of linking analyses across issues and across group and community sectors.

Reed, David (1981) Education for Building a People's Movement. Boston: South End Press

This publication's stated purpose is "to empower people." The author identifies four basic principles to develop an empowering and transforming social education: "using learners' values and social interests to determine the purpose, direction and character of the learning process; making the social practice of the learners the basic content of the study process; linking the learners' practice to the historical development of society; and drawing on lessons and experiences of other progressive groups to improve learners' practice." The chapters describe the background of social unrest; develop the idea of creating new social knowledge; provide a case study on rebuilding a militant housing movement in which the aspects of a supportive process are defined; and outline how to structure a training programme to confront elitism in international solidarity work. The book concludes that evaluation in social pedagogy requires more than "judging the weaknesses and strengths of the learning process." Evaluation also must look at the learning process as a political act, understanding the relationship between this learning process

and the contradictions in society.

GATT FLY (1983) Ah-Hah!: a new approach to popular education Toronto: Between The Lines Publishing

This publication outlines the methods used by GATT-FLY in their Ah-Hah Seminars, an educational process of empowerment that makes participants aware of how the political, social and economic systems effects their individual experiences and lives. The term "Ah-Hah" is used because it is the word which colloquial English speakers exclaim "when they understand clearly for the first time something that they knew before in a partial or confused way." Among the themes discussed are the role of the animator and recorder and the development of action strategies. Three case studies using this method are outlined. The aim of the manual is to show individuals that once they have a basic understanding of the system they can then begin to analyze its effectiveness and take actions to achieve social justice.

al-Yahya, Abdul-Razzak (1990) "Popular Education and the Reinforcement of Democracy", Literacy, Popular Education and Democracy: Building the Movement. Toronto: International Council for Adult Education

This paper argues that popular education enables various sectors of the people to take part in developing democracy itself. It works to create awareness among the people of their rights and supplies them with the necessary tools to demand those rights. Al-Yahya outlines some of the challenges which Palestine has faced and their problems with illiteracy. He discusses the various concepts which Palestinian popular education apply in their struggles and the peoples' belief in the role which popular education plays in the development of a democratic society.

The Answers are in the Villages Bangkok: The Department of Non-Formal Education, 1986

This collection of experiences and case studies is derived from the Hill Areas Education Project, whose aim was to ensure community participation in various activities from planning through implementation to evaluation. The publication begins with the history, philosophy, goals and objectives of the project. Some of the case studies put an emphasis on transferring classroom learning into practice, "where it begins to affect their way of life" and therefore the learning becomes much more relevant. Others illustrate various problem-solving activities such as rice banks, cooperative stores, medicine banks, and water supply systems. All case studies are evaluated in terms of what worked or not, and why.

Arnold, Rick and Bev Burke (1983) A Popular Education Handbook: An Educational Experience from Central America and Adapted to the Canadian Context. Toronto: CUSO Development Education and OISE Publishing

The handbook's first section defines popular education and lists its characteristics; outlines the history of this learning process; and outlines what is needed to plan a popular education programme, by describing the methodology as well as the role of the popular educator. Chapter two gives workshop examples which can be used as a starting point and adapted to any number of situations. Chapter three looks at the various tools or techniques which can be used to build a popular education programme: sculpturing, socio-drama, role playing, drawing and song writing. Chapter four outlines various exercises which can be used within a program of popular

education to encourage maximum participation. The final chapter dispels fears of technology and shows how it can be used, simply and cheaply, to produce teaching tools such as videos, slide tapes, and audio cassettes. This handbook moreover is an example of a popular style of writing: clear, concise and filled with cartoons, photographs, tables, and drawings.

Vio Grossi, Francisco ed. (1988) Educación popular, sociedad civil y desarrollo alternativo. Santiago: Consejo Internacional de Educación de Adultos (CEAAL)

The ten papers in this book focus on popular education in Latin America. The first chapter by Francisco Vio Grossi outlines the definitions and roles of adult education in Latin America, beginning with the notion that "adult education is unity and diversity at the same time". Other chapters examine: the role of popular education in creating and determining alternative development models; the politics and civil society; and also the political functions of social movements. The essays present some emerging alternatives to the currently failing economic and social models, and how popular education can play a role.

Sang bagsak: Popular na edukasyon (1989) Manila: Philippine Peasant Institute

This comprehensive manual is written from the experience of the Philippine Peasant Institute. It discusses the role of education in society as a starting point in understanding the concept of popular education and gives an analysis of popular education in general. The manual outlines the necessary preparations for training as well as techniques in handling discussions based on the culture and traditions of the surrounding countryside.

Freire, Paulo and Donaldo Macedo (1987) Literacy - Reading the Word and the World. New York: Bergin and Garvey

This book extends the ideas of other works written by Freire on literacy. Authors Freire and Macedo attempt to redefine the interconnections between literacy, culture and education, to provide a better understanding of the meaning of literacy vis a vis popular education. Here, the examination of principles of critical consciousness and the pedagogy of knowing highlight, for example, how we never just "see" something, but that we always see it with respect to something else. By being able to codify life through literacy, people are able to recognize elements in their world, and as a result are able to view their world more objectively. This form of recognition is a key theme throughout the publication. Another theme which emerges is that of reinvention, specifically the reinvention of power. For example, Freire believes that teachers must have authority but not be authoritarian. Three of the chapters are written as dialogues between Freire and Macedo, mirroring the authors' own belief that learning should take place in dialogues rather than lectures. They believe that teachers should learn from students through dialoguing. These discussions highlight the significance of dignity in dialogue, and illuminate Freire's character and struggles. The book examines literacy in the United States, the literacy program in Guinea-Bissau with which Freire assisted, and Freire's literacy approach in the curriculum and literacy materials used in Sao Tome and Principe. The authors give insight into the politics of illiteracy and link it to cultural hegemony, oppression, and certain forms of resistance. The book's theoretical and practical notions evoke a tone of hope and possibility.

Filson, Glen, ed. (1991) A Political Economy of Adult Education in Nigeria. Ibadan: Ibadan

University Press

This book examines the interconnectedness of politics and economics in relation to adult education in present day Nigeria. The team of four authors did a study of the government of Nigeria's nonformal education, sponsored by Bayero University in Nigeria. The study was based on hundreds of interviews via questionnaires with adult education policy makers, administrators, teachers, and students within Nigeria's government and non-governmental organizations. The book includes the questionnaires and describes the methods of data collection. The evolution of Nigerian adult education is explored in relation to various levels of Nigeria's state apparatus. The present condition of adult education in three Nigerian states is reviewed and analyzed. The authors also provide some insights about the activities of the federal mass mobilization agency, MAMSER. Nigeria's economy and class structures are outlined with focus on issues of gender and adult education, pointing out that Nigerian women are disadvantaged in both formal and non-formal education sectors.

Freire, Paulo (1972) Pedagogy of the Oppressed. London: Penguin Books

In Pedagogy of the Oppressed, Paulo Freire speaks out for the Third World and underprivileged people. He states the purpose of a pedagogy for the oppressed and explains how the disparity between the oppressors and the oppressed can be overcome through a process of mutual liberation. An educational system in which teachers teach passive students is an instrument of oppression. For Freire, education should be a mutual process which liberates both teacher and student by using dialogue. Freire lobbies for the use of dialogics, which are characterized by cooperation, unity, organization, and cultural synthesis, rather than conquest, 'divide and rule' reasoning, manipulation, and cultural invasion. Moreover, he points out how men differ from animals. Freire sees literacy as a tool to create social change, and education as a means by which people can transform the world and liberate themselves. He provides us with a description of the role of the oppressed in revolutionary action.

Horton, Myles and Paulo Freire (1990) We Make the Road by Walking: Conversations on Education and Social Change. Philadelphia: Temple University Press

This book is a dialogue between Myles Horton and Paulo Freire about pedagogy, social criticism, and collective struggle. It discusses problems faced by educators who are concerned with linking participatory education to the practice of liberation and social change. Horton and Freire "speak a book" as their conversations are recorded on audiotape, and later transcribed and edited. The two men first discuss why they decided to embark on this venture and their approach to do so. They then discuss their youths, families, other memories and their respective cultures. Although Horton and Freire have experienced such different social contexts, they share a very similar theory and vision of education: They both deeply believe in the use of participatory education to empower the oppressed. They address whether education can be neutral, how the concept of authority fits into their thinking and practice, and give opinions on charismatic leadership and also on the differences between educating and organizing. They look at the educator, the role of intervention in the learning experiences of others, theory and practice in adult learning, and also the nature of social change and empowerment. In addition to discussing their views on theoretical questions, the two men relate aspects of their work in communities, workshops and classrooms, in different cultural settings. Through stories and anecdotes Myles

and Paulo relate their struggles to change systems from the inside rather than the outside, as well as cite examples from Latin America and North America. They end the dialogue by looking back at the people, the literature, and the events which influenced their thinking and their work.

Park, Peter et al. (1993) Voices of Change. Participatory Research in the United States and Canada. Toronto: OISE Press

Voices of Change focuses on transformative community actions that evolve from participatory research, a process "which supports the voices from the margins in speaking, analyzing, building alliances, and taking action." The process, writes editor Budd Hall, is "about the right to speak" and "part of the resistance to colonial or neocolonial research practices." The chapters describe specific projects in which a role for university-based researchers is shown not as at the centre of the process but instead "in the margins, in the communities with women, with people of colour, and so forth." The book's usefulness resides not only in step-by-step descriptions of diverse projects by respective university researchers, but moreover in their honest identification of a project's limitations and errors in judgement or assumptions from which readers can learn. Project examples range from several USA communities where citizens gathered environmental health data to expose the irresponsibility of scientific experts, to demand greater health protection, to engaging disabled citizens in strategies to have wider access to public spaces, helping formerly battered women gain more self confidence, exploring Canadian aboriginal leadership's achievements and flaws in its political movement, and examining the need to create wider democratic participation in the production of knowledge to counter the growing tendency of elite ownership of knowledge. The book's further premise, that university researchers must phase themselves out of their job in order for other participants to take control over their own lives, is powerfully illustrated in a chapter on North Bonneville, USA. Here, local citizens worked in partnership with university students to challenge successfully the US Army Corp of Engineers and the government in selecting and designing a new town site according to communal needs rather than according to the criteria and regulations initially dictated by the outsider institutions.

Leonard, Peter and McLaren, Peter, ed. (1993) Paulo Freire: A Critical Encounter. London and New York: Routledge

The editors' introduction acknowledges the contribution of Friere's writings in "the central political project of our time" which they name as: "how to struggle for the social transformation of our postmodern and postcolonial world in the interests of the liberation of subordinate populations and cultures from the structures and ideologies that dominate them." The scholars in this book who critique Friere therefore "stand on the same side of the political struggle" as Friere while they examine his contribution's strengths and limitations from their respective sites of struggle. The scholars include: Stanley Aronowitz, Henry A. Giroux, bell hooks, Colin Lankshear, Peter Leonard, Donaldo Macedo, Peter McLaren, Ira Shor, Tomaz Tadeu da Silva, Carlos Alberto Torres and Cornel West (who writes the foreword). They present a diversity of critical positions ranging from Afro-American feminist bell hooks to postmodernism and poststructuralism. As well, Giroux among others speaks to the danger of Friere's work being appropriated by those western

intellectuals who are grounded in a colonialist or post-colonialist perspective. Chapters by the respective scholars reflect the editors' ambivalence when they cite the "negative lesson of much of postmodern writing", that is, "it's inaccessibility" by "obscurity of language" while in the same breath arguing that the political struggle for new social conditions "invite and sometimes demand new and difficult vocabularies of meaning."

Plowman, Edward W., Thomas, Alan, ed. (1986) Learning and Development, A Global Perspective. Toronto: Symposium Series/15, OISE Press

The authors' diverse models open up conventional notions about "learning" and education in and beyond schools. The book's second, and interconnected, message is to recognize the merits of educational models grounded within respective cultures and to understand why the imposition of the Western model upon other cultures is inappropriate. Cultural examples provided by some authors include Albert Tevoedjre's focus on 'South-South' cooperation regarding agriculture, traditional medicines and inexpensive environmentally-suitable housing. L.G. Hewage challenges the 'East-West' dichotomy and outlines the Buddhist concepts for education, while Sri Lankan writer A.T. Ariyaratne describes the Buddhist-oriented Sarvodaya Shramadana movement that encompasses all aspects of learning and living. Francis M. Deng presents the traditional Dinka concepts of knowledge and learning and how these can be combined today with the knowledge and realities of the larger world. Madame Li Li, Director of Workers' and Peasants' Educational Development in Shanghai, explains the focus on adult education linked both "to production and the progress of society." Luis Alberto Machado, formerly Minister of State for the Development of Human Intelligence in the Venezuelan government, identifies how multi-linked programmes develop cognitive skills and creativity in school children. Other authors provide theoretical frameworks for global learning. Edward T. Hall distinguishes between 'low context' and 'high context' cultures which embody different learning styles. Majid Tehranian identifies two global trends 'transnationalism' and 'tribalization' and how these are interlinked with communications, democracy and development. Kenneth E. Boulding views two levels of human knowledge and learning as "the level of consciousness and reflection" and "the level of physiology" while Peter Holland suggests animal behaviour study has relevance to human global learning paths. Jorge Glusberg believes individuals must be made aware how their material and ecological environments influence their learning. Peter Montagnon outlines the merits of Britain's Open University partly based upon the use of television and radio to reach students not engaged in formal education. Donald A. Schon challenges "technical rationality" as the tendency of "professional knowledge" which de-legitimizes other ways of acquiring knowledge. Rex Nettleford elaborates on "the process of discovery" in combining an exploration of historical experience within one's cultural roots while also equally accepting "discreet knowledge rooted in the experience of peoples from all parts of the globe."

Pike, Graham, and Selby, David (1988) Global Teacher, Global Learner, London, Sydney, Auckland, Toronto: Hodder and Stoughton

This book is a practical guide for teachers and students combining theory and hands-on exercises, that address global education within the context of an interdependent world system, and describing methods for constructive critique of the status quo that transcend partisan politics. Four sections respectively focus

on the: global learner, global classroom, global curriculum and global teacher.

The Selby/Pike approach advocates four dimensions and five goals of learning. The dimensions include: the spatial (how the local connects to the global); the temporal (knowing the past and present to consider the future); the study of key global issues; and the inner/holistic potential of the individual learner. The goals develop the learner's consciousness in five interconnected aspects: systems thinking, perspectives (to acknowledge divergent worldviews), health of planet, involvement, and preparedness and process mindedness. The curriculum section suggests ways that current school subject areas can adapt a global approach, and the classroom section describes how to do a variety of experiential activities that include simulations, role plays, enhancing self esteem, and feedback techniques.

Berry, Thomas (1988) The Dream of the Earth, San Francisco: Sierra Club Books

Author Father Thomas Berry is an American monk and preeminent eco-theologian who calls for a "new story of the universe." This book is the first volume in a Sierra Club series on nature and natural philosophy. Berry cautions against the human preoccupation with a "technological wonderworld", and writes: "The greatest support for the feminist, antipatriarchal movement can be found in the ecological movement." He challenges misguided assumptions that privilege one theology over another, instead identifying the merits within various spiritual teachings from Taoism and Buddhism to Native American beliefs. Berry also argues, however, that the re-establishment of ancient creation stories is not enough to move humanity beyond its autism (lack of consciousness). While he critiques traditional western sciences that have been limited to an investigation of the universe's physical dimensions, he at the same time looks to more recent scientific approaches, such as quantum physics, as an essential component to create a "new story" that can heal an afflicted planet. Moreover, he espouses human recognition of the universe's psychic dimensions, pointing out that therein (rather than the manmade scriptures) resides the context to understand our place in God's creation.

Freire, P. (1993) Pedagogy of the City New York: The Continuum Publishing Company.

Paulo Freire here speaks from his role as Secretary of Education for the city of Sao Paulo, Brazil. In a compilation of interviews he explains the imperative need to transform schooling so that it is dynamic and responsive. He provides an action plan therein that leads toward a more democratic system of education in which assessment and grades are replaced by a curriculum composed of students' life experiences and creativity. Freire argues that such a system is crucial to reform a society into one in which all individuals have the freedom to create knowledge from their own experiences. He believes that in order to accomplish this, it is necessary to give more autonomy to local schools. Freire develops these ideas by discussing the deficits of Brazilian education, the challenges of urban education, and the need for youth and adult literacy.

Barndt, D. (1991) To Change this House: Popular Education Under the Sandinistas. Toronto: The Doris Marshall Institute for Education and Action; The Jesuit Centre for Social Faith and Justice; Between the Lines.

This illustrated volume introduces readers to the popular education effort in Nicaragua with photographs of the people, places, and processes pursued in the effort. The book discusses the concept of popular education and brings it to life, while

outlining the role that it played in the Nicaraguan revolution. It describes the history of intervention, public education in Nicaragua after 1979, and the literacy crusade and adult education. It also explores training in popular communication, the National Health Campaigns, and the role of women in this process. Finally, it looks at the training of community workers, and education in Christian-based communities. The book believes in the use of popular education to change a house founded on "the political and economic system of industrial capitalism" with its walls between the rich and the poor. It does not look to further liberal humanistic techniques to reform the education system, but instead calls for taking apart the structures of injustice.

Aronowitz, S., & Giroux, H. A. (1991) Postmodern Education Minnesota: University of Minnesota Press.

This book demonstrates how postmodernism can be used to solve educational crises, and situates the role of postmodernism within the area of educational criticism. In this book, Aronowitz and Giroux continue the debate they started in Education under Siege by discussing the roles of class, race, and gender in educational politics, as well as in the politics of literacy. They suggest postmodernism reformulate the relationship between intellectuals and those who speak for the broader culture, and asks the reader to question the relations between the centre and the margins of power. The authors vis a vis postmodernism address issues such as, curriculum, student voice, popular culture, textual authority, and knowledge.

Snyder, G. (1974) Turtle Island. New York: New Directions Publishing Corporation This book of poetry and poetic prose communicates the significance of nature and the diversity of life forms on the planet. The writings relate how, today, the inhabitants of Turtle Island, a (Native American) mythic name for North America, have forgotten how intertwined and interconnected the life forces on the planet are, and have begun to destroy them with technology. Snyder calls upon all peoples of the planet to return to living in harmony with the natural world. He asks us to really examine what is happening to the earth and to bring about change through social and political action.

Feminist Challenges to Popular Education

Viezzler, Moema "El desarrollo del feminismo y la educación popular en america latina y el caribe". Seminario Latinoamericano sobre educación popular y feminismo de CEAAL, Montevideo, 1-6 de diciembre de 1986

In her presentation at the Popular Education and Feminism seminar in Uruguay, Moema Viezzler outlines her definition of popular education as a theoretical and methodological process which supports the hegemony of oppressed and exploited groups. She links the particulars with the general and daily life with a historic plan in a transformative perspective, through strategies that articulate the restraints, varieties and steps of the educative process. She discusses the changes which have taken place over the past 15 years, how women have come to be involved in the advancement of the popular movement in the region and how, through their participation, they have come to understand themselves as citizens, members of the oppressed of society as well as an integral part of the working class. Many women also began to discover the

contradictions of gender both within the home as well as within the popular institutions and organizations to which they belong. Viezzer outlines the different types of feminisms, noting that "neither in theory or in practice have we developed a hegemonic focus of feminism." The paper goes on to define the concepts of popular education that feminists incorporate into their theory and practice and their goals for analysis and action, and challenges popular education to use a gender perspective.

Yanz, Linda "The Feminist Challenge to Adult Education" in Voices Rising, May 1988

This article begins by looking at the dichotomy between women from the First and Third Worlds and the different ways in which they view their own political realities and struggles. Many Third World women believe that they should work within popular social and national liberation movements, and that gender and class oppression are integrally interwoven. Popular education is suggested as an essential tool in the work which all these women do because it takes the standpoint of the oppressed, links immediate issues with broader social struggles, and moves from personal and lived experience to political understanding. However, the article also notes that "women's experience within popular education has not been problem-free." Popular education has tended to reinforce oppressive gender stereotypes rather than acknowledge gender differences, and tended to silence women. It instead needs to "see the importance of integrating gender issues into all questions." The feminist struggle is to see that a gender perspective is incorporated into all aspects of the popular education movement.

Latin American Council for Adult Education (1987) Crecer Juntas: Mujeres, Feminismo y Educación Popular en America Latina y El Caribe. Santiago: Isis International

This publication illustrates the growing phenomenon of women participating and organizing within the popular sector into vitalized movements of basic needs and defense of the quality of life. Women from around Latin America and the Caribbean here join together to discuss their own experiences vis-a-vis the organizing and training of grassroots women. They discuss the ways in which the popular education processes in which grassroots women are involved raise their consciousness about the societies in which they live so that they can understand and challenge a system which is incapable of satisfying or, at times, even recognizing their particular needs. The authors define these processes as a coming together of the feminist and popular education movements. The women talk about the obstacles which they have faced, and how each woman emphatically prioritized the contradiction of class or the contradiction of gender. They point out how women working in popular education programmes have been preoccupied in how to incorporate the variable of gender into their work as much as the feminist movement has tried to articulate the contradiction of class and gender. (In Spanish)

Part B: Environmental Issues

Women and the Environment

Rodriguez, Regina and Lezak Shallat (1993) Despejando Horizontes: mujeres en el medioambiente. Santiago: Isis International, No. 18

Despejando Horizontes (Broadening Horizons: women in the environment) brings together economic analysis, global policies, sociology, journalism, environmental activism, nuclear war, and development theories and how they affect women in the natural environment. Some contributors are: Wangari Maathai, who traces the history and outlines the objectives of the women's Greenbelt environmental movement of Kenya in which she is a key actor; Maria Cherkasova from Russia who focuses on the threat of the nuclear industry to people and the environment; Gita Sen from India who looks at women, poverty and population; and Jaqueline Pitanguy and Selene Herculano who assess the 1992 Earth Summit in Rio de Janeiro, discuss environmentalism in Brazil and look at the issues of women, gender and the environment. Other authors look at issues such as the external debt, race, class and gender as forms of resistance, the negative effects of structural adjustments policies in Guyana, Jamaica and Latin America, and the obstacles which face women journalists in China. The publication affirms that women are more vulnerable to environmental degradation because of their subordinate social role and that many of the specific effects which this degradation has on the lives of women is invisible as is their contribution to societal development. What is prominent is that women are at the forefront of the struggle to save the planet and that their actions and ideas reflect a very different understanding of the problems which face the world today. (In Spanish)

Durning, Alan B "Environmentalism South", The Amicus Journal 12.3 (1990): pg. 12 - 18

In this article, Durning, a senior researcher with the Worldwatch Institute in Washington, D.C., states that in much of the Third World "women are the backbone of community movements. As the hewers and haulers of wood, they know most directly what environmental deterioration means, and therefore have the most to gain from organizing." He describes a new generation of national, community and grass-roots women's environmental organizations which are growing stronger and more powerful. Within a relatively short length of time, women have become efficient local and global networkers and robust political activists. He describes how the Chipko movement in India went beyond resource protection to ecological management, conservation, restoration and to what its members call "eco-development." Although most of the world's hundreds of local women's movements for resource protection never draw the international attention which Chipko did, Durning argues they have become extremely adept at behind-the-scenes' linking to women's movements, organizations and institutions in the North through which they can obtain funds, educative materials, and a forum for the exchange of ideas, practices, hopes and defeats. He also outlines grass-roots organizations such as the Greenbelt movement of Kenya, and others from Asia and South America which put valuable time and energy into the conservation of natural resources and re-building of the land.

Canadian Woman Studies, "Women and the Environment", North York: York University, Volume 13, Number 3, Spring 1993

The chorus of voices in this issue of Canadian Woman Studies focus on the various elements of the global environmental crisis and the roles which women play within it. Contributors include Vandana Shiva, an outstanding academic/grassroots activist who explores the biotechnological revolution which is attempting to control the reproductive powers of both nature and women in her essay entitled "The Seed and the Earth: The Colonization of Regeneration". Ana Isla from Peru looks at the links between women, development and the market economy, and puts forward the debt crisis in Latin America as an example of unsustainable development due primarily to the International Monetary Fund's structural adjustment policies. Nakanyike Musisi, a professor of women's studies at the University of Toronto outlines a history of the unequal gender relations in Buganda, and Eva Johnson shares an "Open Letter" on indigenous cultures' profound link to the environment. Other topics include Innu women's struggle in northern Canada against low-level flight testing over their lands; and the implications to women's health of structural adjustment policies in Nigeria. A section entitled "Women's Activism" looks at efforts to stop the logging in Clayoquot Sound as well as the role of children in fighting environmental degradation in the Himalayas. A section on poetry, and reviews of various books conclude this very informative and challenging journal edition.

Rodda, Annabel (1991) Women and the Environment. London: Zed Books Ltd.

This book focuses on the importance of women in relation to environment and development. It focuses on how women in developing countries and how their relationship to the environment is vital to their basic needs. Rodda describes the various roles of women as collectors and as carriers of fuel, food, fodder, and water, as well as consumers, producers, workers, farmers, and managers. She also identifies the various effects of rural and urban environmental degradation.

Chapter four is the central focus of the publication, looking at women as agents of change and the influential forces which they are becoming. Although women bear the brunt of environmental degradation they are not passive recipients of this fate but play a very crucial role in environmental management and resistance against the destruction of the environment within their communities and around their regions. The author looks at the critical roles which women play as educators, communicators and environmentalists. She cites case studies such as the Chipko movement in India, and the Greenbelt women's movement in Kenya to illustrate the resilience and strength of women.

Sontheimer, Sally ed. (1991) Women and the Environment: A Reader. London: Earthscan Publications Ltd.

From the perspectives of women from the North and the South, this reader describes how women live and cope with environmentally distressing conditions. The women and their organizations described here have produced demonstrably effective approaches for more sustainable uses of natural resources, and in doing so challenge conventional accounts of the role of women. The book is divided into four sections, the first three as essays on women's use and management of life-sustaining systems such as forests, land and water. The last section of the book chronicles a few examples of women's initiatives, both spontaneous and guided, which are taking place worldwide.

Warren, Sarah T. ed. (1992) Gender and Environment: Lessons for social forestry and natural resource management. Toronto: Aga Khan Foundation Canada

These essays by women from around the world articulate the premise that since "women are the primary users of natural resources for human subsistence in the developing world" they "have an extensive knowledge of their environments that is based on culturally-derived expertise and their own daily experience." As fuel wood becomes harder to find, water more polluted, food and cropland more scarce, women have begun to use their knowledge to organize locally, network globally, and become more politically active. Warren's book outlines some of the developments and changes in women's methods of organizing over the last three decades. By forming small dynamic local organizations or national coalitions, women have initiated a process and forum that enables them to share experiences, workloads, problems, and identify and explore their own needs, and come up with their own solutions to resource conservation. Over the past decade funds from Women In Development (WID) departments in government aid agencies have enabled women from the South and women from the North to exchange information, ideas and strategies. Various global networks and movements have begun to take shape with increasing momentum. Warren also cites the shortcomings of WID. The book identifies two key elements which give strength to women's organizing: literacy and ecofeminism. Literacy skills have given women more confidence to demand greater "access to economic, political, and natural resources" and ecofeminism strengthens their link to the land and unity. The final chapters consists of case studies of women's groups from the South and how they manifest their diverse organizing skills working together in agriculture, forestry, and water and soil conservation.

Seager, Joni (1993) Earth Follies: Coming to Feminist Terms with the Global Environmental Crisis. New York: Routledge

Seager's book explores what feminists can contribute to an understanding of environmental problems and offers a feminist analysis of the crisis caused by structures of power within institutions which are dominated by masculinist presumptions. Earth Follies' analysis determines that in order to understand and repair the already extensive damage done to the planet, one must look at agencies and institutions that shape modern life and perpetuate environmental degradation. Section one focuses on the military in times of war and the connection to the nuclear industry. Section two looks at the world of business, focusing on such areas as profit margins, short-term planning, hierarchies and emotional bracketing. This section also examines women as "other", as secretaries, wives and workers. Part three examines the role which governments around the world have played in environmental destruction, particularly the free trade market economy and the practice of waste dumping in countries in the South. Section four addresses the environmental movement and the organizations which have grown from it. Seager critiques their sexist and racist policies and programmes, and the masculinist presumptions which are often responsible for shaping them. This section also delves into the world of animal exploitation and explains how and why women are criticized for the success of the fur industry. Following this the author enters the debate of ecofeminism and the complicated historical relationship between women and nature. The final chapter "Hysterical Housewives, Treehuggers and Other Mad Women" begins with consumerism, focusing on woman-blaming, consumer manipulation and the personalization of the environmental crisis. It concludes by examining the stories behind some of the many women's grass-roots environmental

organizations which have begun to appear.

Dankelman, Irene, and Davidson, Joan, ed. (1988) Women and Environment in the Third World, Alliance for the Future, London: Earthscan Publications Ltd; The International Union for Conservation of Nature and Natural Resources (IUCN)

Twenty-two women contributors join the editors in a rigorous overview of the direct experiences of women globally as providers and protectors of nature's life support systems. Case studies from different continents illustrate the importance and effectiveness of outside organizations helping women to organize themselves in community-based groups and to implement culturally appropriate technologies that are environmentally suitable. The goals are not just to meet basic life support needs but, moreover, to develop the confidence and abilities of women and children otherwise victimized by oversights in longstanding economic development and cultural decisions. This excellent reference book reveals the parallels of women's experience in traditional societies worldwide in which their primary roles as "invisible water managers" and providers of fuel, food and fodder too often are undervalued and, worse, undermined, to cause, ultimately, unnecessary disease, malnutrition and death. The book's first section Women, Environment and Natural Resources relates many stories of women who live at the centre of water, food and energy crises. Here, destructive attitudes and practices are identified as well as how the women struggle to overcome their particular life-threatening situation. The second section Women and Environmental Conservation includes interviews with women environmental activists in India, Brazil and Zambia and further explains how women increasingly are being heard as they gain self awareness and self determination in connecting conservation with family planning and promotion of appropriate technology.

Plant Judith (1993) "Revaluing Home: Feminism and Bioregionalism". Home! A Bioregional Reader Van Adruss, Plant, Plant, and Wright (eds) Vancouver: New Society Publishers (pp. 21-23)

The basic premise of this essay is that the notion of home or "place" has been undervalued and has been a very isolated place particularly for women. Therefore, to change this situation, home needs understanding, valuing and redefining. Plant argues that a partnership between feminism and bioregionalism could be "fertile ground for deep societal changes" because bioregionalism alone will not bring about a shift in attitude required for a ecologically harmonious life. The author also examines the idea of whether revaluing the home will not double women's bind and what can be done to ensure that men and women come together, with integrity and dignity in a bioregional community.

DiPerna, Paula "Truth vs. 'Facts'" in Ms. II(2) 1991: pp 20-26

The article begins with the brief story of one woman who became environmentally active after her child died of leukaemia. Anne Anderson suspected foul tap water was the common thread between the death of her child and others in the area. DiPerna states that women understand that environmentalism is an issue of humanity much more than an issue of science. She examines the fact that women who are environmentally active do not see a healthy planet as a luxury but as a "basic human necessity." The article also points out that despite a new consciousness on global warming, toxic waste, ozone depletion and

contaminated drinking water, millions of acres of land per year are turned to desert, diversity is depleted, and eco-warfare rages. DiPerna believes it is because "clear-cut links between cause and effect are elusive" in many cases and therefore remedies are easily evaded. The author identifies the work of many women around the world such as 'Iguana Mama' Dagmar Werner who uses iguanas to stem the flow of 'slash and burn' forestry in Costa Rica; Wangari Maathai, founder and leader of Kenya's Greenbelt reforestation movement; Maureen Jones, who warned of impending danger in the Exxon Valdez disaster; Marilyn Waring, who in her book If Women Counted showed how the world's accounting systems ignored work performed by women and nature; and countless other local and global initiatives which women have undertaken. DiPerna concludes by noting that the "environment is not a special interest, but the single common interest, and as such acquires unique political and moral force". She believes that if this force were put into the hands of women, it "could be the light of the next century."

Griffin, Susan (1980) Women and Nature: The Roaring Inside Her. New York; Cambridge; Philadelphia; San Francisco; London; Mexico City; Sao Paulo; Singapore; Sydney: Harper & Row Publishers.

"Women and Nature is about memory and mutilation, female anger as power, and female presence as a transforming force." One of the strongest critiques put by the author of patriarchal thought, is its claim to objectivity remaining separate from emotion which is considered weak and inferior. Book One entitled "Matter" traces patriarchy's judgements about the nature of matter or the nature of nature and its opinions and views of women and nature throughout history. It explores the notion of control through harnessed winds, domesticated horses, talking mules, how land is shaped for use, and the use of women's bodies as the keystone of patriarchal ideology. The second book, "Separation", is a protest against all the separations which are part of the civilized "male's" thinking and living such as culture/nature, etc.. The author explores this through the elements of male control, knowledge, vigilance, power certainty and secrets. Book three called "Passage" separates consciousness from the consciousness of patriarchy which leads to book four: "Her Vision" which is a vision of re-seeing the world. "The Separate Rejoined", the final section, looks at mystery, dreams, possibility, clarity and transformation.

Ecofeminism

Greta Gaard, ed. (1993) Ecofeminism: Women, Animals, Nature. Philadelphia: Temple University Press

Gaard and other contributors share the premise vis-a-vis the ideology of ecofeminism: "the ideology which authorizes oppression such as those based on race, class, gender, sexuality, physical abilities, and special needs is the same ideology which sanctions the oppression of nature." In this publication various essays' focus on "animals" as their central theme. In "Feminist Traffic in Animals", author Adams argues convincingly why feminists should be vegetarians. Gruen, in her essay entitled "Dismantling Oppression: An Analysis of the Connection Between Women and Animals" shows how both women and animals are linked together as 'the Other'. Other essays present a challenge to ecofeminism such as Huey-li Li's "A Cross-Cultural Critique of Ecofeminism". Li shows, by using China as a case study, why

ecofeminists may need to re-think the woman-nature affinity. Gaard's "Ecofeminism and Native American Culture: Pushing the Limits of Cultural Imperialism" challenges ecofeminism's appropriation of Native culture. Gaard points out that ecofeminist theory is lacking vis-a-vis the complex economic, social and political forces which drive environmental destruction. Other authors discuss issues such as the relationship between ecofeminist theory and environmental history and an ecofeminist ethic.

Diamond, Irene and Gloria Feman Orenstein (1990) Reweaving The World: The Emergence of Ecofeminism. San Francisco: Sierra Club Books

This publication explores the emerging ecofeminist movement which represents a bridging of the environmental and feminist movements. The essays by scholars, scientists, activists, writers and artists communicate the diverse definitions about the ideology of ecofeminisms in the Western world. The authors explore topics such as "Rethinking Theology and Nature", "The Gaia Tradition", and "Ecofeminism and the Politics of Resistance". Marti Kheel reflects on the differences and similarities between ecofeminism and deep ecology while Judith Plant explores ecofeminist bioregionalism. The essays, albeit provocative, mostly are grounded in a western cultural perspective. A rare exception in this volume is the voice of Vandana Shiva of India whose essay here offers a powerful challenge to the West.

Hessing, Melody "Women and Sustainability: Ecofeminist Perspectives" in Alternatives, Volume 19(4) 1993

In this article Hessing begins by putting Third World women's daily work into perspective: "Ajede wakes before sunrise in Zaire and sparks banana leaves and brush into flame for the morning cookfire. She sweeps the floor, tends the animals and prepares a meal for her six children before leaving to work in the fields." Hessing then explores how the linkages between environmental degradation, poverty and powerlessness affect all women. The author also provides a Canadian context by discussing the high degree of poverty and inadequacy of work environments faced by indigenous communities, senior women, and female single parents, adding: "the relationship between the socio-economic situation of women and environmental protection has traditionally been ignored by development programmes and government policy." Addressing the global picture, Hessing points out that although the Brundtland Report was ground-breaking, its gender neutrality reduces and ignores the roles and plights of women. She argues that, in contrast, an ecofeminist analysis focuses on the relationships between women and the environment. She then describes the main characteristics and limitations of: radical ecofeminism, which challenges the dual subordination of women and nature by patriarchy; liberal ecofeminism, who works for social change within the existing structures; and socialist ecofeminism which believes that these structures are the source of both women's oppression and also environmental degradation. She concludes the article by recognizing that there is a diversity of perspectives yet they have one common denominator: "the concept of sustainability. They also understand that only a fundamental and rapid shift in values and action will ensure the survival of life on earth."

Mies, Maria and Vandana Shiva (1993) Ecofeminism. Halifax: Fernwood Publications

The first chapter of this path-breaking publication identifies the reasons why this is co-authored. Written by two women who live and work thousands of miles apart - one in the so-

called South, and the other in the North - they found that they shared common concerns and thoughts vis-a-vis global politics which did not demonstrate uniformity or homogeneity "but rather a creative transcendence" of difference. Therein the two authors construct their own ecofeminist epistemology and methodology and argue for an acceptance of limits, and a rejection of endless exploitation, violence, and commodification. Chapters written by Vandana Shiva focus on reductionism and regeneration; environmental degradation and poverty creation particularly in reference to women and children; globalization and the rise of nationalism; homelessness in the "Global Village"; women's indigenous knowledge as it pertains to biodiversity conservation; the impact of GATT on agriculture and women in the South and the Chipko women's movement's concept of freedom; and the issue of the intellectual colonization of the North. Maria Mies focuses on feminist research methodologies; how and why nature became the enemy; the colonization of women, the issues of violence, desire, pornography and prostitution and tourism, reproductive technologies and alternatives; the dilemma of self-determination; and consumerism. The two authors come together again in chapter 19 to look at population control and coercion. Maria Mies concludes the book by advocating a new "subsistence perspective".

Action Initiatives

Hisham, Mohamed-Ahmed et al (1991) Whose Trees? A People's View of Forestry Aid. London: Panos Publications Ltd.

This publication is part of a program to encourage greater participation in the development debate by people of the South in forestry policy. First it looks at the history of forest aid, and some of the misconceptions and contradictions "which have bedeviled the aid industry and compromised its chances of success." It next outlines the changes which have taken place over the years in forestry, particularly the role of trees as suppliers of fuelwood, and clarifies that many early attempts at community forestry "were merely miniature versions of commercial forestry plantations: rows of eucalyptus planted in straight lines and surrounded by fences." Nor has community forestry escaped the top-down development approach which means that village communities were not encouraged to feel the masters of their own development. The 1980s saw a shift in forest policy and a move towards an integrated approach which links trees to every aspect of rural life; however, forestry departments have a legacy of mistrust to shake off. Three case studies from Sudan, Tanzania and Nepal give examples of various types of grass roots forestry projects which are springing up all over Asia and Africa.

Brown, Lester et al (1991) Saving the Planet - How to Shape an Environmentally Sustainable Global Economy. Washington D.C.: The Worldwatch Institute

This Worldwatch Institute publication reveals how the world's economy can be vigorous and environmentally-friendly at the same time. Profound political, social, and economic reforms must be initiated by businesses, religious organizations, civic groups, activists, governments, and voters. The book states that we can transform our present actions to create a sustainable global community by thoroughly restructuring energy systems, tax systems, agricultural and forestry systems, international aid, and the economics of both industrial and developing nations. In order to accomplish these tasks, the authors suggest that we replace oil and coal as the world's main

energy source, and develop new sources of energy such as solar power. They explain how our throwaway society can be replaced by one which recycles and reuses while at the same time becoming more economical. The authors alert us to the natural destruction which is occurring at an alarming rate, as a result of human activity, and warn us that if we continue in this direction, it will make the planet uninhabitable. They tell us that if we are ever to meet the needs of all the earth's population, we must manage our forests, grasslands, fisheries, and croplands more intelligently. The book cites the need to increase the world's grain harvest dramatically in order to eliminate hunger. Some ideas it provides for doing this effectively are: intercropping, transplanting, and transforming fertile land used for grazing cattle into cropping land. The authors argue that governments must be made to see that human progress is not just economic growth and recommends that governments produce incentives which encourage sustainability and tax activities which reduce environmental destruction. The book demonstrates how the world's economic welfare and restructuring are necessary to ensure environmental sustainability, and it warns that the metamorphosis to an ecological society must take place soon.

Part C: International Trends and Practices

Environmental Politics

Porter, Gareth and Janet Welsh Brown (1991) Global Environmental Politics: Dilemmas in World Politics. Boulder: Westview Press, Inc.

Chapter one traces the emergence of global environmental politics over the years as global environmental problems moved from "low politics" or minor issues to an arena of major concern. The authors argue that its dramatic rise is a direct reaction to explosive population growth and economic activity in the latter half of the twentieth century which subsequently led to an increase in world energy consumption, contributing to the greenhouse effect or global warming, the contamination of soils, oceans and forests, reduction in biodiversity, and desertification. The authors explain the concept of international regimes as a set of norms, rules, or decision-making procedures, whether implicit or explicit, that produces some convergence in the actors' expectations in a particular issue area and how they affect global policy. They next explain the paradigm shift as the change that gave rise to an alternative paradigm of ecologically sound policies promoted by an emerging global community of practitioners, NGOs and scholars. Chapter two describes the various actors in the environmental arena such as nation-state, international organizations, multilateral financial institutions, non-governmental organizations, and corporations. Chapter three examines key issues such as transboundary air pollution (acid rain), ozone depletion, whaling, African elephant ivory trade, the international toxic waste trade, Antarctic minerals, global warming, and tropical forest destruction. Chapter four discusses the issues of global security, North-South relations, and trade. The authors argue the harmful and life-threatening impacts of military activities on the natural world, citing the Persian Gulf War as an example of consequences, pointing out "the United States faces a choice between continued nuclear weapons production and protection of the environment." The book identifies the areas of friction, as well as the reasons for mistrust by the South, regarding policies of the North, and also the negative impacts of GATT and so-called Free Trade. Chapter five suggests and elaborates on alternative approaches to global cooperation such as an incremental change approach; a global partnership approach; and a global governance approach that calls for a far-reaching institutional restructuring.

Swift, Jamie and Brian Tomlinson eds. (1991) Conflicts of Interest: Canada in the Third World. Toronto: Between the Lines Publishing

In Conflicts of Interest, activists and scholars analyze and critique the latest development issues linking Canada and the Third World. Brian Tomlinson examines Development in the 1990s: Canada's economic relations with the Third World. He argues that Canadian aid policies "cannot be separated from Canada's global economic policies and from public support within Canada" if they are to be relevant to the popular movements in Africa, Asia and Latin America, where alternative development strategies effectively challenge the imposed dominant economic growth models. Elsewhere, Jamie Swift discusses the global debt crisis as "A Case of Global Usury", and examines Canada's role in the global environmental arena, noting that it has not been immune to environmentally destructive megaprojects. Chapter three, by Betty Plewes and Ricky Stuart, critiques the notion of Women and Development, stressing its failures and weaknesses as

a case to support a Gender and Development Approach. Charles Lane outlines the failure of the Canadian-Tanzania wheat program, and Brian Murphy defines non-governmental organizations and international non-governmental organizations to examine their nascent role in the international arena. Esther Epp-Tiessen looks at "The Links Between Militarism and Underdevelopment", drawing attention to the vast amounts of money which are spent on "war machines" in both the developed and developing worlds. A chapter by Pam Colorado, a native woman from Alberta, is a passionate story told from the top of a mountain which eloquently defines "A Native View of Development". Eleanor O'Donnell discusses how Canada portrays the Third World through mass media and Anton Allahar concludes the publication with his chapter "Manufacturing Legitimacy: Ideology, Politics, and Third World Foreign Policy."

Kamieniecki, Sheldon ed. (1993) *Environmental Politics in the International Arena: Movements, Parties, Organizations and Policy*. New York: State University of New York Press

This publication is based on the premise that global environmental issues can be best understood by studying environmental movements, ecological parties, international organizations and regimes, international law, and the problems of policies of specific nations in different regions of the world. The environmental movement around the world is having a visible impact on national and international policies; therefore the book examines the dominant ethics, attitudes, and moral values behind this movement and analyzes its influences. Chapter one discusses the role which stories play in defining who we are and the society around us, and how people are learning and adopting a new story to determine how the world works. Chapter two examines the historical evolution of the environmental movement from the 1800s to the present in Western Europe. Chapter three identifies a number of grass-roots popular environmental movements in the South and articulates the common patterns which emerge. Section two examines the growing Green Party phenomenon, its appeal, successes and methods of operation. Section three looks at the role of international organizations and law within the green movement. The final section takes a comparative look at politics and public policy in the European Community, the former Soviet Union, Latin America and Asia. The book concludes by placing environmental challenges in a global context.

Paehlke, Robert C. (1989) *Environmentalism and the Future of Progressive Politics*. Westford: Murray Printing Company

Paehlke argues that environmentalism is the basis for a new political ideology, the first such ideology since the evolution of socialism. This book offers an historical, philosophical, and political consideration of environmentalism, and evaluates the potential of an environmentally informed progressive movement as a political response to neoconservatism in the 1990s. Part one outlines the evolution of environmentalism by looking at conservation, ecology and pollution, population and resources and the energy crisis. Part two develops the connection between environmentalism and scientific knowledge and how it can be understood as a new scientific paradigm, a set of values and as a political ideology. Part three examines neoconservatism, environmentalism and contemporary realities, and the role environmentalism can play in the restoration of moderate progressive political ideas. The final chapter outlines the future of environmentalism as a new ideology which will shape the world to come.

Environment, Policies and Structures

Reed, David, ed. (1992) Structural Adjustment and the Environment. Boulder: Westview Press

This publication focuses on the International Monetary Fund and World Bank-developed structural adjustment programs (SAPs), created to address what these agencies perceived as the very serious debt payment crisis of the South. Reed believes that SAPs in themselves are not bad; however, their policies need to be reformed. He states that the failure of SAPs is in their design which has had negative impacts on the environment and has been unable to create "a sustainable development path." In the short-term SAPs do not alleviate poverty; they make it worse. Reed does not believe that environmental degradation and unsustainable practices should be the inevitable outcomes of SAP policy and he makes a number of recommendations to promote sustainable development. He points out that adjustment "must increase the attention given to rebuilding natural capital, restoring degraded natural resources, improving institutional capability for planning and managing resource utilization." Reed states that until the public is involved in managing the environment and their needs and concerns met: "fundamental improvement in the management of the local, regional and global environment will continue to prove elusive." Throughout the publication, Reed outlines the link between the failure of SAPs and environmental destruction, showing how present policies do not and cannot contribute to sustainable development.

Ecodecision, Environment and Policy Magazine No. 10, September 1993 Montreal, Quebec

This bilingual French/English magazine contains articles by authors from around the world which focus on the many different aspects of environmental degradation and regeneration as well as key actors such as women, corporations, the military who play diverse major roles. The articles range from corporate responsibilities to the roles which women play at the grass-roots level to rebuild the planet. Vandana Shiva from India explores biotechnology and the colonization of regeneration, while Nafis Sadik of the U.S.A. examines the women and population debate. Peggy Antobus of Barbados focuses on the quality of everyday living for women in the Caribbean, and Thais Corral of Brazil puts forward women's views for a new world order. Terry Muller of Canada looks at the environment and legal development, and Francois Ramade of France looks at population pressures on the biosphere. Other articles focus on democracy, security and the environment; the role of rural women in the world food supply; the dilemma of donor agencies; the relationship between military agendas and environmental destruction; the Women's Action 21 paper; poverty; and the 1992 Rio conference.

Women in the Global Arena

Food and Agricultural Organization of the United Nations (FAO) and the Swedish International Development Authority (SIDA) "Restoring the Balance: women and forest resources", August 1990

This government report describes the factors that militate against women participating fully in environmental projects: "[W]omen are short of land, time and money, often poorly organized, have restricted access to political power, and limited ability to influence decision-makers." It examines how women in the South have taken action, either spontaneously or

through community-based organizations, to protect forest resources from destruction for instance, and how such positive initiatives have led to progressive ideas which can be shared worldwide. This publication outlines how women are taking the lead in times of ecological disaster to rebuild destroyed agricultural land, create nurseries, and protect hillsides, replant indigenous trees. Also, a number of policies to support and strengthen already existing innovative local women's groups are suggested.

Gladwin, Christina ed. (1991) Structural Adjustment and African Women Farmers. Gainesville: University of Florida Press

This publication presents evidence from noted African and Africanist social scientists who debate the pros and cons of structural adjustment programs (SAPs), looking at the impact of SAP's on women in Nigeria, Zaire, Tanzania, Malawi, Cameroon and Ghana. Pro-SAP writers argue that SAP reforms are the best means to invigorate stagnating agricultural and industrial sectors of Africa. Such reforms include: "devaluation of overvalued currencies, increases in artificially low food prices and interest rates, a closer alignment of domestic prices with world prices, an emphasis on tradeables/exportables and the gradual withdrawal of restrictions on competition from abroad, privatization policies, a decrease in government spending, wage and hiring freezes, reductions in employment in the public sector or the minimum wage, the removal of food and input subsidies, and across-the-board reduction in budget deficits". Those writers who oppose SAPs argue that they have failed to stimulate economic growth or recovery, and that despite a heavy focus on agriculture, and effort to increase producer incentives for farmers, agricultural production and incomes have worsened. Anti-SAP writers further argue that SAPs are "macroeconomic" in scope, therefore focusing on national and international economic levels at the expense of the local. That women provide most of the labour required to produce food means that it is primarily their situations which have been most adversely affected: "Due to social stratification at the village level and inequality in gender relations at the household level, women rural producers are in no position to benefit from the supposedly gender-neutral effects of SAP." The book concludes with four case studies of women's organizations' responses to structural adjustment and action plans by the FAO to integrate women into development projects.

Shiva, Vandana (1989) Staying Alive. London: Zed Books Ltd.

Staying Alive defines the links between the ecological crisis, colonialism, patriarchy and the oppression of women. Shiva explains economic development as maldevelopment and how the impact of science, technology and politics are inherently exploitative. She outlines how the so-called Age of Enlightenment and the theory of progress "began to destroy life without any assessment of how fast and how much of the diversity of life on this planet is disappearing." Chapter one traces the historical and conceptual roots of development as a project of gender ideology, and analyzes how the particular economic assumptions of western patriarchy have subjugated more humane assumptions of economics as the provision of sustenance. Chapter two addresses the myth of neutrality and universality of modern science, and Chapter three describes the world which Indian women inhabit and their roles as leaders in ecological movements. Chapter four cites the beginning of the destruction of forests and women's expertise in forestry, focusing primarily on the Chipko women's forestry movement of Garhwal. Chapter five analyzes the food crisis in terms of male-dominated agricultural practices. Chapter

six looks at the water crisis, contrasting the reductionist view of water and water management with the holistic knowledge women have to conserve and use it only when necessary. The final chapter looks at reclaiming the "feminine principle" as a non-violent, non-gendered and humanly inclusive alternative to the dominant science, technology and development paradigm which exists today.

Peterson, V. Spike and Anne Sisson Runyan (1993) Global Gender Issues. Boulder: Westview Press

This publication looks at world politics "through a gender-sensitive lens." It explores the nature of the difference of how men and women are situated within global processes and the extent of gender inequality. The introduction analyzes the theory of looking through lenses and how they work. It cites the reasons for identifying gender as the central focus within a global context, and outlines the presence of women in world politics. The focus of Chapter two is on "the power of gender", how the lens works to shape our lives and filter our understanding. Chapter three examines how and where women and men are differently situated in relation to the gendered divisions of power. Chapter four outlines how women and men are differently situated in relation to gendered divisions of violence, labour, and resources. Chapter six identifies four feminist orientations and distinguishes between practical and strategic interests, and examines gender at work in revolutionary movements, in activities promoting peace, anti-militarization and anti-violence in movements for economic justice and sustainable ecology. The final chapter sums up the previous chapters and closes with recommendations on how individuals and institutions can promote a world less burdened by the dilemma of gender and other inequalities.

Peterson, V. Spike ed. (1992) Gendered States: Feminist (Re)Visions of International Relations Theory. Boulder: Lynne Rienner Publishers, Inc.

This publication explores the core concepts of political and international relations theory which include the state, sovereignty, and power, and reframes them through feminist lenses. The authors show what distinguishes a gender perspective and highlight the role which gender plays in constructing and maintaining the sovereign state system and its related notions of security, autonomy, and identity. Chapter one poses the question of what is at stake by taking feminism seriously. Chapter two answers the question "What Exactly Is Working with the Liberal State as an Agent of Change?". Chapter three explores women's involvement in the military and international security and how this affects the feminist standpoint. In chapter four, Mary Ann Tetreault develops a framework that can be used to analyze the interaction between revolution and the role of women in society. Chapter five discusses the move from a natural order to a state order and puts forward ecofeminist perspectives that resist unified metaphors of nature by exiting the "cultivated garden of white, Western man and his state and entering into a more fractious and just politics through which people's relationships with each other and with nature are redefined. The final chapters explore ideas of sovereignty, identity and sacrifice, feminist views of autonomy and obligation in international relations, and offer a gender critique of the theory of international relations.

Kelly, Petra "Women and Global Green Politics", Woman of Power Issue 19, Spring 1991.

This article analyzes the work of the green feminist movements. Kelly notes that "Global Green feminist politics" have never had such an opportunity" as they do now to transform the world and "feminize power." She examines the difference between men's concept of dying for a cause and the feminist daring to live for a cause. Green feminist-based transformation is described through the work of many women around the world such as the nuns in the Philippines who non-violently brought about the fall of the Marcos regime, the Chipko women who saved their forest, Argentinean mothers who search for their "disappeared" and a U.S. peace activist sentenced to five years in prison for destroying three navigation computers designed for nuclear war-making. Kelly outlines how and why women are more affected by environmental devastation, stressing that the "overlooked factor in the power of women as world political force is the magnitude of suffering" combined with magnitude of women. In addition, she notes that patriarchy has kept women divided and invisible, questioning how many know that Gandhi's nonviolent resistance strategies came from a nineteenth century India Women's movement or that women's actions inspired the "Solidarnosc" movement in Poland. The author believes that most women want no part of established male power and therefore, the concepts of power and the way in which that power is used must be transformed. Kelly concludes by noting that the Western world must transform itself first. She defines transforming the planet as promoting social justice, and ending exploitation and weapons transfer.

Part D: Environmental Education

278-2215

* Indigenous Teachings

Johnson, Tim and Andrew Cornell (1993) Echoes of the Ancestors. Lanark: Plenty Canada.
Echoes of the Ancestors provides an introduction for educators and other individuals pursuing cross-cultural work. The book outlines examples about why and how indigenous African and non-indigenous co-workers in Africa must combine selected traditional knowledge with selected western technologies, to work in an effective partnership. The book's message is, all partners first must recognize and then overcome the continuing problems caused by a colonial legacy. For example, younger indigenous generations no longer see the value of traditional ecological respect while at the same time African government policies and also foreign aid approaches perpetuate development methodologies geared to fail. Specific African community projects facilitated by Plenty Canada are described, such as development of water systems and tree planting by local indigenous people, and also the Village Technology Training Centre (VTTC) in Lesotho. At the VTTC, vegetable gardens, soy dairy and training facilities are integratively designed to resemble a traditional village. Chapter contributions by individual indigenous African environmental workers compose the book's second major theme. They identify honestly the local obstacles, caused by their own people, to re-establishing a better quality of life. They also outline the essential attitudes, skills and cross-cultural methodologies that can enhance human cultures and our life support system embedded in the natural world.

Environmental Education

Ibikunle-Johnson, V. and Edward Rugumayo (1987) Environmental Education Through Adult Education. Nairobi: African Association for Literacy and Adult Education.

Environmental Education is the first manual on this subject to come out of Africa. The manual begins with a glossary that defines the environmental and education terms subsequently used throughout the text, such as ecology, development, ecosystem, adult education, pollution, viruses, etc. The manual's content focuses on facts and principles about four environmental themes: Health, Agroforestry, Population and Urban/Industrial Development. For each theme the problem is identified, giving a case study and teaching examples, accompanied by extensive bibliography and reference materials. The final chapter outlines some techniques used in adult education, such as role playing, story-telling, field trips, seminars and workshops, panel discussions, symposiums and debates. Learning aids are defined as posters, pictures, slides and films, and flip charts.

International Council for Adult Education Convergence, Volume XXV, Number 2, 1992.

This special issue of Convergence focuses on environmental education with articles from around the world. Moema Viezzer of Brazil looks at how literacy classes can be used to promote environmental awareness, linking a clean and healthy environment to a human right. Viezzer writes: "[one] cannot say that it is more natural for women to be more interested in the

environment than men, but it can perhaps be understood through history that if in a social relationship where women have always been treated as subordinate to men, and have been totally dominated by them, a parallel setting would have been created for men to dominate and destroy nature as well." Patricia Mische from the United States discusses a pedagogy of ecological responsibility and the need to learn to reinhabit the earth. Kamla Bhasin of India outlines the problems of mainstream development, defines a vision of sustainable development and makes recommendations of what development activists can do to help preserve the world. Marta Benavides from El Salvador outlines the concept of sustainable societies as being "based on social justice and equity, economic viability, sound environment, popular organized participation, and in the promotion and maintenance of durable peace." Ewa Usang looks at various literacy educations such as Freirean strategies, functional literacy methods and organic methods which can be "used to propagate and promote green literacy." Ibrahim Al Agib outlines the elements of environmental education in the Arab Countries and Andy Alm explores the use of computer electronic mail networks to support the work of global environmental education.

Harmony Foundation of Canada (1991) Community Workshops for the Environment

This manual is a flexible guide, intended to be used as a tool for educators and community groups to organize and present workshops on environmental values. The workshops are designed to inform participants about some of the Canadian Environmental issues and to stimulate hope and community action. The manual is divided into three parts. Part I provide introductory material on workshops, includes the facilitator's role, how to plan a workshop, what components to include and sample workshop outlines. Part II focuses on action within the main topics of energy, hazardous materials, waste reduction, and water use. Part III provides a basic introduction to solving environmental problems through community action.

Peralta, Joaquin Esteva "Ambientalismo y educación. Hacia una educación popular ambiental en America Latina". Congreso Iberoamericano de Educación Ambiental de CEAAL, 22 al 27 de noviembre de 1992. Guadalajara, Jal., Mexico.

This document outlines the intentions and activities of environmental popular education of REPEC (the Network of Popular Education and Ecology) of the CEAAL (the Adult Board of Education of Latin America). This network since 1983, with links reaching throughout Latin America, has brought together all the institutions and non-governmental organizations which work in the area of popular education. REPEC was established as an opportunity for exchange for popular educators working on environmental action projects. It also aims to contribute to the unity of the popular education movement, permitting the Network and its regional organizations to grow alongside other CEAAL networks. The Network endeavours to find a philosophy which will deeply transform environmental theory and practice. This work summarizes the contributions of important researchers in the field of popular education and environmentalism. It outlines the challenges faced by these fields which heighten the importance of the development of an environmental vision coming from popular education.

Matthias Finger "Environmental Adult Learning in Switzerland", Final Report to the Swiss National Science Foundation (1992).

The findings in this report are based on a representative survey of the Swiss population.

The analysis shows that there is a high level of sensitization, concern and fear of environmental problems among the Swiss. However, despite these high levels, the Swiss actually do little for the environment. The report outlines how further learning about the environment has become a substitute for behavioural change or environmental action. The report concludes that more environmental information and knowledge will not translate into corresponding behaviour or action. Recommendations put forward by the author include: provide the population with nature experiences, particularly for the young and urban dwellers; involve people in environmental activism projects, particularly school children; address fear and anxiety; and provide more knowledge about the environment beyond sensitization needs. The author notes that the challenge of environmental education is to develop programmes which integrate all of the four recommendations.

"Learning for the Future: Adult Learning and the Environment", A NIACE Policy Discussion Paper, April 1993

This policy discussion paper is intended to stimulate debate about how practitioners can develop more and better opportunities for environmental education for adults. The paper begins by considering the case for environmental adult education by focusing on political commitments, current provisions, training, and the role of voluntary organizations. It concludes with an examination of why adults should be targeted. The paper then goes on to report on the levels and kinds of activities that currently exist and then identifies a series of developments such as curriculum and institutional changes, discussions on values, building partnerships, staff development and social policy issues, all of which the authors of the report see as necessary steps in the transition to a more sustainable society.

ASPBAE Courier, "Environmental Education for Sustainable Development", No. 55, 1993.

This edition of the newsletter by the Asian-South Pacific Bureau of Adult Education highlights the role which environmental adult education can play in building sustainable societies and development. This role is identified first in a presentation of the historical Belgrade Charter which, though drafted ten years ago, still remains pertinent today in its principles and philosophy of environmental education for adults. Gordon Ng's article defines his approach to environmental education, the 3 "A"s approach, which consists of Awareness-raising, Attitude-changing and Action-plan implementation. Other articles deal with issues such as appropriate education technology, and environmental education in government in-service and training centres.

The National Institute of Adult Continuing Education "Learning for the Future", a special issue on adult learning and the environment, in Adults Learning, Vol. 4 No. 8, April 1993.

This special issue presents different examples on how educators and practitioners provide environmental education for adults. Articles by various authors from around Europe focus on current situations in environmental education and training, education and action for urban environments, and environmental ethics. Other articles examine the role which local communities play in setting environmental agendas and offer practical guidance on how everyday objects can be used to raise topics for discussion and action about the environment.

Orr, David (1992) Ecological Literacy: Education and the Transition to a Postmodern World. Albany: State University of New York Press

This publication outlines the changes that must occur in the educational system if ecological disasters are to be avoided. The essays in this volume, written between 1984 and 1989, represent an extended reflection on the crisis of sustainability in the modern world, and what this means for the theory and practice of education. Part one focuses on the issue of sustainability, the problems, meanings, systems and strategies. Part two looks at the role education must play in the journey to a postmodern world. It defines the place of pedagogy in this new world and asks questions vis a vis the purpose of education and whether environmental education is an oxymoron. Part three asks the question "What Knowledge for What Purpose?" if there is no planet left on which to function, and examines food and agriculture systems.

Women and Environmental Education

Women and Environments: Women, Education, Environment and Development. Toronto: Our Times Publishing, Vol. 13 No.3/4, Winter/Spring 1993.

These writings compiled by women from around the world evoke the "personal is political" ethos. They communicate how their strength as women has moved them to take many diverse actions to protect the environment, support one another, educate themselves, provide economic, moral, social and psychological support and challenge oppressive global structures and processes. Various essays look at local initiatives by women in Nigeria towards a healthy environment; discuss the myths and facts vis-a-vis global population; outline the debt crisis in Latin America and its particular impact on women; articulate the struggle for development which women face in Cuba; make linkages between women and nature; and discuss how the United Nations Conference on Environment and Development is now being seen as an excellent example of the potential of women's participation and organizing capacity.

Lechte, Ruth "Women as Educators for Primary Environmental Care". Paper written for the May 1993 Seminar on Environmental Education for Women in Asia, Taiwan

The argument of this paper is that healthier and better educated people are more able to participate in good environmental development. Education and training empowers by creating a sense of confidence and understanding. Lechte identifies the paper as a call to deliver knowledge and education to women and for more women to become educators and trainers. The author frames the work by discussing the strong emphasis on education and knowledge in documents from the United Nations Conference on Environment and Development (UNCED). In Section two Lechte reflects on why there is, and should continue to be, an emphasis on the training and education of women. She sees women as traditionally being the major educators in their communities who now need to receive more updated information so they can operate at macro as well as micro levels. In the next section Lechte defines primary health care and relates the application of its concepts to the environment. Lechte puts forward the idea that, by empowering women and their communities, the world has a better chance of survival. Section four explores the notion of sustainable development by examining the way the world is run and its economic systems and emphasizing the role of education in helping to understand "just what may be destroying the very ground of our being". Section five describes the benefit of environmental

education and a possible process which could be used that includes identifying the problem, the solution, the resources needed, the audience and ensuring that the problem is clearly understood. The author concludes by identifying a number of key initiatives which women have undertaken around the world both to combat environmental degradation and moreover to build or restore healthy communities.

Part E: Food Production, Consumption and Distribution

Women and Agriculture

Dixon-Mueller, Ruth (1985) Women's Work in Third World Agriculture. Geneva: International Labour Organization

This author gathers information from scores of studies carried out in the Third World and describes how women are the most active producers in agriculture throughout the Third World. Dixon-Mueller points out that development programmes, GNP, and labour statistics often ignore women's key roles in this area and, as a result, development plans do not work for women; consequently, their status either remains low in society or even is diminished. Chapter one looks into the attitudes behind the flexibility and rigidity of the sexual division of labour in both the community and the household. Chapter two surveys women's work by using time-use as opposed to the simpler task-specific approach, arguing: "surveys can reveal daily, weekly and seasonal fluctuations in patterns of labour allocation between and within the household maintenance or between work on and off the farm." Chapter three discusses the value of women's labour, for example, farm production, women's contribution to household incomes, their control over returns and the wages they earn. It also outlines various underlying factors which affect women's productivity. Chapter four defines unemployment and underemployment, and looks into the discrepancies among data sources vis-a-vis women's labour force participation. The final chapter summarizes the findings and identifies various implications for research and policy, using various concepts and indicators which the author discussed throughout the book.

Sachs, Carolyn E. (1983) The Invisible Farmers: Women in Agricultural Production. Totowa: Rowman and Allanheld

Sachs investigates the historic roots of patriarchy on the family farm, and women's systemically undervalued role in agricultural production, in the United States throughout its history. A methodology of historical research and interviews with contemporary farm women explores women's involvement. The twenty-one indepth interviews focus on women farmers who are: 1) widows, 2) single women, 3) women married to men who are not farmers, 4) women married to farmers. These interviews reveal the subjective experiences of women on farms. Two case studies for each interview are presented. The author explains how women involved in farm work have been overlooked because of the impact of patriarchy on the division of labour in agricultural production. Women have often been restricted to domestic work. As a result, they have been kept in a subordinate position. In a feminist approach, the author looks at women's subordination in the sphere of agriculture from a political, class, and gendered perspective. She further examines how religion, science, economics, and the government legitimate this subordination. The book specifically traces women's work in subsistence production in seventeenth and eighteenth century New England to the present to look at transformations in the processes of agricultural production and changes in women's lives. It examines the beginning of the agrarian system, landownership and women, the division in decision making, and effects of urbanization, industrialization, science, and capitalism on farm women. It shows how agriculture in the United States is based on men's control of land, cash crops, machinery, and women's labour. Moreover, Sachs discusses how patriarchy and policies of domestication in the American

agricultural system are exported around the world by means of development programs that have subordinated women further in the third world by excluding them from access to modern agricultural techniques.

Monson, Jamie and Marion Kalb eds. (1985) Women as Food Producers in Developing Countries. Los Angeles: University of California

Authors from different countries illustrate the important but undervalued role which women play in food production around the world. Chapter one gives a brief overview of the issues, focusing on the marginalization of women through the modernization of agricultural production and marketing, and the loss of hundreds of jobs due to the Green Revolution. Chapter two examines new trends in labour and productivity on family farms/firms in the United States and their potential use in the South. Chapter three exposes some of the discrepancies which exist in official statistics of women's work by using examples from many countries. The next two chapters examine female-dominated business in Ghana and women's roles in livestock production in the Amazon region of Brazil. Chapter five examines the politics behind women's access to resources in Kenya, focusing on the conflict between national level institutions and local practices and power of women's organizations, as well as how male-biased resource distribution inhibits change. The publication concludes with a play entitled A Woman Has A Voice: "Theatre is used here as a medium of expression for education and understanding of the complexity of change facing rural agricultural communities in Africa."

Organic and Sustainable Agriculture

Christianson, Russel (1988) "A Marketing Plan for Sustainable Food Systems" (unpublished paper)

This document begins with some statistics and facts that show how the North American food system is grossly unsustainable. The author points out that it is not enough just to introduce organic foods into the mainstream foods system because they simply become a luxury only affordable to the affluent. Sustainable agriculture requires empowerment through collective action, decentralization of production and distribution, and a nurturing relationship with the environment rather than an exploitative one. Christianson develops vision and mission statements for a sustainable food system based on a list of the values that characterize it. Some measurable objectives of a sustainable food system identified by Christianson include: increasing the organic share of the food market, obtaining a high degree of return on investment for farmers, composting any food that is wasted, developing a high percentage of bio-degradable and recyclable packaging for organic producers, decreasing the petro-chemical inputs into agriculture, developing a code of ethics for a just and sustainable food system, lobbying to have valuable farmlands protected from the encroachment of development, lobbying government to financially support organic agriculture and related research, and integrating values of sustainable food system into education at all levels. The publication provides a "situation analysis" to assess the opportunities and constraints presented by the current situation for the development of a sustainable food system. The paper concludes by outlining a three-component market plan and then discusses the implementation of this plan, stressing the need for all interested parties to work

cooperatively, think globally and act locally.

"Organic Agriculture Study" Fredericton: Baseline Market Research Ltd. (1988)

This publication is a comprehensive market research report conducted for Agriculture Canada. It assesses the characteristics of the current market demand for organic foods and the potential for growth of the market in the future by gauging public opinion, perception and attitudes toward organic foods, as well as identifying who are the current and potential consumers. The research is conducted through a literature review, observation focus groups, and a national survey of urban households. The findings show that most people are at least aware that organic foods are healthier than commercial products since they are relatively chemical-free; that consumers of organic foods tend to be the younger, more educated, upper income, urban dwellers, based on their knowledge and concern about the harmfulness of chemicals in commercial foods; people in general are in favour of having organic foods more readily available; potential consumers are primarily the current consumers; that growth of the market will depend partly on setting prices that do not exceed 25% higher than commercial products; and finally that growth of the market is expected to benefit mostly farmers' markets rather than health food or grocery stores.

Part F: Biodiversity

Shiva, Vandana et al and the World Rainforest Movement (1993). Biodiversity: Social & Ecological Perspectives. London: Zed Book Ltd.

This collection of essays from the World Rainforest Movement challenge a publication by the World Bank, the IUCN, the World Wildlife Fund and the World Research Institute which focuses biodiversity erosion as a Third World phenomenon which can only be controlled by the industrial North. The essays present the solutions in the North and the problems in the South. The authors of Biodiversity argue "that the roots of the genetic erosion crisis lie in the industrial system of the North. They point out that Third World peasants and forest dwellers, who have been the guardians and beneficiaries of the world's biodiversity, could have their roles jeopardized by the incessant "need" of the North "to turn life forms into private property." Vandana Shiva, a leading ecofeminist, physicist and philosopher, also points out the dangers in emerging biotechnologies which create uniformity in production or monocultures. The essays outline the impacts which biodiversity conservation schemes from the North have had on indigenous populations, explore the underlying economic and political causes of the loss of biodiversity, and profile the real preservers of biodiversity: the NGOs, indigenous peoples, women's grass roots organizations, and "ordinary farmers."

The Navdanya Team (1994) Cultivating Diversity: Biodiversity Conservation and the Politics of the Seed New Delhi: Research Foundation of Science, Technology and Natural Resource Policy

This report is the first in a series of research papers which published on the issues of biodiversity erosion and the social and ecological impacts of monocultures in the forestry agriculture sectors of India. The first chapter of this report looks at the economic, ecological, nutritional and political importance of conserving biodiversity in farmers' fields. Chapter two outlines the many vulnerabilities which exist in the contemporary seed supply system due to the movement away from indigenous seeds brought about by the Green Revolution as well as the privatization of seeds and patents. The third chapter defines the importance of people's participation in the conservation of biodiversity and the work of Navdanya in strengthening people's knowledge and abilities to maintain seed biodiversity. It describes traditional agricultural methods such as in-situ conservation, crop rotation, cropping patterns, and the conservation of indigenous varieties as well as the role of trees and livestock in traditional systems of cultivation. The report includes tables, accompanied by drawings, which list trees identified by farmers as having high utility value. The final two chapters discuss how biodiversity is used to produce high yields and internal inputs and the looming extinction of nutritious crops due to biodiversity reduction as well as genetic engineering.

Shiva, Vandana, Vanaja Ramprasad and Radha Holla Bhar (1994) Sustaining Diversity: Renewing diversity and balance through conservation New Delhi: Research Foundation for Science, Technology and Natural Resource Policy

This publication begins with an explanation of the value of seeds in Indian culture. Chapter one outlines the concepts of diversity and sustainable agriculture as well as the displacement of biodiversity by monocultures, new biotechnologies and the world of GATT.

Chapter two discusses the limitations of gene banks and defines how and why in-situ conservation techniques are the most viable alternative. The following chapters outline the work of Navdanya which include planning, reinforcing farmers' knowledge, strengthening documentation, determining where and how to set-up community seed banks, and methods of seed storage and treatment, testing, evaluation and characterization.

ECO-ACTION INITIATIVES

OVERALL

Eco-Action provides Canadians with the information and encouragement they require to make decisions and to take voluntary actions to enhance the environment. It targets the business community, individuals and the educational community. All projects are designed to reduce specific actions with measurable result indicators.

The emphasis is on building the capacity of Canadians to make sound environmental decisions and to take appropriate actions. Some of the tools used are disseminating motivational messages, sharing success stories, and providing informational products. Projects are designed and implemented in partnership with industry organizations, educational associations, other levels of government, community and environmental groups.

The operational dynamic is based on the synergy between the Headquarters group and the five regions. They work together to set the national framework for actions. Headquarters develops national projects and materials while the regional offices determine what activities and emphasis are most appropriate in their region. The initiatives described reflect the national initiatives.

Educational Community

- a) **EECOM** The Canadian Network for Environmental Education and Communication has a mandate to strengthen and improve environmental education in Canada and to foster a greater awareness of environmental education among Canadians. Environment Canada provided initial financial support to the original Steering Committee which founded EECOM and will continue to work with it as it networks with environmental educators across the country.
- b) **The Coalition of Canada's Education Leaders** is a group of thirteen national education associations which joined together to promote environmental citizenship. With the support of Environment Canada they have completed a declaration supporting environmental citizenship. They have called on their own constituencies to commit themselves to certain principles of environmental citizenship and to offer educational programs.
- c) **Learning for a Sustainable Future** is an initiative started by the National Round Table on the Environment and the Economy and now supported by Environment Canada. It is a multi-stakeholder, independent, non-profit organization which has as its goal to incorporate sustainable development principles into the curriculum of the formal education system.

Environmental Success Stories

A Data Bank consisting of examples of individuals and organizations who have taken concrete measures to change their practices in ways which will benefit the environment. Often these changes have also benefitted the companies or groups financially as well. The Data Bank is divided into 10 categories: 1) Individuals 2) Municipal Governments 3) Non-Profit Organizations 4) Academia 5) Provincial Governments 6) Environment Canada 7) Federal OGDs 8) Specialized Bodies 9) Private Sector 10) Environmental industries.

International

Limited initiatives related to sharing information and products with other countries in the area of environmental education and awareness. Most of the effort in this regard is on the Trilateral Agreement on Environmental Education with the U.S.A. and Mexico.

Action 21

Action 21 is a national campaign "to communicate the individual and collective actions needed for sustainable development". This initiative promised in the Liberal Red Book, addresses all sectors and presents an opportunity to engage Canadians as participants in keys issues rather than as targets for information. The national campaign has four prongs: a) Greening Government b) Greening Business c) Promoting Community Action d) Engaging Individual Canadians (Informed Public Debate).

Messages Program

One of the communication elements of a broader Environment Canada strategy; it disseminates environmental citizenship messages to the media and the public via 80 community-based Weather Offices. The program is being revised so that the messages will have greater impact and can be delivered by a wider variety of partners.

Backyards for Biodiversity

To encourage and empower Canadians to participate in the achievement of this nation's Biodiversity Convention Strategy by taking action in their own backyard in an effective and measurable manner. A contribution has been made to the Canadian Nature Federation to publish a special issue in the Spring of 1995 focused on biodiversity and what people can do to support it. Initial products under consideration for design and delivery in conjunction with environmental organizations and provincial/local governments include a) National Technical Manual for small area landowners b) Regional Technical Manuals c) Recognition "Awards" d) Registry of Backyard for Biodiversity Participants.

Information / Products / Networks

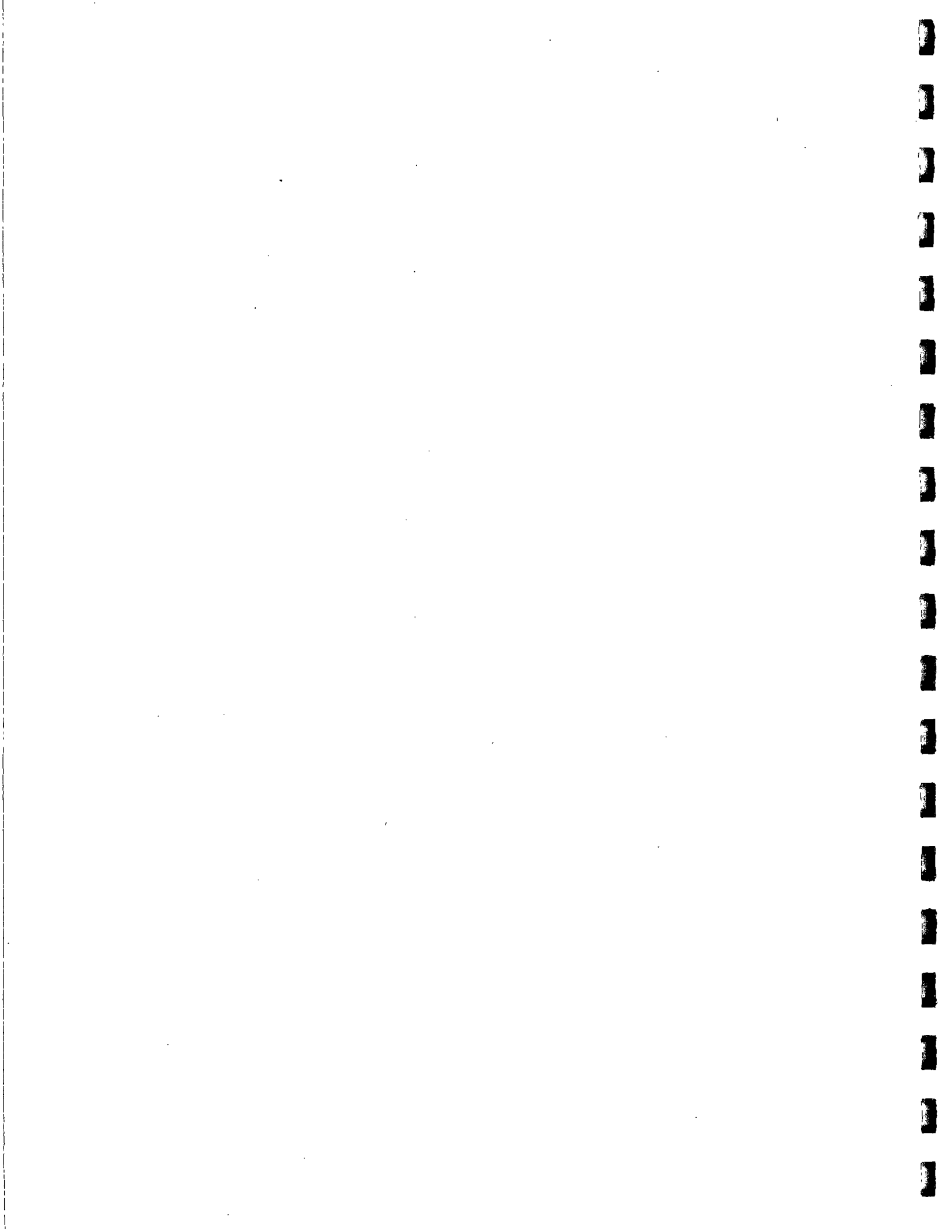
Series of Environmental Citizenship primers and Snapshots have been produced providing information on subjects such as global warming, ozone depletion, waste management, fresh water, space and species, environmental citizenship. Tapping the Internet Network resources is being actively explored.

EnviroCat (Environmental Citizens Access Terminal)

Paper-free publishing of electronic Interactive books as educational tools. The books are to be distributed on Internet and electronic bulletin board systems.

EcoFax

An automated fax data link hooking a caller up with an electronic library and providing the individual with immediate information via fax. The library is made of selected documents from the four Branches of the Environmental Citizenship Directorate: Environmental Stewardship, Environmental Partners Fund, Environmental Choice and Eco-Action.





SECTION III

SELECTED ENVIRONMENTAL EDUCATION RESOURCES AND
INFORMATION DIRECTORIES IN CANADA

Title	Brief Description	Contact Name and Address	Comments	pages
The Canadian Compendium of Environmental Training Courses and Programs	<ul style="list-style-type: none"> ▪ Compilation of environmentally-related courses currently offered in post-secondary educational institutions in Canada 	Canadian Council for Human Resources in the Environment Industry 700 4th Avenue S.W. Calgary, AB T2P 3J4 T 403-233-0748 F 403-269-9544	<ul style="list-style-type: none"> ▪ Not in IDRC library ▪ 4 volume print version ▪ 1.44 MB diskette computer version 	1 - 4
The Canadian Environmental Education Catalogue	<ul style="list-style-type: none"> ▪ Catalogue listing over 1,200 environmental education titles complete with bibliographic, ordering and pricing information. ▪ Supplementary titles updated every 6-8 months. ▪ Entirely revised catalogue every 2 years. 	The Pembina Institute Box 7558 Drayton Valley, AB T0E 0M0 T 403-542-6272 F 403-542-6464	<ul style="list-style-type: none"> ▪ Available at IDRC Library ▪ 3-Ring binder print version ▪ MS-DOS or Macintosh computer version (3.5 or 5.25 inch for MS-DOS) 	5 - 14
Clearinghouses and Resource Centre	<ul style="list-style-type: none"> ▪ Names, addresses and description of over 25 individuals and organisations supplying educational materials to the public. 	See listing	<ul style="list-style-type: none"> ▪ Taken directly from ECO-ED Catalogue of Resources (see below) 	15 - 16

ECO-ED Catalogue of Resources	<ul style="list-style-type: none"> ▪ Bibliographic listing and ordering information for 1,000 educational materials from over 50 countries related to environmental and development education. 	<p>Walk Your Talk Publications 329 Eglinton Avenue Toronto, ON M4P 1L7 T 416-487-8141 F 416-588-5725</p>	<ul style="list-style-type: none"> ▪ Available at IDRC Library ▪ 3-Ring binder print version 	17 - 44
Environment and Development Education Activities in Canada Data Base	<ul style="list-style-type: none"> ▪ Inventory of Canadian public education activities linking environment and development issues from 1990-1992. 	<p>Joy Woolfrey International Education Centre St. Mary's University Halifax, NS B3H 3C3 T 902-420-5525 F 902-420-5288</p>	<ul style="list-style-type: none"> ▪ Available at IDRC Library ▪ 3-Ring binder print version with 3.5 MS-DOS diskette 	45 - 58
Environment Educator's Guide to the Internet		<p>Rick Kool B.C. Ministry of the Environment T 604-356-2077</p>	<ul style="list-style-type: none"> ▪ Not available yet, but will send to IDRC when complete 	N/A
North American Association for Environmental Education	<ul style="list-style-type: none"> ▪ List of names and addresses of all NAAEE members worldwide. 	<p>Edward McCrea NAAEE P.O. Box 400 Troy, OH U.S.A. 45373 T 513-676-2514</p>	<ul style="list-style-type: none"> ▪ Membership made up of formal and informal educators concerned with environmental stewardship and responsible action. 	59 - 88
Who's Who in Environmental Education - A Directory of Organizations and Agencies 1993	<ul style="list-style-type: none"> ▪ A fully indexed directory of over 350 Canadian environmental education organisations. 	<p>The Pembina Institute Box 7558 Drayton Valley, AB T0E 0M0 T 403-542-6272 F 403-542-6464</p>	<ul style="list-style-type: none"> ▪ Available at IDRC Library 	89 - 98

CANADIAN COUNCIL FOR

HUMAN RESOURCES IN
ENVIRONMENT INDUSTRY

LE CONSEIL CANADIEN DES RESSOURCES HUMAINES DE L'INDUSTRIE DE L'ENVIRONNEMENT

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Compendium of Environmental Training Courses and Programs Publication Announcement

March 1994

The Canadian Council for Human Resources in the Environment Industry ("the Council") is an industry-initiated and led, not-for profit Canadian corporation with a mission "to ensure an adequate supply of people with the appropriate skills and knowledge to meet the environmental needs of the public and private sectors." This permanent, national body will assist the stakeholders of the environment industry in resolving critical human resource issues which could constrain the industry's future growth.

During its first year of operation, the Council compiled the environmentally-related courses currently offered in post-secondary educational institutions across Canada. This resulted in the publication of the *Compendium of Environmental Training Courses and Programs*. After thoroughly documenting the skills and knowledge needed by the various subsectors of the environment industry, the Council will use the compendium in comparing the skills being taught with those actually needed by industry. This strategy will help ensure competent and qualified environmental employment in Canada in the future. The compendium was initially created for the Council's own use, but it is now being offered to the public in order to facilitate information transfer between the stakeholders of the environment industry.

The compendium consists of four volumes:

- *Volume I — The Atlantic Region*
- *Volume II — Quebec*
- *Volume III — Ontario*
- *Volume IV — The Western Region and Territories*

The compendium is available in hardcopy or on 1.44 MB diskette. Thousands of courses and their descriptions are listed for each region, in alphabetical order by institute. If you would like to order any of the above volumes, please contact the Council at:

Canadian Council for Human Resources in the Environment Industry
700 - 4th Avenue S.W., Suite 700, Calgary (Alberta) T2P 3J4
Tel: (403) 233-0748 Fax: (403) 269-9544



CANADIAN COUNCIL FOR



HUMAN RESOURCES IN THE ENVIRONMENT INDUSTRY

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 Calgary, AB T2P 3J4
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 Facsimile: (403) 269-9544



Maintenance (Proposed)

Course Description: Demonstrate knowledge of the power system, its function and components. Use checklist for routine maintenance of an emergency power system. Demonstrate knowledge of maintenance guidelines regarding fuel and engine oil filters. Demonstrate knowledge of the minimum operating conditions for a diesel engine.

ONTARIO SOIL AND CROP IMPROVEMENT ASSOCIATION
181 Toronto St. S.
Markdale, ON
N0C 1H0

Environmental Planning and Education
W.M. Don Hill, Program Coordinator
Telephone: 519 986-2040
Facsimile: 519 986-3014

**ENVIRONMENTAL EDUCATION AND PLANNING
PROJECT DEVELOPMENT**
Contact: W. M. (Don) Hill
Program: Environmental Education for Farmers
Programs

Course Description: In January 1992, a coalition of 28 farm organizations representing some 40,000 producers in Ontario, released a document entitled "Our Farm Environmental Agenda." This document represented the beginning of a consultative process, by which farmers seek to be proactive and accept responsibilities for the impacts of agriculture in the environment. It documents 17 areas of concern and suggests mechanisms to bring about positive changes. The central feature of the initiative will "ask every farmer to develop and maintain an environmental farm plan for his or her enterprise." These farm plans include 23 risk assessment modules for a broad range of issues from drinking water wells to wood lots and associated wildlife, a planning section outlining proposed solutions for higher risk situations and an implementation schedule. Funding is in place from Agriculture Canada providing an opportunity for 500 farm families to develop environmental farm plans this winter (1993). Technical assistance has been provided by the Ontario Ministries of Agriculture and Food, Environment, and Natural Resources and several non-government organizations. The members of the Farm Environmental Coalition are the Ontario Federation of Agriculture, Christian Farmers Federation of Ontario, AGC care and Ontario Farm Animal Council.

PONTIFICAL INSTITUTE OF MEDIEVAL STUDIES
59 Queen's Park Cres. E.
Toronto, ON
M5S 2C4
Telephone: 416 926-1300
Facsimile: 416 926-7276

**MST 9217 THE ART AND ARCHAEOLOGY OF
MEDIEVAL ROME**

Contact: S. Campbell
Program: Doctorate in Medieval Studies
Course Description: The development of Rome as a medieval city, with special attention to the artistic development and archaeological evidence of its transition from a pagan imperial city, and with reference to city planning, history, and the economy.

QUEEN'S THEOLOGICAL COLLEGE
Kingston, ON
K7L 3N6
Telephone: 613 545-2110

Facsimile: 613 545-6879

To date there has been no response.

QUEEN'S UNIVERSITY AT KINGSTON:
Kingston, ON
K7L 3N6
Telephone: 613 545-2000

Environmental Science
Prof. Robert Gilbert, Coordinator
Telephone: 613 545-2000
Facsimile: 613 545-6810

Environmental Engineering
J.D. McCowan, Associate Dean

CIVL 850 ADVANCED FLUID MECHANICS

Contact: No Information Available

Program: Civil Engineering

Course Description: Fundamental equations of real fluid flows are developed and discussed using vector and tensor notions. Some exact and approximate solutions of these equations are introduced. The stability of laminar flows and the transition to turbulence are examined; the Reynolds equations are derived and some applications of these equations are investigated. The boundary layer concepts is introduced. Recent developments in the theory of turbulence are outlined and discussed.

CIVL 851 ADVANCED HYDROLOGY

Contact: No Information Available

Program: Civil Engineering

Course Description: Single site and regional frequency analysis; parametric modelling of hydrologic components and systems; lumped and distributed event models for urban and natural drainage basins; continuous stream flow simulation; real-time hydrological forecasting.

**CIVL 855 HYDRODYNAMICS OF COASTS AND
ESTUARIES**

Contact: No Information Available

Program: Civil Engineering

Course Description: Equilibrium theory of tides, tide recording, tidal analysis and prediction, one and two-dimensional tidal computation in estuaries and seas, salinity, sedimentation, pollution in estuaries, storm surges and tsunamis, and tidal inlets are the major topics treated. Emphasis will be on both theoretical analysis and practical design.

CIVL 857 RIVER AND ICE ENGINEERING

Contact: No Information Available

Program: Civil Engineering

Course Description: Principles of the theory of dimensions, as required for the study of alluvial processes, are introduced. The prediction and consequences of sediment transport are explained and formulated for rivers and open channels. Hydraulic modelling of fluvial processes and river engineering structures is discussed. Ice engineering includes the effects of a continuous cover of ice on the regime of a river, the forces exerted by ice on structures and the nature and cause of ice jams.

CIVL 880 SUBSURFACE CONTAMINATION

Contact: No Information Available

Program: Civil Engineering

Course Description: This course deals with subsurface contamination by hazardous industrial liquids such as PCB oils, gasoline, jet fuel, chlorinated solvents and coal tars. The fundamentals of multiphase/multicomponent flow and transport will be outlined followed by specific treatments of both dense and light non-aqueous phase liquids. The course will examine the subsurface distribution of these liquids, sampling and detection, clean-up technologies, regulatory aspects, and

selected case histories.

CIVL 886 UNIT OPERATIONS AND PROCESSES OF BIOLOGICAL WASTEWATER TREATMENT

Contact: No Information Available

Program: Civil Engineering

Course Description: This course will develop the principles and operation of biological wastewater treatment processes, with particular emphasis on the microbiological aspects of these operations. The application and design of different treatment methodologies incorporating aerobic and anaerobic techniques, will be detailed for various wastes. The management, processing and disposal of treatment residuals will be presented. Selected advanced and innovative small-scale treatment options, with application to the local situation, will be described.

CIVL 887 INDUSTRIAL LIQUID/HAZARDOUS WASTE MANAGEMENT

Contact: No Information Available

Program: Civil Engineering

Course Description: This course will discuss and develop the principles and theories behind the management of industrial liquid waste and hazardous waste. Topics include industrial water quantity/quality requirements; characteristics of specific industrial liquid effluent; avenues of liquid waste management (as required by programs such as M.I.S.A.); and environmental auditing procedure. Hazardous waste management techniques to be discussed include containment, dispersion and destruction methods.

BIOL-101 ORGANIZATION FOR LIFE - THE CELL

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: Structural morphology and biochemistry of cellular processes. The interaction of cells and the formation of tissues/modifications of cells for different functions with emphasis on the relation of organ structure considered in a framework of organic evolution.

BIOL-111 ECOLOGY AND THE ENVIRONMENT

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: The basic laws governing ecosystems; study of major environments; environmental issues including population growth, climatic changes, lake eutrophication, acid precipitation and pesticides. Registration requires approval of course instructor as enrolment may be limited.

BIOL-200 ORGANIZATION FOR LIFE - THE ORGANISM

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: A survey of plants and animals, their internal organization and their relationships to their environment. Organismal biology is discussed in a phylogenetic context and the evolution of organizational complexity and structure-function relations are stressed.

BIOL-201 INTRODUCTION TO GENETICS

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: Molecular, Mendelian and population genetics. Effort is made to relate principles to evolution. Individual and group studies are emphasized through tutorials and laboratory projects.

BIOL-301 PLANT PHYSIOLOGY

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: Carbon metabolism (photosynthesis, respiration, fat metabolism); nitrogen metabolism; mineral nutrition; ion uptake; water relations; translocation; growth substances.

BIOL-302 POPULATION AND EVOLUTIONARY ECOLOGY

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: Introductory ecology dealing with population growth and regulation, species interactions and reproductive and life history strategies. Laboratory work includes field studies as well as individual and group projects.

BIOL-303 COMMUNITY AND ECOSYSTEM ECOLOGY

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: A continuation of introductory ecology in BIOL 302 dealing with adaptation to the physical environment, the dynamics of energy and elements in the ecosystem, and community structure and development. Environmental problems are assessed in terms of ecological principles. Laboratory work includes individual and group projects.

BIOL-307 FIELD BIOLOGY I

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: Two weeks of field work plus written assignments in one or two areas of study to be done when specialized modules are available in May, July, August or February. Studies may include ecology of birds, fish, insects, small mammals, plants, tundra and taiga, lakes and caves. The schedule of offerings for each year is available in January.

BIOL-335 GENERAL LIMNOLOGY

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: The physical, chemical, and biological characteristics of freshwater lakes. Emphasis is on morphometry, light and temperature regimes, water chemistry as it relates to nutrients and physiological requirements, the composition and interaction of algal and invertebrate populations, eutrophication, and pollution.

BIOL-338 COMPARATIVE ANIMAL PHYSIOLOGY

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: Stress is placed on adaptive physiology and integrative function (nervous and hormonal, movement, excretion, circulation and digestion) with examples selected from various phylogenetic levels as appropriate.

BIOL-343 DATA MANAGEMENT AND ANALYSIS

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: This course explores the entire process of data handling for biologists from the formulation of interesting questions, through the design of experiments and statistical analysis, to final publication of results in papers and seminars. Emphasis is placed on the use of microcomputers to facilitate this process and on the practical application of statistical methods for data analysis.

BIOL-501 BIOL501/0.5 TO 533/0.5 - ADVANCED HONOURS SEMINARS

Contact: Robert Gilbert

Program: Environmental Sciences

Course Description: A series of advanced half courses with an emphasis on reading and/or experimental enquiry carried out independently by each student. Regular meetings in small groups with staff provide direction in developing approaches to particular topics. Evaluation is based primarily on oral presentations and written reports. 500-level offerings will be announced in advance for students in their third year. Offerings may vary from year to year depending on availability of staff and student interest. Normally, due to enrolment restrictions,

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The Canadian
Environmental Education
Catalogue

A Guide to Selected Resources and Materials

Premier Edition

compiled and published by

The Pembina Institute for Appropriate Development
Drayton Valley, Alberta

with support from

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Selected from The Pembina Institute's comprehensive environmental education resources database and cataloguing service.

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Several members of the environmental education community, experienced in working as educators, resource developers, and/or program directors, took time from their busy schedules to share with us their advice and feedback. Many of their ideas have been incorporated in the development of the catalogue. We acknowledge with thanks: Dan Stoker, Jim Martin, Wallie Samiroden, Bev Romanyshin, Nestor Kelba, Bev Yee, Earl Choldin, and Pam Shipstone.

The members of the catalogue project team must be commended for getting the project off the ground, and managing its development. Their hard work and dedication have laid a strong foundation for the ongoing cataloguing service.

Our thanks are also extended to the many individuals and organizations involved in producing environmental education resources who sent us review copies of their materials and took the time to respond to our questionnaires and phone calls.

Finally, we acknowledge the thousands of people who are educating others to understand the problems of, and the solutions to, the global environmental crisis we face. It is through education that people are motivated and empowered to take action; and through action that we can achieve an environmentally-sustainable, just, and secure future.

The Future of the Catalogue

The first edition of the Catalogue was developed as a pilot project. Released in 1992, it introduced the environmental education cataloguing service to Canadian educators. The response to the service has been excellent, to date over 800 copies have been distributed.

As demand for the service continues to grow, we have set in motion a three-year plan to provide comprehensive coverage of the more than 4500 English-language resources not yet listed in the Catalogue. We have also established a partnership with a Quebec-based environmental non-governmental organization to cover French-language resources in the Second Edition of the Catalogue, to be released in the fall of 1994. We are developing new means for educators to access the Catalogue's information. It is now available in electronic format for Macintosh computers, and will soon be available for MS DOS-based systems. The ability to access the Catalogue using a modem linked to a computer network is also being developed.

Support for the research and development of this comprehensive service has been received from the Environmental Partners Fund, Shell Canada, TransAlta Utilities, and LA Technology. Their support has enabled us to continue to provide the Catalogue at a low cost to educators. We thank them all for their contributions and confidence.

We would like your support in promoting the Catalogue among your colleagues. If you can assist us by publishing information about it in newsletters or periodicals, or by displaying it at conferences or workshops, please contact us at the address provided on the following page to receive suitable promotional materials.

To order additional copies of this catalogue,
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Drayton Valley, Alberta, Canada
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Ph: (403) 542-6272 Fax: (403) 542-6464

- Print Version - *receive the main volume plus two supplementary volumes of new resources*

- Computer Version - *available in MS-DOS or Macintosh (please specify preference and disk size - 3.5 inch or 5.25 inch for MS-DOS format)*

The computer version comes with an easy-to-use program that performs faster, more sophisticated searches to retrieve information, and allows you to print customized lists. Individual copies are affordably priced and site licences and bulk order rates are available.

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Foreword

Air pollution; toxic spills; shrinking wilderness and wildlife habitat; the loss of wild rivers or unique spaces and the growing rate of extinction of plants and animals; rising levels of chemically-induced cancers; marine pollution resulting in everything from plastic to oil lapping up on coastlines around the world; climate change and global warming from greenhouse gases and deforestation; increasing health risks from our assault on the protective ozone layer; growing scarcity of potable water supplies; soil erosion and expanding deserts; over-consumption; -- these are only a few elements of the global ecological crisis we now face.

In Canada, our huge resource base, the existence of some environmental protection standards and our low population density can easily obscure our view of these escalating environmental threats. However, we are part of a world community which shares a common global economy and a common global life support system -- a system that is deteriorating at an accelerating rate. The Earth is also the source of the natural resources upon which much of our economic well-being depends; thus the environmental crisis is now finally being recognized as a profound economic disaster looming on the horizon.

The severity of the global environmental crisis has reached a stage where the evidence is finally being taken seriously by scientists, governments, businesses and individual citizens. There is a growing consensus that the major global environmental battles will be won or lost during this decade. If current trends are not reversed in this time span, pollution and resource shortages will lead to human suffering and social dislocations of a magnitude that we once thought only possible from global thermo-nuclear war.

The solutions to the myriad of environmental threats facing Earth and her inhabitants are inextricably linked to resolving problems of underdevelopment, poverty and social injustice; and to attaining peace and security using a fraction of the resources now devoted to national military systems. They are also linked to resolving the increasing social decay within industrial societies -- a decay that is rooted in excessive materialistic consumerism and the blind pursuit of quantity of consumption over quality of experiences and relationships and a deeper appreciation for life.

A successful strategy for survival and prosperity must follow several tracks. Immediate action must

be taken on numerous fronts, requiring individuals and institutions to reduce consumption and stop pollution and destruction of natural systems. Immediate advocacy and action is required to change policies and programs of governments, corporations and social institutions. These short-term stop-gap efforts can buy the time needed to achieve fundamental shifts in the underlying value systems of our societies towards a worldview that can sustain a peaceful, just, and environmentally-sustainable future. The importance of school, adult, and community education about environmental issues and solutions is paramount to success on both short and long-term tracks.

Thus, whether it be formally by curricular requirements, informally by their students, or by their own realization of the essential role education must play, educators are being called on to address environmental concerns more and more frequently. However, the magnitude of the environmental education task in the context of ever-expanding demands on school and community educators is at best intimidating, and at worst paralyzing.

Fortunately a number of excellent resources and teaching ideas already exist and can make it easy to start or expand environmental education in almost any setting. However, they are not always easy to find. Thus the Pembina Institute has established a service of reviewing and cataloguing these materials in a way that makes it easy for educators to find what they are looking for.

This first edition of *The Canadian Environmental Education Catalogue* is intended to assist educators and community organizations in a wide variety of environmental education programs and activities. We hope that this will accelerate the development of a public that is better informed, more active and more effective in their efforts towards environmental protection, resource conservation, and the restoration of ecological sanity to human activity.

Good luck in your environmental education initiatives. We hope that the catalogue will be of assistance, and aim to continue to improve and update it. Your feedback and suggestions will be most welcome.

*Rob Macintosh - Executive Director
The Pembina Institute for Appropriate Development
November, 1991*

Introduction

The need for a catalogue

Public demand for information on issues and solutions related to environmental conservation and protection is mushrooming, and it will continue to grow as the environment becomes a major consideration in all aspects of business, culture, and living in the 1990's. This is especially true for educators, who are increasingly being called upon to address environmental concerns.

While there are a great number of environmental education resources available, they can be difficult to find, often reaching only a limited audience. At the same time, educators seeking specific materials face the daunting task of sorting through these resources to identify ones suitable for their needs.

This catalogue is an attempt to broaden awareness of the resources available and to present them in a manner that makes it easy for educators to find what they are looking for.

For developers of environmental education materials and products, the catalogue is an opportunity to identify existing resources to use as background information, or to avoid replicating the efforts of others by "re-inventing the wheel".

Research and compilation

Beginning in the Spring of 1990, a research team contacted numerous practicing environmental educators as well as several hundred organizations and individuals producing environmental resources suitable for school and community education. In the belief that students should develop informed opinions by critically analyzing, comparing, and evaluating information from a number of perspectives, materials were gathered from a wide range of sources including formal educational institutions, environmental groups, commercial publishers, community organizations, government departments, and industry associations.

The primary focus of the service was to catalogue those resources developed in English Canada. However, materials with quality ideas or suitable for general application have also been included from the United States, Great Britain, and other countries.

For each resource bibliographic, ordering, and pricing information has been compiled. The descriptive first-hand review was written by in-house reviewers who have highlighted the essential

elements of the resource's content, structure, and its usefulness as a teaching tool. The environmental topic focus, reading level or intended audience, and the type of educational use for which the resource is designed have also been assessed. Reviewers have identified where a resource reflects a particularly strong bias or indicated the perspective from which an issue is presented.

The project's master database of resources contains more than 4,000 titles, of which approximately 1,200 are included in this first edition. A number of others will be listed in upcoming supplements.

The philosophy of the project has been to provide a service to educators by being somewhat selective and only including resources deemed by the project's advisors and reviewers to be of particular use to school and community environmental education. Resources with the following features have not been listed:

- dated material - information and issues have changed enough that significant omissions or inaccuracies exist.
- superficial environmental content - this includes natural history, science, or outdoor recreation materials without clear links to environmental issues.
- overly technical - material too advanced for general environmental education or background information at the high school or general "lay" public level.
- restricted to specific locales - information or ideas only useful to a limited local application containing little that can be transferred to general use.
- foreign bias - material produced in other countries where the statistics, legal information, or geographic context are sufficiently inappropriate for Canadian use that it would interfere with accurate learning of the overall concepts.
- over-subscribed - in environmental topic and grade categories where a large number of resources are available, only resources rated by reviewers as being of very good calibre are included so as to not overwhelm users.

Affordability

The catalogue has been priced as low as possible to keep it widely accessible to educators. The price covers only the cost of printing, binding, and

mailing. The project co-sponsors subsidized the development of the catalogue (including research, compilation, and production), which represents 85% of the final cost.

A cataloguing service: staying with it!

To be of service to educators, a resource catalogue must be continuously updated. Supplementary volumes of new resources will be

produced on a regular basis (approximately every 6-8 months). The entire catalogue will be revised and updated every two years.

The project is also in the process of developing computerized versions of the catalogue (in both IBM-PC and Macintosh formats). The electronic format will allow faster and more sophisticated searching of current information on resources.

Talk back! We Need To Hear From You!

Corrections: getting it right. We have attempted to provide the most up-to-date and accurate information available for each resource. If you find some errors or omissions, please note the corrections to be made and notify us. These changes will be included in future editions.

Evaluation: what do you think? We would appreciate hearing your opinion about the resources as you use them in your educational work. If our review has missed some key points, or you find that a resource is inappropriate as a teaching tool, let us know! A brief note describing the resource and your evaluation of it would be appreciated.

Referrals: tell us about other resources. If you know of good resources suitable for school or community education and believe other educators should be made aware of them, we would encourage you to send us information about them and where they can be obtained. If you produce such material send us a sample copy to review. In either case, please complete and send the short resource referral form (on page X) with each resource you refer.

Promotion: let others know about the catalogue. The catalogue is an information networking service, by educators, for educators. In order to provide users with quality information at the lowest possible cost we are using efficient and low-cost promotion methods wherever possible: by word of mouth and network information-sharing. We would appreciate your help in telling other educators about the catalogue. On page ix is a subscription order form, and at the back of the binder is promotional material that can be inserted into newsletters or magazines used by other educators who might be interested. Thanks!

How To Use This Catalogue

To use this catalogue effectively read through the brief instructions below and familiarize yourself with the environmental topic and educator use categories which organize the index.

A. Searching by environmental topic:

1 Select the desired environmental topic focus.

On page I-1 you will find a descriptive listing of the general environmental topic categories used in the catalogue. Choose the topic(s) which best match the one you are looking for. To help you select the best term, the key word cross index (page I-2) links some common environmental terms with those of the catalogue. Now find the selected topic heading in the Environmental Topic Index (starting on page I-3). See sample at right.

2 Select the appropriate "educational use" category.

Under each environmental topic, resource titles have been sub-indexed according to the type of educational use for which each resource was designed. These categories are:

- Curriculum Material includes packaged lessons and materials specifically prepared for classroom use.
- Background Information sources of ideas, concepts, statistics, and general information about an environmental topic useful for preparing educational materials or for individual research by learners.
- Games/Activities includes computer programs, gameboards, puzzles, and colouring books.
- Fictional/Non-fictional Stories narrative accounts of events or adventures containing environmental content.
- Display/Motivational Material includes posters, music, and poetry or quotations, many of which are good starting points for a lesson or unit.

Environmental Topic Index		Wilderness & Parks	
Topic	Page No.	Format	Page No.
Games/Activities			
Digital Parade	46	poster	
The Eco-Kids Recycle The River: A Colouring Book	33	booklet	
The Peaks Of Flower Hill Colouring Book	156	booklet	
Display/Motivational Material			
Popeye Poster	139	poster	
Wilderness & Parks			
Curriculum Material			
Canopy Connections	23	booklet	
A Curriculum Activities Guide To Watershed Investigations And Environmental Studies, Volume IV	41	booklet	
Ecology Connections	51	booklet	
Ecology Studies Of Lakes In Alberta	52	kit	
Ecology: Balance Of Nature	53	kit	
Fieldwork Ecotourism: A Resource To Supplement The Alberta Education Junior High Environmental And Outdoor Education Course	76	booklet	
Friends Of The Forest	77	booklet	
How Living Things Depend On Each Other	101	kit	
Legends Of The Earth: Native Stories And Environmental Activities For Children	107	book	
Living Up To Death: Recreation Management In The Rocky Mountains	114	kit	
Natural Regions Of Alberta: Poster Series And Manual	119	poster kit	
Pond Pals - Grades 1-3	135	booklet	
Rainforest: A Living Layer	143	kit	
South Moravia: Destinations Of Conservation And Development: Teachers Resource Guide	163	kit	
Treasures Of The Rainforest	177	poster kit	
Tropical Rain Forests Under Fire	178	kit	
Vanishing Animals Teacher's Guide	181	booklet	
Welcome To My Home	187	booklet	
Wilderness - And You	191	booklet	
Wildlife Inquiry Through Zoo Education: Survival Strategies	192	kit	
Wind Over The Prairie	193	kit	
Background Information			
Alberta Wildlife Viewing Guide	11	book	
Alberta: Nature Alert Newsletter	12	newsletter	
Atlas Of Alberta Lakes	13	book	
The Big Outback: A Descriptive Inventory Of The Big Wilderness Areas Of The US	17	book	
Biosphere Series	18	1/2" VHS, Home Film	
Boreal: The Magazine For Canadian Parks And Wilderness	20	magazine	
Conservation	24	magazine	
Conserving The World's Biological Diversity	27	book	

3 Choose resource titles to lookup.

A select group of resource titles is available to you. Beside this alphabetized list is the page number of each resource's detailed listing in the catalogue. The reading level or intended audience of a resource, its format, and a cross reference to other topics with which it deals are also listed. This additional information will help you decide if a resource is appropriate before turning to the main body of the catalogue. Turn to the page number indicated by the index, the listing found there provides detailed information about the resource.

4 Review the resource.

- Title
- Bibliographic information includes (where applicable) author, publishing city, province/state and country, publisher, year published, and a ISBN/ISSN or other reference number.
- Environmental topic focus
- Intended educational use
- Reading/viewing level or intended audience
Reading/viewing level refers to the reading ability required of the person using the resource. It applies to materials designed as background information, fiction/non-fictional stories, and information access.
Intended audience refers to the level for which the content is appropriate. It applies to games/activities, curriculum and display/motivational materials, and resources of teaching methodology.
- Format(s) / refers to the resource's medium. Multimedia resources (using more than one format) are called "kits". The different components of the kit are identified in the review.
- Review / general description of the resource's content, structure, and usefulness as a teaching tool.
- Ordering information / name of the distributor, its page number in the Resource Distributor listings, and price.

Keepers Of The Earth: *Native Stories And Environmental Activities For Children*

Michael J. Caduto and J. Bruchac, Saskatoon, SK: Fifth House Publishers, 1988, ISBN 0-920079-57-1

Focus: aboriginal, wilderness & parks
Use: curriculum material
Intended Audience: grades K-9
Format: book (209 pages)

Designed to promote understanding, appreciation, empathy, and responsible action toward the Earth, including its people, this collection of illustrated North American Indian stories and activities strives to stimulate the imagination and encourage a closer, more symbiotic relationship with nature. Over twenty short stories are organized into simple themes such as seasons, water, and life, death, and spirit. Ecological concepts and values are taught in model and metaphor. In the first of two sections in this book, a guide for facilitators offers suggestions for using these stories. Interdisciplinary activities make up the second section. Background information for discussion, questions, activities, and extension experiences are all provided to help readers become involved and more appreciative. A role-play of how Inuit have been affected by the depletion of animals that make up their food supply, comparing chemical and organic farming techniques, and making a poster board model of a migration route of story characters are just a few examples of the incredible breadth of activities offered in this resource.

Order From: University of Toronto Press, Order Department
(page III-11), \$22.95

5 To order the resource from its distributor.
 Note the distributor's name and page number listed after "Order From:" in the resource's listing and turn to the Resource Distributor listings (pages III-1 to 12) for the distributor's address and phone information.

B. Searching for "How-to" materials, or for other lists of resources:

Two other "educator use" categories are also used:

- Teaching Methodology - strategies or techniques for teaching environmental education
- Information Access - catalogues and listings of resources, directories of organizations, agencies, and individuals.

Resources in these categories generally do not have a specific environmental topic focus. Indexes listing these resources are provided on pages I-57 and I-58.

C. Searching by resource title:

If you already know the name of the resource you are looking for, an alphabetical index of the resource titles begins on page I-59. In addition, the resource listings themselves are organized alphabetically.

Participants in the Meeting of
Clearinghouses and Resource Centre

One of the many events that happened at ECO-ED was a meeting to bring together individuals and organizations which are in the business of supplying information and educational materials to the public. Over 25 organizations attended the meeting and several more have expressed an interest in maintaining contact with one another. The following is a list of individuals and organizations which attended this meeting and may be able to give you access to further information:

Richard Jordan
36 Gramercy Park - 10 - S
New York, NY. 10003
USA
t. 212-475-3190
f. 212-645-6866

To link holistically, partners and partner organizations both North and South and to share resources, both human and financial.

Teresa Thomas
Center for Microbial Ecology
Michigan State University
540 Plant and Soil Sciences
East Lansing, MI 48824-1325
USA
t. 517-353-2917
f. 517-355-0204

Clearinghouse for educational materials available to K-12 teachers in education in general broken down into specific areas. Educational materials include: hands-on activities, laboratories, teacher training possibilities, student activities, information, books, etc...

Bruce Matthews
Coalition for Education in the Outdoors
Suny College at Cortland
Box 2000
Cortland, NY 13045, USA
t. 607/753-4971
f. 607/753-5999
Develop protocol for networking and cooperation with International Focus

Michael R. Alford
Earth Explorer Group
4590 MacArthur Blvd.
Washington, DC 20007, USA
t. 202/338-1063 ext.26
f. 202/338-1386

Developing CD Rom clearinghouse on EE for US. EPA, ECO NET Sonic Images

Tonya Hancherow
ECO-ED
c/o ICAE
720 Bathurst St, Suite # 500
Toronto, Ont. M5S 2R4
Canada
t. 416-482-9212

ECO-ED is dedicated to Education and Communication on Environment and Development. Projects revolve around multi sectoral partnership building and the maintenance of a data base on curriculum and resource materials.

Claude Lefcancois
EE Consultant
25 de la Marelle
Hull, Quebec
J8Z 2T6
Canada
t. 819/771-4391

EE consultant, working on a water & environment museum project that will try to act as a link to existing information. The museum would also make available it's own resources via existing networks.

Rhonda Hunter
Environmental Ed. Assoc. of Washington
c/o Dept. of Ecology -
P.O.Box 47600
Olympia, Washington
98504-7600 U.S.A.
t. 206/459-6147
f. 206/459-6146

Just beginning a plan for a state wide environmental education clearinghouse for many existing state wide EE resources. Target audiences: K-12 teachers (science, social studies, language arts + non-formal educators (public community).

Cathy Nensick
Environmental Exchange
1930 18th Street N.W. # 24
Washington, D.C. 20009
USA

Dr. Tony Myers
Environmental Health Centre
Room 233, Environmental Health Centre
Environmental Health Directorate
Turney's Pasture
Ottawa, Ont. K1A 0L2
Canada
t. 613-954-1759
f. 613-954-2486

To protect Canadians from hazards that may contribute to premature illness and death from exposure to chemical radiation and medical devices. The National Film Board of Canada is the contact for A/V Educational materials.

Jiri Kulich
EVA - c/o Czech Environmental Education Centre
CS-542 26 Horni Marsov, CSFR
Czechoslovakia
t. 42-439-948150
f. 948182
Representing national centres for environmental education serving as information clearing houses & resources centres both in Czech and Slovak republics.

Joan Adin
Global Education Centres of Ontario
815 Danforth Ave.
Suite 405
Toronto, Ontario
M4J 1L2, Canada
t. (416) 469-5664
f. (416) 469-5541
e:mail web id "geco"
G.E.C.O. is a network of 16 global education / development education community resource & action centres across Ontario.

Clearinghouses and Resource Centres

Jake Gomilny
Infolife
23 New Mount Street
Manchester M4 4DE
England
t. 061-953-4094
f. 061-953-4001 Paul Nathanson
Institute of Public Law
University of New Mexico School of Law
1200 Steinfeld N.E.
Albuquerque, NM, USA
Clearinghouse for wildlife and appropriate
legislation.

Andrew Rice
International Development Conference
1401 New York Ave. N.W. Suite # 1100
Washington, D.C. 20005, USA
t. 202-638-3111
f. 202-638-1374
Editor of "Ideas and Information about
Development Education" a resource
publication for development educators
published quarterly.

Beverly Croft
International Joint Commission
100 Ouellette Ave., 8th Fl.
Windsor, Ontario
N9A 6T3, Canada
The commission's mandate is to have a
warehouse for environmental and Great Lakes
information. A U.S. and Canadian
clearinghouse, networking & cooperation with
other databases English & French.

John Stewart
La Fête colombienne des enfants - The
Canadian Ambassadors Program
202-12840 16th Avenue
South Surrey, BC V4A 1N6
Canada
Provides a free Catalogue/data base of
materials concerning the environment, science
and technology that are available free of
charge from a variety of sources, government
and non-government. This material is on a
Macintosh compatible hyper card program and
is delivered personally to schools in Canada
by flight attendants from Canadian Airlines.
Bilingual

**Janet Talbot, David Cappaert, Paul
Nowak**
National Consortium for Environmental
Education and Training (USA) (NCEET)
Univ. of Michigan, School of Natural
Resources
430 E - Univ - 2028 Dana
Ann Arbor, MI 48109-1115 USA
t. 313-764-4350
f. 313-936-2195

Rory O'Brien
Nirv Centre - Web/EcoNet/APC
104-401 Richmond St. W.
Toronto, Ontario
M5V 3A8
Canada
t. 416-596-0212
f. 416-596-1374
To provide electronic mail, computer
conferences and online databases to users
in 94 countries in the areas of
environment, peace, human rights, social
justice, international development,
education and health.

Kate Muldoon
Office of Environmental Ed.
Florida Dept. of Ed.,
Rm 2246, Florida Ed Center
Tallahassee, FL 32399.0400,
t. 904-487-7900
f. 904-922-0028
State mandate is to "collect, refer and
disseminate EE material and use current
technology to do so."

Dave Henderson
Royal Society of Canada
Canadian Global Change Program
P.O. Box 9734,
Ottawa, Ontario, K1G 5J4
Canada
WCSRSC @ Carleton.Ca
Clearinghouse for global change
information in Canada. (primarily
research but have worked with media,
educators and public in the past)

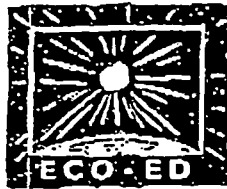
Joelle Danant
The American Forum for Global Education
National Clearinghouse on Development &
Environmental Education
45 John Street, Ste 908
New York, NY, 10038, USA
t. 212-732-8606
f. 212-791-4132
To contribute to creating internationally
compatible solutions for sustainability by
serving as a clearinghouse for formal &
informal educators, to support their work.

Raimonds Ernsteins
University of Latvia Ecological Centre/Institute
for Environmental Education and Information
19 Rainis Biv.
Riga LV-1098, Latvia
PHONE: +7-0132-225304
FAX: +7-0132-225039
TELEX: 161172 TEMA SU
INTERNET: root @ exocentis.riga, lv.

Elaine Andrews
University of Wisconsin - Cooperative
Extension
Environmental Resources Center
216 Agriculture Hall
Madison, WI 53706, USA
Water curricula - emphasis on non-formal
youth education.

Randy Champeau
Wisconsin Center for Environmental Education
Learning Resources Centre - Univ. of
Wisconsin
Stevens Point, WI, 54481, USA
t. 715-346-4973
To promote environmental education in
Wisconsin by developing and providing EE
courses and resources for K-12 teachers in
Wisconsin.

Donald Gordon
World Conservation Monitoring Centre
219 Huntington Road
Cambridge, CB3 0DL
ENGLAND
t. 1223-277-314
f. 223-277136
The World Conservation Monitoring Centre is
a joint venture between the IUCN, UNEP and
WWF. Its mission is to support conservation
and sustainable development through the
provision of information on the world's
biological diversity.



ECO-ED Catalogue of Resources

The ECO-ED Catalogue of Resources is a compilation of materials relating to environment and development education from over 50 countries. This is a valuable tool for educators, communicators and activists around the world. It features:

- ◆ 1000 educational materials relating to environment and development issues
- ◆ materials listed include: publications, films, videos, interactive disks, software, books and other educational tools indexing by subject and distributor
- ◆ 250 distributors of resource materials including publishers, non-governmental organizations, government, business and international institutions, clearinghouses and resource centres

Order Your Own Catalogue Now!

The ECO-ED Catalogue of Resources, edited by Tonya Hancherow, is a bibliographic listing of over 1000 educational materials which relate to environment and global education issues. The Catalogue's listing of 250 distributors, provides a who's who in the environmental education field. It contains UNESCO/UNEP and other United Nations publications with 50% of the materials listed available free of charge, and several offered in a variety of languages.

1993 \$52.80 3 Ring Binder 180 pages
Reference ◆ Environmental Education ◆ International Development

Available for \$52.80 (includes GST, shipping & handling) through:
Walk Your Talk Publications
329 Eglinton Ave East, Toronto, Ontario, M4P 1L7
tel. (416) 487-8141

action/advocacy
 agriculture
 acid deposition
 air quality/climate
 appropriate technology
 arctic and northern
 biodiversity
 biotechnology
 children
 consensus building
 critical thinking
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 development education
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 environment education
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 ethics/spirituality
 environmental technologies
 famine and hunger
 forests/deforestation
 global education
 hazardous/toxic
 health
 human rights
 indigenous
 information transfer network
 land use/desertification
 lifestyle
 literacy and training
 law and government policy
 militarism
 marine
 mining
 nuclear
 outdoor education
 peace
 pesticides
 population
 poverty
 recycling & waste
 sustainable development
 transnational organizations
 transportation
 tropical environments
 urban issues
 wilderness & parks
 wildlife preservation
 women & youth
 water quality

How to Use the Catalogue

The resources in this catalogue have been entered according to the information given to ECO-ED by the distributors. Some editing has been done, keeping as closely as possible to the original text. The information has then been sorted for easy access using indexes as a guide. The catalogue of resources has been broken into 3 sections:

1. Indexes by subject
2. Distributor Listing alphabetically with full ordering address
3. Resources Listing by title

Information from the indexes will refer to the specific title which can then be found in the Resource Listing.

The Resource Listing gives the following details:

Title:

Bibliographic Information: Includes; author(s), program or department under which the material is issued; publisher; year or times of publication; and, ISBN/ISSN reference Number(s).

Subject(s): 3 choices in order of relevance

Geographical Focus:

Audience: Age level and/or interest group to which this material is targeted.

Nature of Material/Service: Type of resource. ie. kit (combining several types of material), video tape, theatre, etc...

Language: The languages in which the resource is available.

Description: This section describes the material. It also contains miscellaneous information which may be relevant to the particular resource. For example, "Obtain from..." appears as an indicator of a contact different from that listed for the organization in the Distributor Listings.

Distributor: The name of the distributor and the price (with appropriate currency) is listed here. If you wish to order this item, note the distributor name and look in the Distributor Listing to find the address, phone and/or fax number(s) and other ordering information.

Environmental Awareness Resource and Training Handbook (Earthworks)

Jill Edbrook and Lisbeth Grundy, Council for Environmental Education, 1991, ISBN 0-906711-19-3

Subjects: Environmental Education, Youth

Audience: Secondary (15-18 yrs), Teacher Training

Nature of Material/Service: Educational Theory Materials (3 booklets)

Language: English

A total approach to environmental youth work, consisting of 3 booklets: "Action Pack for Face-to-Face Workers" contains practical ideas to enable young people to understand their own environment; "Taking an Environmental Approach" is aimed at trainers and consists of training materials with an environmental perspective; "Developing Policy Practice in Environmental Youth Work" provides policy makers with a framework for good practice.

Distributor: University Of Reading, Council For Environmental Education, 7.95 pounds (UK)

**Highlights of World Congress for
EDUCATION & COMMUNICATION ON ENVIRONMENT & DEVELOPMENT
October 16 - 21, 1992**

ECO-ED is an acronym for "Education and Communication on Environment and Development". Both an event - A World Congress held in Toronto, Canada in October 16-21, 1992, and an on-going outreach program of ECO-LINKs. ECO-ED's purpose is to improve the quality and delivery of education and communication about environment and development. The Congress was the first follow-up conference to the Earth Summit and focused on implementation of the educational aspects of Agenda 21. It was officially sponsored by UNESCO, and the International Chamber of Commerce in cooperation with UNEP, with support from the Government of Canada. Four North American groups involved with environmental education came together to host ECO-ED. The North American Association for Environmental Education, the Council of Outdoor Educators of Ontario, the Ontario Association for Geographic and Environmental Education and Canada UNESCO's Man and the Biosphere Program combined their normal annual conferences into one event which would build on the momentum and spirit of cooperation begun in the preparation process for the Earth Summit.

ECO-ED's purpose is to improve the quality and delivery
of education and communication about environment and development.

THE CONGRESS

The World Congress was a complex affair. It included a Conference, an Exposition, an Arts Festival, a Curricula and Resources Fair, A Video and Film Festival, a Children's Environmental Festival, Field Trips and 31 Partner Events. The Congress was held at the Metro Toronto Convention Centre. Based on a belief in the value of improving dialogue across sectors, disciplines and national boundaries, the program was designed to include:

- ◆ both environment and development issues
- ◆ the experience and perspectives of professionals from business, government, science, non-governmental organizations, and the arts, along with those of education and communications professionals
- ◆ the perspectives of women, indigenous peoples and youth
- ◆ the points of view of the North, South, East and West
- ◆ ethical, spiritual and cultural, as well as scientific issues
- ◆ a wide range of options and experiences, from formal presentations and artistic performances, to informal networking and hands-on workshops

An overview of the participation at ECO-ED is given by the following statistics:

- ◆ 84 countries were represented
- ◆ 3178 delegates attended the conference
- ◆ 222 invited speakers (46% women, 14% indigenous, 30% from developing countries or regions) addressed the audience
- ◆ 674 persons presented workshops, panels or participated in interact sessions or roundtable discussions
- ◆ 400 volunteers from universities, high schools and grassroots groups contributed their time
- ◆ 176 media representatives attended
- ◆ 66 groups and companies exhibited in 186 booths at the Exposition
- ◆ 256 organizations displayed curricula and resource materials at the Fair
- ◆ 16 local schools participated at the Children's Environmental Festival
- ◆ 30 groups and 270 artists performed at the Arts Festival
- ◆ 127 entries from 6 continents were screened at the Film and Video Festival
- ◆ 31 Partner Events involved 1725 participants

"ECO-ED was a unique experience for those of us accustomed to traditional research conferences. Besides the common fixtures of general sessions, plenaries, workshops and exhibition booth, ECO-ED broke new ground by nesting a vibrant arts program within its conference agenda...another unique fixture was the extensive display of educational materials available at the Curricula and Resources Fair." from Delta, The newsletter of the Canadian Global Change Program

THE CONFERENCE

The Congress was intended to serve as a focal point for bringing together people and resource materials from around the world. It brought the experts on environment and development issues together with educators and communicators. It was intended to be an opportunity for sharing, networking and learning in a stimulating and varied setting.

"But another aspect of the conference was extremely stimulating in a way that no other workshop has been for me. On several occasions I stopped everything and listened to foreign voices, different languages, beautiful accents, persons young and old, all working a common theme. In endless places with widely varied approaches and resources we are all trying to share caring and compassion for our planet and all life that shares it."

Lisa Primavesi, Canadian delegate

Large general sessions were designed to provide the context, to give an overview of the results of the Earth Summit and Global Forum in Brazil, and to raise issues of values, ethics and choices. Smaller sessions were offered to highlight specific environment and development issues or to focus on educational or communications issues or methods. Workshops and "Interact" sessions were held to give hands on training about particular programs or projects.

PROGRAM HIGHLIGHTS

Lessons From Rio: A Dialogue with moderators, Her Excellency, Dame Nita Barrow, Governor General of Barbados and The Honourable John Fraser, Speaker of the House of Commons Canada. Speakers included: Nitin Desai, Deputy Secretary-General of UNCED; Warren Lindner, Executive Director of Centre for Our Common Future; Federico Mayor, Director General of UNESCO; Mostalfa Tolba, Executive Director of UNEP; David Kerr, President and CEO of Noranda Inc.; Margarita Marino de Botero, President of Green College Corporation Colombia; Mary Simon, former President of the Inuit Circumpolar Conference; Desiree McGraw, former Youth Ambassador for UNCED; and, Michael Agnaieff, Director General of Centrale de l'Enseignement du Quebec.

Plenaries included topics such as: Implementing Sustainable Development through Public Awareness Programs; Building the Capacity for Change; Interpreting Science as the Basis for Action; Speaking Personally on Values and Choices; The Arts as Agents for Change; Gender and Sustainable Development; Development and Aid; Atmosphere and Climate Change; Affluence and Consumption; and much more.

THE ARTS FESTIVAL

Believing that people are often as moved to learn new ideas or change their behaviour as the result of seeing or participating in performances, the Arts Festival was an integral part of the program. Performances by Kashtin, an indigenous rock band from Quebec, the Paul Winter Consort, TAROH, a children's group from Sendai, Japan, and a concert by the Esprit Orchestra with visuals from NASA and Courtney Milne enhanced the more traditional sessions.

"I was also deeply touched by the artistic presentation such as Raffi's music, the slide show and especially Paul Winter's concert which was breathtaking."

Suzana Padua

Other Outcomes

New alliances were forged at ECO-ED and have resulted in concrete actions. Some that we know of are listed below:

- ◆ The World Resources Institute are working with the Latin American ECO-LINK to translate their Teacher Guides into Spanish
- ◆ As the result of ECO-ED the International Chamber of Commerce reviewed and revised its policy paper on Environmental Education.
- ◆ Several businesses in Colombia and Ecuador established contacts to undertake joint projects with Canadian businesses, and a proposal for a student exchange program between Ecuador and Canada was developed.
- ◆ Discussion of the outcomes of ECO-ED was featured at an Iberoamericano Conference on Environmental Education held in Guadalajara, Mexico, at a meeting of environmental educators in the Philippines and at a Conference on Environmental Education held in Minnesota.

ECO-LINKS

In an effort to ensure that the Congress was relevant to a number of different sectors and to developing and industrialized nations an outreach program was initiated with a limited number of countries, including Colombia, Costa Rica, Ecuador, Hungary, Indonesia, Mexico, Philippines, Peru, Taiwan, Thailand, West Africa and Ukraine. In a number of them (Colombia, Costa Rica, Ecuador, Mexico, Philippines and Peru) the program resulted in the establishment of informal ECO-LINKs or multi-sectoral circles devoted to promoting education and communication about environment and development. With the assistance of the International Institute for Sustainable Development, a two day meeting was held prior to ECO-ED. The first day was devoted to a joint meeting with the Canadian Executive Service Overseas and the Conference Board of Canada which gave participants an update on the Earth Summit . The second day focused on sharing experiences, issues and insights about working in multi-sectoral groups on educating about sustainable development. The meetings included people from ECO-LINKs and representatives of similar groups, including the Canadian Roundtables on Environment and Economy, the Prince of Wales Business Leaders Forum, the Private Sector Committee on the Environment in Hong Kong, the Independent Sector Facilitating Committee from UNCED, and the Global Tomorrow Coalition (USA).

Enthusiasm for this informal multi-sectoral approach was expressed and ECO-ED was urged to continue to play a key role in assisting the existing and emerging ECO-LINKs to develop their own structure and programs and to obtain financing. As well ECO-ED was requested to link the national and regional "circles" through a newsletter and/or computer conference. The ECO-LINK's particular focus on integrating business, education and training was seen as crucial to three objectives: implementing Chapter 36 of Agenda 21; building the capacity of countries to gain consensus across sectors and across national boundaries, North and South; and encouraging technology cooperation particularly through training and the exchange of "know-how".

THE FUTURE

ECO-ED will continue to serve as a focal point to support international linkages between groups interested in environment and development education. We have located an ECO-LINK office with the offices of the International Council for Adult Education (ICAE) so as to build on the synergy between ECO-ED's activities and ICAE's Learning for Environmental Action Programme.

THE CURRICULA AND RESOURCES FAIR

The Curricula and Resources Fair was a never ending feast of materials on display, supplemented by interaction and sharing. Over 250 organizations displayed their educational materials with highlights including the "Caring for the Earth" display, computer workshops which taught skills and made converts to the WEB and ECONet systems, a special UNCED display which offered the most up to date follow-up material to the Earth Summit, and much more.

"The Curricula and Resources Fair was a mind-boggling, wonderful experience--I felt like a child on a candy store!"

Susan Larson, Director of Education, Bahamas

The displays were presented by educators, non-governmental organizations, governments, private businesses, publishing firms, interest groups and many more from over 50 countries. The Catalogue of "ECO-ED Resources" is the legacy of the Curricula and Resources Fair. Each group that displayed their material at the Fair has had information about their materials listed in the Catalogue. There are several groups that were not able to attend, but have been included in this listing.

THE EXPOSITION

More than 100,000 square feet were devoted to an Exposition of products and services related to the environment and development. A mix of educational and commercial exhibits attracted delegates as well as members of the general public. The Exposition featured the Amway Foundation's Masters of the Arctic Exhibit, the Aga Khan Foundations's HOPE Exhibit, a photographic exhibition from Israel and the Smithsonian Foundation's exhibit of Political Cartoons on the Environment. There were major displays from the government of Catalunya, Spain; various UN agencies, corporations and government departments. An ECO-ED store sold environmental education products. In the words of one of the exhibitor's, there weren't many "tire kickers"; the quality of the contacts made with decision makers and teachers was excellent.

CONCURRENT EVENTS

- ◆ The signing of a Trilateral Agreement between Canada, the USA and Mexico to share resources in the field of environmental education.
- ◆ Efforts were made to form an environmental education association in Canada, as well as an alliance of organizations supporting environmental education.
- ◆ In addition to the annual general meetings of NAAEE, COEO and MABNET, the NAAEE hosted an "Affiliates" breakfast to encourage regional EE organizations to work together.
- ◆ Various ECO-LINK meetings were held and a regional network in Latin America was formed.
- ◆ A network of Clearinghouses in Environment and Development Education was formed and ECO-ED was asked to play a role in continuing to link participants.
- ◆ The World Council of Indigenous Peoples convened a meeting with UNEP at ECO-ED to discuss their concerns about activities planned for the Year of Indigenous Peoples.
- ◆ The Friends of the United Nations held meeting to discuss plans for the fiftieth anniversary of the United Nations in 1995.
- ◆ The Women in Environment and Development Organization (WEDO) took advantage of the occasion to hold a board meeting, as did the communications directors of the Canadian Council of Ministers of the Environment.

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**ENVIRONMENT AND DEVELOPMENT
EDUCATION ACTIVITIES
IN CANADA: 1990-1992**

1993

**International Education Centre (IEC)
Saint Mary's University
Halifax, N.S.
Canada**

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RESOURCE KITS / TROUSSES DE RESSOURCES

- "Espoir: Voir le Monde Sous un Jour Nouveau" - Elementaire
(Fondation Aga Khan Canada)
- "Espoir: Voir le Monde Sous un Jour Nouveau" - Secondaire
(Fondation Aga Khan Canada)
- "Here to Stay: A Resource Kit on Environmentally Sustainable Development" (CUSO)
- "Hope: Seeing Our World Through New Eyes" - Elementary
(Aga Khan Foundation Canada)
- "Hope: Seeing Our World Through New Eyes" - Secondary
(Aga Khan Foundation Canada)
- "Millennium: Tribal Wisdom and the Modern World."
(Body Shop)
- "On the Road to Brazil."
(United Nations Association in Canada)
- "One Earth: Ideas for Education and Action on Environment and Development." (YMCA)
- "Trees for Life Grow-a-Tree Project" (ICCO Trees for Life)
- "Waterworks in Rural Honduras"
(Save the Children Fund of B.C.)

BOOKLETS / BROCHURES

The Edmonton Learner Centre Resources and Programs for Global Justice

Education for Change: The Challenge for Trustees in the '90s - A Workshop for Canadian School Boards Facilitator's Manual (CSBA)

Energy Probe Research Foundation (Probe)

Environment and Development: Our Land Our Cities Our Future
(SCIC)

Espoir: Voir le Monde Sous un Jour Nouveau
(Fondation Aga Khan Canada)

Global Education Project of Newfoundland and Labrador
Directory

Hope: Seeing Our World Through New Eyes
(Aga Khan Foundation Canada)

Hope: Seeing Our World Through New Eyes Youth Summit
Delegation to the Citizens Forum
(Aga Khan Foundation Canada)

Project Learning: Managing Human-Planet Relationships (FIT)

Sustainability: From Vision to Reality (CCIC)

Taking the World the World to Camp: Creative Ideas for
International Education at Camp. (YMCA)

Together let us recover our planet. (CEQ)

Trading off the Environment: International Trade and the
Environment (OCIC)

Tropical Rainforests: Changing Directions
(Newfoundland and Labrador Global Education Project)

Twelfth Atlantic Film Festival

JOURNALS, PERIODICALS, BULLETINS, AND NEWSLETTERS /
JOURNAUX, PÉRIODIQUES, COMMUNIQUÉS, ET BULLETINS

The Canadian School Trustee, April 1990, Vol.5, No.2;
Oct/Nov 1990, Vol.5, No.4 (CBSA)

Connections, July 1992, Vol.17, No.2
(Edmonton Learner Centre)

Earth Chronicles Radio Project, September 1992, No.1

Earth Words, May 1991, Vol.3, No.2 (Friends of the Earth)

EcoCity Report, August 1991, Vol.1, No.2
(Edmonton's EcoCity Society)

Global Report; Red Cross International Education Programs,
1989-90, and Number 9

IDERA News, Spring 1992, Vol.1, No.1

International Community Network, April 1991; May 1992; July
1992; August 1992

Networks, June 1992, Vol.4, No.4 (AGEP)

Partnerships, January 1991, Vol.4, No.3 (PDAP)

The Political Scene, March 1991 (CCIC)

Probe Alert, December 1990; March 1991; June 1991;
December 1991 (Probe International)

Women & Environments, Winter/Spring 1991 (WEED)

ANNUAL REPORTS / RAPPORTS ANNUELS

Brief Summary of E & D Work (SCIC)

Celebrate Development: Annual Report 1991-92 (SCIC)

Development Education in Alberta: DECCA's Annual Report
1990-1991

Friends of the Earth Annual Report 1989-1990; 1991-1992

Highlights of Activities, 1991-92
(Newfoundland and Labrador Global Education Project)

International Education Centre Annual Report 1990-1991
1991-1992

Nova Scotia Environment and Development Group 1991-1992
Report

Peace-Environment-Development: Making the Links; Annual
Report 1990-91 (SCIC)

Synthèse des journées sur l'environnement; 19 et 20
septembre 1990 (Solidarité Canada Sahel)

YWCA of/du Canada Annual Report 1991

VIDEOS

"Waterworks in Rural Honduras" (Save the Children Fund of B.C.)

GAMES

"Survival! (Aga Khan Foundation Canada)

Survie! (Fondation Aga Khan Canada)

BROCHURES AND PAMPHLETS / BROCHURES ET PAMPHLETS

Audiovisual Resources '91: A Supplement to the Resources and Programs Catalogue (Edmonton Learner Centre)

BCCIC British Columbia Council for International Cooperation

Building Skills for Sustainable Development (FIT)

"Burning Rivers" (Variations on a Wave)

Ce Monde en Développement - L'Environnement: Une Terre en Commun

Challenge of Development (Aga Khan Foundation Canada)

Challenge of Environmental Sustainability
(Guideposts for a Sustainable Future)

Children's International Centre (YMCA Ottawa)

Coming Soon...The Earth Chronicles

Cooper Institute Festival '91: Development and the Environment

Earth Chronicles Radio Project Partial List of Episodes

Edmonton Learner Centre Resources and Programs for Global Justice

Educating for Global Citizenship (AGEP)

Environmental Education in Action (Harmony Foundation)

L'éveil au Sahel (Solidarité Canada Sahel)

Friends of the Earth
Glimpses of Development (Aga Khan Foundation Canada)
Guideposts for a Sustainable Future
Guideposts for a Sustainable Future: Time to Choose
Help the Penan People of Sarawak, Malaysia (EYA)
International Education Centre
International Education Centre Schools Program
Linking Alberta with the Third World (DECCA)
Marquis in the Classroom
The Marquis Project
Modules from the Children's International Centre
(YMCA Ottawa)
National Environmental Education Strategy
(Guideposts for a Sustainable Future)
One World Research and Education Network
Our Developing World - Environment: An Earth in Common
(Aga Khan Foundation Canada)
Ozone Protection Campaign (Friends of the Earth)
Partnership in Action (The Marquis Project &
The Uganda Rural Development and Training Programme)
Partnership Walk 92 "An Earth in Common: People and their
Environment" (Aga Khan Foundation Canada)
Planethood: Adopt the Earth (The Marquis Project)
Probe International Publications List
Project Learning (FIT)
Publications and Materials Order Form (Harmony Foundation)
Question of Direction
(Guideposts for a Sustainable Future)
Resources and Workshops (AGEP)
Road from Rio (SCIC)

Road to Brazil: A Manitoba Forum on Environment and
Development
Seeds of Survival (USC)

Seeds of Survival Teaching Kit (USC)

Sharing the Planet (Newfoundland and Labrador Global
Education Project)

Summer Institute for Environmental Values Education -
Description and Application Form (Harmony Foundation)

Summer Institute for Environmental Values 1992
Preliminary Program (Harmony Foundation)

Twelve minutes for 12%

Understanding and Teaching Global Environmental Issues (IEC)

What Works Presents Environment and Economies at the
Atlantic Film Festival

Wiley Book News. Ecological Literacy for Decision makers...
On Common Ground: Managing Human-Planet Relationships

Women and Environments Education and Development Foundation
(WEED)

POSTERS AND HAND-OUTS

"Burning Rivers": A Film About the Environmental Crisis in
Guatemala with Special Guest Speakers (EDWG of SCIC)

"The Earth Summit: What Happened? What Now?" (IEC)

"Environmental Security: For Whose World?" (YM/YWCA Ottawa)

Environmental Youth Alliance

Living with the Land: Communities Restoring the Earth
(BCEDWG and IDERA)

Marche des Partenaires 1992 "Une Terre en Commun: Les Gens
et leur Environnement" (Fondation Aga Khan Canada)

"Media in a Shrinking World" (Aga Khan Foundation Canada)

"Media in a Shrinking World" Foreign Panellists Bios
(Aga Khan Foundation Canada)

"Our Global Homeland" Conference, 5 pieces (EYA)

Ozone Campaign Update (Friends of the Earth)

Partnership Walk 92 "An Earth in Common: People and their Environment" (Aga Khan Foundation)

Sarawak Alert (EYA)

"Save Our Earth.. Eh!" (EYA)

This Charter Protects Canadians (EYA)

Tree of Life: A Global Art Project (SCIC)

Wear and Share Your Environmental Concerns

OTHER

"Toward a Common Future: Women, Environment and Development"
Conference Program and background material. (UNAC)

**Activity: "DEVELOPMENT AND THE ENVIRONMENT"-
CONFERENCE**

This conference was part of the Cooper Institute Festival '91, held August 3-4, at the Gulf Shore Consolidated School, North Rustico, P.E.I. Four workshops and plenary sessions dealt with the opposing models of development: those which are hostile to the environment and humans, and those which are sustainable, environmentally sound, and people centred. Arturo Ornelas' presentations "Destroying the Earth and Destroying the Human Family" and "Tools for Developing Strategies For Sustainable Models of Development" dealt with these alternatives from a Mexican perspective.

The program was simultaneously translated in French and English. Participants included farmers, fishermen, workers, women's groups, environmentalists and cultural minorities, as well as representatives of NGOs and other groups. The conference was attended by 100 people.

Subjects: Sustainable development * Natural resources *

Organization: COOPER INSTITUTE

Address: 81 Prince Street
Charlottetown, P.E.I., C1A 4R3
Phone : (902) 894-4573
Fax : (902) 368-7180
Contact: Maureen Larkin

Record # 109

SUBJECTS:

ACID RAIN
AGRICULTURE
AIR POLLUTION
ARTISTIC EXPRESSION

BIODIVERSITY
BIOGAS

COMMUNITY ACTION
COMMUNITY DEVELOPMENT
Community sustainability
Use COMMUNITY DEVELOPMENT

CONSERVATION
CONSUMERISM
CREDIT

DEBT
DECISION MAKING
DEFORESTATION
DESERTIFICATION
DISASTER REDUCTION
DROUGHT

ECOLOGY
Economic disparity
Use ECONOMICS
Economic growth
Use ECONOMICS
ECONOMICS
Eco-tourism
Use TOURISM

ENDANGERED SPECIES
ENERGY
ENVIRONMENT AND DEVELOPMENT
Used for general or
diverse E&D issues
ENVIRONMENTAL ACTIVISM
ENVIRONMENTAL PLANNING
ETHICS

Farming
Use AGRICULTURE
FISHERIES
FLOODING
Food Production
Use AGRICULTURE

Forest Preservation
Use FORESTRY
FORESTRY

GLOBAL WARMING
GREENING STRATEGY

INDIGENOUS POPULATION

INTERNATIONAL COOPERATION

LAND USE PLANNING
LIFESTYLES

NATURAL RESOURCES

OIL SPILLS
Organic agriculture
Use AGRICULTURE
OZONE DEPLETION

POPULATION GROWTH
POVERTY

Rainforests
Use TROPICAL FORESTS
Reforestation
Use FORESTRY
Recycling
Use WASTE MANAGEMENT
Resource accounting
USE NATURAL RESOURCES
RESOURCE DEVELOPMENT
Resource exploitation
USE NATURAL RESOURCES
Resource management
USE NATURAL RESOURCES
Resource mismanagement
Use NATURAL RESOURCES

RURAL DEVELOPMENT

SEEDS
Sewage
Use WASTE MANAGEMENT

SOCIAL CHANGE
Social forestry
Use FORESTRY
SOCIAL JUSTICE
SOIL CONSERVATION
Solar energy

Use ENERGY
SPIRITUALITY
SUSTAINABLE DEVELOPMENT

TECHNOLOGICAL DEVELOPMENT
TOURISM
Toxic waste
Use WASTE MANAGEMENT
TRADE
TRANSPORTATION
TREES
TROPICAL FORESTS

UNCED
URBANIZATION

Waste disposal
Use WASTE MANAGEMENT
WASTE MANAGEMENT
WATER
WATER POLLUTION
WOMEN

ORGANIZATIONS WITH ACTIVITIES LISTED IN DIRECTORY: ALPHABETICAL

AGA KHAN FOUNDATION CANADA (AKFC)	Toronto, Ont.
ALBERTA GLOBAL EDUCATION PROJECT (AGEP)	Edmonton, Alta.
ATLANTIC FILM FESTIVAL (AFF)	Halifax, N.S.
BRITISH COLUMBIA ENVIRONMENT AND DEVELOPMENT WORKING GROUP (BCEDWG)	Vancouver, B.C.
CALGARY ECO CENTRE (CEC)	Calgary, Alta.
CAMROSE INTERNATIONAL INSTITUTE (CII)	Camrose, Alta.
CANADIAN COOPERATIVES ASSOCIATION (CCA)	Ottawa, Ont.
CANADIAN COUNCIL FOR INTERNATIONAL COOPERATION (CCIC)	Ottawa, Ont.
THE CANADIAN RED CROSS SOCIETY	Ottawa, Ont.
CANADIAN SCHOOL BOARDS ASSOCIATION (CSBA)	Ottawa, Ont.
CARREFOUR INTERNATIONAL	Montreal, P.Q.
CARREFOUR SOLIDARITE INTERNATIONALE	Sherbrooke, P.Q.
CARREFOUR TIERS MONDE	Quebec, P.Q.
CENTRALE DE L'ENSEIGNEMENT DU QUEBEC (CEQ)	Quebec, P.Q.
CENTRE D'ÉTUDES ET DE COOPÉRATION INTERNATIONALE (CÉCI)	Montreal, P.Q.
CENTRE DE SOLIDARITÉ INTERNATIONALE (CSI)	Alma, P.Q.
CENTRE FOR INTERNATIONAL STUDIES (CIS)	Sydney, N.S.
CLUB 2/3	Montreal, P.Q.
COOPER INSTITUTE	Charlottetown, P.E.I.
CUSO. Education Department.	Ottawa, Ont.
CUSO ATLANTIC	Halifax, N.S.
DEVELOPMENT EDUCATION COORDINATING CUSO ATLANTIC COUNCIL OF ALBERTA (DECCA)	Calgary, Alta.
EARTH CHRONICLES RADIO PROJECT	Hamilton, Ont.
ECOCITY SOCIETY	Edmonton, Alta.
EDMONTON LEARNER CENTRE (ELC)	Edmonton, Alta.
EMMANUEL INTERNATIONAL OF CANADA	Stouffville, Alta.
ENVIRONMENTAL COALITION OF P.E.I.	Albany, P.E.I.
ENVIRONMENTAL YOUTH ALLIANCE (EYA)	Vancouver, B.C.
FALLS BROOK CENTRE	Glassville, N.B.
FOUNDATION FOR INTERNATIONAL TRAINING FOR THIRD WORLD COUNTRIES (FIT) Centre for a Sustainable Future	Toronto, Ont.
FRIENDS OF THE EARTH (FoF)	Ottawa, Ont.
GLOBAL EDUCATION PROJECT (NFLD AND LABRADOR)	St. John's, Nfld.
GREEN TEACHER	Toronto, Ont.
GUIDEPOSTS FOR A SUSTAINABLE FUTURE	Merrickville, Ont.
HARMONY FOUNDATION	Ottawa, Ont.
INTERNATIONAL AGRICULTURE NETWORK (IAN)	Saskatoon, Ont.
INTERNATIONAL CENTRE FOR STUDENTS (UofM)	Winnipeg, Man.
INTERNATIONAL COOPERATION OF CHILDREN (ICOC)	
TREES FOR LIFE CANADA	Ancaster, Ont.
INTERNATIONAL DEVELOPMENT EDUCATION RESOURCE ASSOCIATION (IDERA)	Vancouver, B.C.
INTERNATIONAL EDUCATION CENTRE (IEC)	Halifax, N.S.
LESTER PEARSON INSTITUTE FOR INTERNATIONAL DEVELOPMENT (LPI)	Halifax, N.S.
THE MARQUIS PROJECT	Brandon, Man.

NATIONAL FARMERS UNION (NFU) - Women's Linkage Committee	Saskatoon, Sask.
NOVA SCOTIA ENVIRONMENT AND DEVELOPMENT GROUP (NSEDG)	Halifax, N.S.
NOVA SCOTIA TEACHERS UNION	Halifax, N.S.
ONE WORLD RESEARCH AND EDUCATION NETWORK	Belleville, Ont.
ONTARIO COUNCIL FOR INTERNATIONAL COOPERATION (OCIC)	Toronto, Ont.
PHILIPPINE DEVELOPMENT ASSISTANCE PROGRAMME (PDAP)	Ottawa, Ont.
PROBE INTERNATIONAL	Toronto, Ont.
PROJECT PLOUGHSHARES Saskatchewan	Saskatoon, Sask.
REGINA SENIORS' ENVIRONMENTAL GROUP	Regina, Sask.
SASKATCHEWAN COUNCIL FOR INTERNATIONAL COOPERATION (SCIC) - Environment and Development Working Group	Regina, Sask.
SASKATCHEWAN STUDENTS FOR ENVIRONMENTAL ACTION (SSEA)	Saskatoon, Sask.
SAVE THE CHILDREN FUND OF BRITISH COLUMBIA	Vancouver, B.C.
SOLIDARITÉ CANADA SAHEL	Montreal, P.Q.
TURTLE ISLAND EARTH STEWARDS (TIES)	Vancouver, B.C.
UNICEF NOVA SCOTIA	Halifax, N.S.
UNITARIAN SERVICE COMMITTEE OF CANADA (USC)	Ottawa, Ont.
UNITED NATIONS ASSOCIATION IN CANADA (UNAC)	Ottawa, Ont.
- New Brunswick Branch	Saint John, N.B.
- Victoria Branch	Victoria, B.C.
YM-YWCA CANADA - Development Education Committee	Ottawa, Ont.
YM-YWCA OTTAWA - International Education	Ottawa, Ont.
YM-YWCA FREDERICTON - International Department	Fredericton, N.B.
YM-YWCA WINNIPEG - International Development Branch	Winnipeg, Man.
YMCA CANADA - International Education Department	Ottawa, Ont.
YMCA EDMONTON	Edmonton, Alta.
YMCA KITCHENER	Kitchener, Ont.
YMCA MONTREAL - International Program	Montreal, P.Q.
YMCA METROPOLITAN TORONTO - International Department	Toronto, Ont.
YMCA OWEN SOUND	Owen Sound, Ont.
YMCA REGINA	Regina, Sask.
YWCA VANCOUVER	Vancouver, B.C.

03/03/93

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
ABE, Osamu	Shimookubo	Urawa, Saitama, 338	JAPAN	048/832-9866	93/02
AK Dept of Fish & Game,	333 Raspberry Rd	Anchorage, AK, 99518-1599	USA	CES	907/267-2291(W) 94/01
AL Dept of Env'l Mge,	Water Div/1751 Dickenson Dr	Montgomery, AL, 36117	USA	205/271-7938	93/03
AZ Assoc/Learning about Env'l,	179 W Kent Dr	Chandler, AZ, 85224	USA	602/963-7959	AFIL
Abdouch, Curt	23951 Dublin Street	Lake Forest, CA, 92630	USA	714/859-0308	93/04
Abrams, Isabel	2216 Schiller Ave	Wilmette, IL, 60091	USA	ESES/NFS/CES	708/251-8935 93/09
Abrams, Kathleen	Rt. 4, Box 4086	Monticello, FL, 32344	USA	ESES/ESES/NFS/CES	93/11
Abrams, Robert	115 Valentine Place #401	Ithaca, NY, 14850	USA		93/10
Academy for Ed Development,	1255 23rd St N.W.	Washington, DC, 20037	USA	202/862-1900	93/10
Adaas, Stephen	4533 Tollman Hall	Berkely, CA, 94720	USA	ESES	415/642-4206 93/06
Adkins, Carol	PO Box 2412	Page, AZ, 86040	USA	ESES	602/645-8146(W) 93/06
Adkins, Ms. Carol	PO Box 5697	Flagstaff, AZ, 86011	USA		93/06
Adolph, Tom	Outdoor Education	Akron, OH, 44325	USA	216/972-7476	93/03
Ahrends, Amy...	2407 Hwy 169	Algona, IA, 50511	USA	515/295-2138	93/09
Alania, Letty	4101 College Main	Bryan, TX, 77801	USA	NFS/CES	409/845-0495(W) 93/11
Albert R Mann Library,	Acquisitions Division	Ithaca, NY, 14853	USA		92/11
Alderman, Jim	Rd. 2, Box 161 1/2	Leves, DE, 19958	USA	302/645-7711	93/02
Allen, Barbara	PO Box 2715	Rock Springs, WY, 82902	USA	NFS	93/02
Allen, Irma	PO Box 135	Mbabane, .	SWAZILAND	ESES/NFS	268/52081 93/10
Allen, Joseph	10625 Greiner Rd	Clarence, NY, 14031-1317	USA	ESES/CES	716/874-8401(W) 93/11
Allen, Kristina	14843 N 63rd Avenue	Glendale, AZ, 85206	USA	ESES/CES	602/542-3052 94/01
Alliance for Env Ed,	51 Main Street/Box 368	The Plains, VA, 22171	USA		NON/87
Alperin, Lie Saba	Aplicada, CC 122	Cordoba, 5000,	ARGENTINA	54-51-35264	93/08
Althouse, Jody Kosack	601 NE 107 Street	Miami, FL, 33139	USA	ESES/ESS/CES	93/06
Abbry, Edward	143 Fox Hill Rd	Denville, NJ, 07834	USA	NFS	201/627-7214 93/06
American Forests,	1516 P St., NW	Washington, DC, 20005	USA	ESES/NFS/CES	202/667-3300 94/02
American Youth Hostels,	PO Box 37613	Washington, DC, 20013	USA		202/783-6161 94/02
Anclaa, Kenneth	Route #1, Box 505	Darien, WI, 53114	USA	ESES/CES	414/472-5239(W) 93/05
Andersen, Gail	521 E Locust St	Des Moines, IA, 50309-1911	USA		515/244-0021 93/10
Anderson, Lisa	1801 N Lincoln	Oklahoma City, OK, 73152	USA	NFS/CES	405/372-3439 93/09
Anderson, Christine	5 Bird Street	Houlton, ME, 04730	USA	ESES/CES	207/532-6551 94/01
Andrews, Elaine	3142 View Rd	Madison, WI, 53711	USA	NFS	608/262-0142(W) 93/03
Andrews, Melinda	121 Stone Rd	Knoxville, TN, 37920	USA	ESES/CES	615/632-1637(W) 93/05
Andrews, W	38 Killdeer Cres.	Toronto, ON, M4G 2W8	CANADA	ESES	416/429-2786 93/09
Anjema, Chris	1110-2 Assiniboine Rd	Downsview, ON, M3J 1L1	CANADA	ESES/NFS/CES	416/665-6534 93/10
Annese, Catherine	1000 Washington Ave	Brooklyn, NY, 11225	USA	ESES/NFS/CES	718/622-4433 93/06
Antunez, Kay	4605 North Avenue	Sacramento, CA, 95821	USA	ESES/NFS	916/653-7958(W) 93/07
Appalachian Mtn Club,	PO Box 298	Gorham, NH, 03581	USA	ESES/ESS/NFS/CES	603/666-2721 93/04
Appleby, Gordon	4600 Connecticut Ave NW	Washington, DC, 20008	USA	ESS/CES	202/537-3044 93/09
Archer, Deanna	1402 E Las Olas Blvd	Ft Lauderdale, FL, 33301	USA	ESES/NFS/CES	305/752-5218 93/04
Archie, Michele	318 South 5th E., 2nd Floor	Missoula, MT, 59801	USA		406/542-0476 93/09
Arganbright, Donald	Holdsworth Nat'l Resources Ctr	Amherst, MA, 01003	USA	ESS	93/07
Arndt, Laura Sanders	21765 Saddlebrook Dr	Parker, CO, 80134	USA	ESES	303/699-0408 93/09
Arny, Nancy	Univ of FL	Gainesville, FL, 32611-0303	USA	ESES/NFS	904/392-5420 93/06
Attenborough-Deakin, Lauri-Ann	PO Box 56	Dunedin, 9001,	NEW ZEALAND		03/479-8152 92/11
Attfield, Peter	13236 Boyview Avenue	Richmond Hill, ON, L4E 3C6	CANADA	NFS/CES	416/832-2289 93/06
Austin, Rose Anne	16 Edmund Place	West Hartford, CT, 06119	USA	ESES/NFS/CES	203/232-4561(W) 93/07
Australian Assc for Env'l Ed,	Box 12003/Brisbane Elizabeth S	Myer Centre, Brisbane,	AUSTRALIA		07/875-7105 AFIL
Bady, Rick	RR 2, Box 258B	Proctorville, OH, 45669	USA		614/886-5796 93/04
Bailey, James	4345 Hwy 47 E	White Bluff, TN, 37187	USA	CES	LIFE
Baker, Marilyn	1600 WaterMark Dr/PO Box 1049	Columbus, OH, 43266-0149	USA		614/644-2160 93/12

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
Bakkow-Schletz, Cindy	20851 S Briarwood Lane	Mokena, IL, 60448	USA	708/679-2255	93/06
Baldwin, Anthony	RD #1 Box 192	Cochran, PA, 16314-9219	USA	NFS 814/425-7510	93/12
Baldwin, John	147C Hendricks Hall	Eugene, OR, 97403	USA	ESS 503/346-3895	LIFE
Baldwin, Kerry	2221 W Greenway Rd	Phoenix, AZ, 85023	USA	602/789-3237	93/10
Ballard, Melissa	One CNN Center/Box 105366	Atlanta, GA, 30348-5366	USA		93/05
Banting, Roger	808 Berkley St	Durham, NC, 27705-4202	USA	919/286-5132	93/01
Baptista, Lynne	1250 24th St., NW	Washington, DC, 20037	USA	ESES/CES 202/778-9503	93/09
Barber, Shirley	2020 White Bear Ave	St Paul, MN, 55109	USA	612/777-8156	93/08
Bardwell, Lisa	210 Pleasant Place	Ann Arbor, MI, 48103	USA	ESES/ESS/NFS 313/747-7408	94/03
Barham, Thomas	RR 5, Box 118A	Greencastle, IN, 46135	USA	ESES 317/526-2297	LIFE
Barker, Susan	458 South Main #2	Columbia, IL, 62236	USA	ESES/ESS 618/281-6404	93/03
Barker, Wallis	2202 Wiabeldon Circle	Silver Spring, MD, 20906	USA	ESES/CES	93/07
Barnes, Randy	PO Box 202	Wilmot, OH, 44689-0202	USA	ESES/NFS/CES 216/359-5235	93/06
Barnes, Tingle	614 Dorseyville Rd	Pittsburgh, PA, 15238	USA	412/963-6100(W)	93/09
Barnes, Joan	PO Box 214	Lindstrom, MN, 55045	USA	ESES/NFS/CES 612/293-1420(W)	93/12
Barone, Christine	PO Box 840	Dunfries, VA, 22026	USA	202/205-0954(W)	93/12
Barron, Pat	611 Overbrook Drive	Columbus, OH, 43214-3130	USA	ESES 614/421-9800(W)	93/10
Bates, Jim	10 University Drive	Duluth, MN, 55812	USA	218/726-8111(W)	93/09
Batycky, William	1055 Edgement Rd. NW	Calgary, AB, T3A 2J5	CANADA	403/228-5363(W)	93/10
Bauer, Ruth	106 W Kansas St	Boscobel, WI, 53805	USA	ESES 608/375-5460	93/06
Bay Model Ctr-US Army, 5	2100 Bridgegway Blvd.	Sausalito, CA, 94965-1753	USA	NFS 415/332-3871	94/02
Bay Village Sch Dist,	377 Dover Center Rd	Bay Village, OH, 44140-2391	USA	ESS 216/871-2322	93/11
Bazler, Elizabeth	83 Mountain Rd	Erving, MA, 01344	USA	NFS 413/659-3714(W)	93/06
Beattie, Jack	413 EAST MANSION	JACKSON, MI, 49203	USA	CES	LIFE
Becker, Linda	202 Teepee	N Platte, NE, 69101	USA	ESES 308/535-7132(W)	93/07
Beeson, Brenda	346 Northwestern A	W Lafayette, IN, 47906	USA	ESES 317/743-1319(W)	93/09
Beharriell, Richard	650 Parliament St	Toronto, ON, M4X 1R3	CANADA	NFS 416/921-0816	93/12
Behrens, Larry	650 Cap Au-Gris	Troy, MO, 63379	USA	ESES/CES 314/528-6766	93/10
Behringer Ploskonka, Catherine	2112 Bishops Bridge Rd	Knoxville, TN, 37922	USA	ESS 615/974-7362(W)	93/10
Bell, James	Rt 1, Box 483	Big Pine Key, FL, 33043	USA	CES 305/872-2239	94/01
Benayas, Javier	Universidad Autonoma de Madrid	28049, Madrid	ESPAÑA	1-39 78 014	94/02
Benenson, Gary	City College of NY	New York, NY, 10031	USA	ESES 212/650-8013	93/12
Benjamin, Thomas	51 Main St/PO Box 368	The Plains, VA, 22171	USA	703/253-5812(W)	93/10
Benjamin, Lyn	PO Box 2881	Ketchum, ID, 85340	USA	ESES/NFS/CES 205/622-3955	94/01
Bennett, Dean	RFD #1-Box 3410-Bean	Mt Vernon, ME, 04352-9742	USA	ESES/CES 203/293-2761	LIFE
Benson, Sue	PO Box 416	Cable, WI, 54821	USA	715/798-3890(W)	93/10
Bentley, Michael	1313 Ashland Avenue	Evanston, IL, 60201	USA	ESES 708/475-1100(W)	94/01
Berberet, William	30 N Brainard St	Naperville, IL, 60564	USA	ESS 708/420-3454	LIFE
Bergvall, John	PO Box 47001	Olympia, WA, 98506-7001	USA	ESES/CES 206/902-1027(W)	93/11
Beringer, Almut	ZUR Munschen Burg 10	W-3520 Hofgeisa,,	GERMANY	ESS/NFS	93/12
Berkowitz, Alan	Box AB	Millbrook, NY, 12545	USA	ESS/NFS 914/677-5358	93/10
Bernard, Jean	Univ of Laval	Quebec, PQ, G1K 7P4	CANADA	ESES 418/656-3789	93/02
Berry, Sanford	P O Box 1437	Keene, NH, 03431	USA	603/357-8410	93/09
Berryman, Joan	3200 Cedar	Everett, WA, 98201	USA	ESES/NFS/CES 206/259-8863	94/02
Bertoldi, Lisa Maria	51 Conway Rd	Williamsburg, MA, 01096	USA	ESES/NFS 413/256-6006(W)	93/09
Bielefield, Donald	2647 Las Gallinas Avenue	San Rafael, CA, 94903	USA	NFS/CES 415/472-2401(W)	93/11
Bill, Briana	246 S Maple Ave	Oak Park, IL, 60302	USA	NFS 708/668-7968	92/11
Billings, Clarence	812 BOONEVILLE ROAD	JEFFERSON CITY, MO, 65101	USA	CES	LIFE
Bindner, Jr., C. M.	4402 NORTH 67TH AVEN	PHOENIX, AZ, 85033	USA	CES	LIFE
Bishop, Clifford	2518 S 52nd Ave	Yakima, WA, 98903	USA	ESES 509/575-2916(W)	93/10
Bittle, Chris	444 Appleyard Dr	Tallahassee, FL, 32304	USA	ESES/ESS/CES 904/488-0467(W)	93/08

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Bivens, Sandra	3506 Gen Bater Drive	Nashville, TN, 37209	USA	CES	615/352-6299(W)	93/10
Black, George	908 E Moore	Stillwater, OK, 74075	USA	ESES/ESS	405/744-6822	94/03
Blackburn, Anne	5 Brackett Road	Wayland, MA, 01778	USA		508/358-2945	93/07
Blackburn, Mary	7550 E Spring St	Long Beach, CA, 90815	USA	ESES/CES	213/421-9431	93/06
Blackie, Barbara	HC 62 Box 9T	Port Angeles, WA, 98362	USA		206/928-3720	93/04
Blackmon, Elbert	415 Walnut St. LB2B	Knoxville, TN, 37902	USA		615/632-3480	93/07
Blanchard, Kathleen	39 S Main St	Isidwich, MA, 01938-2321	USA	NFS/CES	508/356-0038	LIFE--
Bloom, Rich	Star Route 3272	Jackson, WY, 83001	USA		307/733-0674	93/07
Blouin, Glen	185 SOMERSET ST W ST	Ottawa, ON, K2P 0J2	CANADA	CES	613/232-1815	94/01
Bodwell, Amy	PO Box 1787/Belize City	Belize, ,	C AMERICA	ESES/NFS	011-501092-3310	93/12
Boerschig, Sally	B-1 University Gardens	Chapel Hill, NC, 27516	USA	NFS		93/09
Bogan, Margaret	PO Box 1024	Jacksonville, AL, 36265-5024	USA	ESES/NFS/CES	205/782-5849	93/09
Bohorquez de Tsoi, Diana	Apt 9,	Haracibo, Zulia, Apt 15036	VENEZUELA	NFS	061/913384	93/12
Bollwinkel, Carl	Price Lab School	Cedar Falls, IA, 50613	USA	ESES	319/273-2783	94/03
Bones, David	621 W Hoover	Ann Arbor, MI, 48103	USA		313/995-5332	93/08
Bonhotal, Jean	468 Hollister Hall	Ithaca, NY, 14853-3501	USA	ESES/NFS/CES	607/255-8444	93/09
Bonney, Rick	159 Sapsucker Wds RD	Ithaca, NY, 14850	USA	NFS/CES		93/06
Booth, Dan	4533 Laurel Cvy Blvd	N Hollywood, CA, 91607	USA		818/980-7280	92/11
Borden, Jack	54 Webb St	Lexington, MA, 02173	USA			93/09
Borneman, David	5040 State Rd 67 N	Martinsville, IN, 46151	USA	ESS/NFS/CES	317/342-2915	94/12
Bossi, Richard	1255 23rd St., NW	Washington, DC, 20037	USA		202/467-8751	93/10
Bossong, Lynn	8955 Aramidillo Trail	Evergreen, CO, 80439-0316	USA	NFS/CES		93/10
Bousquet, Woodward	701 Warren Wilson Rd	Swannanoa, NC, 28778	USA	ESS	704/298-2186	93/03
Bowman, R Michael	PO Box 9307	Moscow, ID, 83843-0116	USA	CES	208/746-6857	94/02
Boyd, Kenneth	3903 Brandy Lane Dr	Regina, SK, S4S 7E1	CANADA		306/586-2430	93/08
Boyne River Natural Sci School,	RR #4	Shelburne, ON, L0N 1S8	CANADA	ESES	519/925-3913	93/05
Bradford, Angela	PO Box 5011	Greeley, CO, 80631	USA			93/12
Bradof, Kristine	1400 Townsend Drive	Houghton, MI, 49931-1295	USA	NFS/CES	906/487-3341	93/08
Bradshaw, Louise	3939 Shaw	St Louis, MO, 63110	USA	ESES/NFS	314/781-0900	93/05
Bradstreet, Lois	50 E McCreight Avenue	Springfield, OH, 45504	USA	NFS	513/328-6853	93/07
Brair Bush Nature Center,	1212 EDGE HILL ROAD	ABINGTON, PA, 19001	USA	CES		LIFE
Brandt, Todd	402 3rd Ave South	Saskatoon, SK, S7K 3G5	CANADA	NFS	306/665-6887	93/06
Brandwein, Paul	Box 326	Unionville, NY, 10988	USA		614/856-1730	LIFE
Braus, Judy	10196 Oakton Terr Rd	Oakton, VA, 22124	USA	NSES/NFS	202/778-9542	93/07
Bravo Mercado, Teresa	collo 1521 #44 Col El Parque	Mexico DF, 15960,	MEXICO	ESS	6-65-01-23	93/10
Bredt, Sandy	1000 Oak Street	Oakland, CA, 94607	USA	NFS	510/238-3884	93/08
Breidenstein, Lisa	1574 Fernvista Ln	Cincinnati, OH, 45246-2038	USA		513/529/4264	93/09
Breise, Arlene	886 Cannery Row	Monterey, CA, 93940	USA	NFS/CES	408/698-4834	93/12
Breiting, Soren	Norraevaenget 26	Vaerloose, DK-3500,	DENMARK	ESES/CES		93/03
Brenner, Mark	701 Warren Wilson RJ	Swannanoa, NC, 28778	USA		704/298-3325	92/12
Breslav, Marc	11 Peekskill Rd	Cold Spring, NY, 10516-1202	USA	NFS	914/424-3484	93/07
Bricker, Michael	1495 Brozio Lane	Decatur, IL, 62521	USA		217/423-7073	94/02
Bridle, Luann	Rt 3, Box 68C	Walnut Cove, NC, 27052	USA		919/591-5882	93/09
Brill, Debbie	5995 Horseshoe Bend Rd	Troy, OH, 45373	USA	ESES	513/698-6493	93/09
Brink, Clark	2020 L St. 5th Floor	Sacramento, CA, 95814	USA			93/12
Brody, L. Jeffrey	27 Haines Drive	Sewell, NJ, 08080	USA	ESES		93/06
Brody, Michael	Culbertson Hall	Bozeman, MT, 59717	USA	ESES/NFS/CES	406/994-5392	93/10
Brooks, Diana	1390 Buskin River Rd	Kodiak, AK, 99615	USA			93/10
Brothers, Christine	915 Governor Prence	Eastham, MA, 02642-3243	USA	NFS	508/349-2615	93/08
Brotherton, Dave	1107 Monte Sano Blvd	Huntsville, AL, 35801	USA	ESES	205/532-4825	93/05
Brown, Denise	425 Divisadero St/Suite 307	San Francisco, CA, 94117	USA	NFS	415/863-1444	93/11

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Brown, Heidi	PO Box 273	Brainard, NE, 68626-0273	USA	ESES/NFS/CES		93/01
Brown, J. Willcox	POST OFFICE BOX 528-B	CONCORD, NH, 03302-0528	USA	CES		LIFE
Brown, Terry Lorraine	PO Box 299	Oregon, IL, 61061	USA		815/753-0205	93/08
Brown, Tom	135 Overlea Blvd	Don Mills, ON, M3C 1B3	CANADA		616/396-2410	93/10
Brown-Babcock, Maria	312 Sutter St., #606	San Francisco, CA, 94108	USA		415/391-6204	93/09
Brozyna-Clock, Kris	3125 Benefit Rd	Chesapeake, VA, 23322	USA	NFS	804/421-4245	93/12
Buchman, Roland	13305 N Boutwell	Stillwater, MN, 55082	USA	ESES	612/439-9046	93/09
Buckardt, Nan	2190D N Riverwoods R	Deerfield, IL, 60015	USA	NFS	708/948-7750	93/06
Buckley, Tom	Box 218	Monrode, IA, 52639	USA	NFS/CES	319/463-7673	93/10
Buethe, Chris	6321 Tanglewood Rd	Terre Haute, IN, 47802-8920	USA	ESES		93/04
Bull, James	34 Overwood Rd	Akron, OH, 44313-3929	USA	ESES/NFS	800/642-3297	94/03
Burack, David	655 15th St, NW #444	Washington, DC, 20005-2401	USA		202/393-8238	93/10
Bureau of Reclamation/Env,	Box 25007/Bldg 7/Fed Center	Denver, CO, 80225-0007	USA	NFS	303/236-8366	93/06
Burgess, JoAnn	5700 24-Mile Road	Utica, MI, 48087	USA	ESES/ESS	313/781-0406	94/02
Burmeister, Lisa	1250 24th St NW	Washington, DC, 20037	USA		202/778-9536	93/09
Burnett, Andrew	1990 K Street NW	Washington, DC, 20526	USA	NFS/CES	202/254-8400	93/08
Burton, Janis	PO Box 1770	Manomet, MA, 02345	USA		508/224-6521	93/10
Busby, Laura	344 Ruth Avenue	Loveland, OH, 45140	USA		513/891-4227	93/09
Busch, Phyllis	OLD ASYLUM ROAD	LAKEVILLE, CT, 06039	USA	CES		LIFE
Buscher, Tracy	853 S MacArthur	Springfield, IL, 62704	USA	ESES	217/793-1602	93/08
Bush, Brenda	200 S 7th St/#200	Louisville, KY, 40202	USA	ESES/ESS	502/625-2702	93/09
Bushor, Karen	8480 Hagy's Mill Rd	Philadelphia, PA, 19128-1998	USA	ESS	215/482-7300	93/12
Buzan, Dave	PO Box 13087	Austin, TX, 78711-3087	USA	ESES/ESS/NFS/CES	512/463-8206	93/06
Byers, Tim	1742 Plover St	Stevens Point, WI, 54431-3520	USA	ESES/NFS	414/834-5322	93/06
Bylsma, Carol	6060 Broadway	Denver, CO, 80216	USA		303/291-7262	93/09
CIRADEM-QUEBEC, 6	Succ Outremont C.P. 103	Outremont, PQ, H2V 4M6	CANADA		514/272-5705	AFIL
CO Division of Wldlf,	6060 Broadway	Denver, CO, 80216	USA	ESES/NFS/CES	303/297-1192-Ex	93/04
CO State Univ Libraries,		Ft Collins, CO, 80523	USA			93/11
Caddis-Burrell, Karen	6016 Poplar Court	Bellvue, CO, 80512-5635	USA	ESES/CES		94/02
Caduto, Michael	PO Box 1052	Norwich, VT, 05055	USA	ESES/CES	802/649-1815	93/10
Cairn, Susan	3533 44th Ave S	Minneapolis, MN, 55406	USA	ESES/NFS/CES	612/722-5806	93/10
Callinan, Tom	168 Shore Rd	Clinton, CT, 06413	USA		203/669-6648	93/12
Calvin, Rae	248 Patton Road	Sandy Lake, PA, 16145	USA	ESES/CES	412/376-3918	94/03
Camozzi, Anne	PO Box 1514	Antigonish, NS, B2G 2L8	CANADA	ESES/ESS/NFS	902/863-5984	94/02
Canadian Nature Fed,	453 Sussex Drive	Ottawa, ON, K1N 6Z4	CANADA			HONORARY
Cancilla, Leslie	419 N Pearl St	Ft Collins, CO, 80521	USA	ESES/NFS		93/07
Cantrell, Diane	948 Old Pine Drive	Gahanna, OH, 43230-3826	USA	ESES	6114/265-6788	94/02
Capuco, Carrie	134 Monticello Avenue	Annapolis, MD, 21401	USA	NFS		93/07
Carlson, Betsy	PO Box 1555	Port Townsend, WA, 98368-0052	USA		206/928-3720	93/09
Carlson, Stephen	2324 Hillside Ave	St Paul, MN, 55108-1612	USA	ESS	617/626-1259	93/06
Carpenter, Jim	100 Van Morgan/TVA	Golden Pond, KY, 42211	USA	ESES/NFS	502/924-1249	93/10
Carpenter, Julia	100 Leach Lane	South Natick, MA, 01760	USA	ESES/NFS	617/261-5201	93/10
Carrasco, Ken	3600 136th Place SE	Bellevue, WA, 98006-1400	USA			94/02
Carrera, Julio	A.P. 486	Saltillo/Coah, 25000,	MEXICO	ESES/NFS/CES	84-173022/317	93/10
Carroll, Mary	1212 Mission Canyon	Santa Barbara, CA, 93105	USA		805/682-4726	94/01
Carter, Robert	410 Audubon Road	Streamwood, IL, 60107	USA		708/289-8040	93/08
Case, Laurie	One East Hazelwood Dr	Champaign, IL, 61820	USA	ESES/ESS/NFS	217/333-8948	93/04
Castillo, Alicia	Heroes de Padierna	10700 Contreras, Mexico D.F.,	MEXICO			93/10
Ceballos, Alicia de Alba	Col. La Guadalupe-Contreras	Mexico D.F., 10820,	MEXICO		52(5)553-6279	93/11
Ceccarelli, Nance	1516 P Street NW	Washington, DC, 20013	USA		202/667-3300	93/09
Celhoffer, William	RR 4	Shelburne, ON, L0N 1S0	CANADA	ESES/ESS	519/925-3913794	93/10

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Center for Energy/Env/Sci Ed,	North Georgia Col	Dahlonega, GA, 30597	USA	ESS	404/864-1527	93/06
Centre for Env Ed,	Thaltej Tekra	Ahmedabad, 380 054,	INDIA		462051	93/05
Centro Europeo dell'Educaz EU,	Villa Falconieri	00044, Frascati,	ROMA		invoice La Nuov	93/01
Cervoni, Cleti	South Great Rd	Lincoln, MA, 01773	USA	ESES		93/12
Champeau, Randall	College of Nat Res	Stevens Point, WI, 54481	USA	ESES/NFS	715/346-4174	93/02
Chanin, Irene	610 10909 Jasper Avenue	Edmonton, AB, T5S 3L9	CANADA			93/12
Chapman, Dave	1835-2 Nemoke Trail	Heslett, MI, 48840	USA	ESES/NFS	517/349-4460	93/09
Chapman, Debra	PO Box 400	Glencoe, IL, 60022-0400	USA	ESES/CES	708/835-8239	94/01
Chappell, Alex	Box 39	Dillon, CO, 80435	USA		303/468-3601	93/09
Charbonneau, Eric	250 St Martin #6	Napierville, PO, J0J 1L0	CANADA	NFS/CES	514/245-0193	93/10
Charles, Cheryl	Box 18060	Boulder, CO, 80308-8060	USA	ESES	303/444-2390	LIFE
Charnley, Janet	18616 59th Ave SE	Snohomish, WA, 98290	USA	ESES	206/487-3783	94/01
Charny, Rena	26 Hamapilin St	Herzuya Pituach, 46543,	ISRAEL		052/572092	93/03
Chase, Craig	PR/EE Dept/S Rk U	Slippery Rock, PA, 16057	USA	ESES\CES	612/794-7126	LIFE
Chase, Bonnie	324 Forest Dr. South	Short Hills, NJ, 07078	USA	ESES		94/01
Chattin, Sam	RR 2, Box 177	Lexington, IN, 47138	USA	ESES	812/752-8976	93/06
Chawla, Louise	794 Ridgeview Drive	Frankfort, KY, 40601	USA	ESES/ESS	502/227-6721	93/09
Chen, Pei-Jen	134 Ho-Ping E Rd., Sec. 2	Taipei, 10659,	TAIWAN (ROC)	ESES/NFS		94/02
Chenhall, Ruth	PO Box 855	League City, TX, 77574	USA	NFS/CES	713/332-3402	93/10
Cherif, Abour	600 S Michigan Ave	Chicago, IL, 60605-1996	USA	ESES/ESS		93/12
Cherry, Lynne	3603 Norton Pl., NW	Washington, DC, 20016	USA	ESES	202/966-6110	93/11
Chexpax,	PO Box 722	Huntingtown, MD, 20639	USA		410/535-7371	93/10
Chickering, Donna	325 BSE-SRNR	Tucson, AZ, 85721	USA	NFS/CES	602/621-7263	93/04
Children's Earth Fund, 2	40 W 20 Street/Room 1100	New York, NY, 10011	USA	NFS	212/727-4493	93/06
Chin, Belinda	9750 Ravenna Ave. NE	Seattle, WA, 98115	USA	ESES/NFS/CES	206/684-3883	93/05
Chiras, Dan	7652 Gartner Rd	Evergreen, CO, 80439	USA		303/670-3711	94/01
Chou, Ju	Hsin-Hai Rd, Sec 4	Taipei, 11718,	TAIWAN (ROC)	ESES/NFS/CES	886-2-9355232	93/10
Christensen, Barbara	4985 40th St W	Webster, MN, 55088-2106	USA	ESES/ESS/CES		93/05
Christensen, Becky	1700 Elkhorn Rd	Watsonville, CA, 95076	USA	ESS/NFS/CES	408/728-2822	93/12
Christensen-Macauley, Karen	280 E Main St #D4	Clinton, CT, 06413	USA	ESES	203/457-0692	93/03
Christie, Nancy	18 Clover Lane	Quakertown, PA, 18951	USA	ESES	215/482-7300	94/02
Clark, Delia	PO Box 668	Wilder, VT, 05088	USA	NFS	802/295-6397	93/10
Clark, Mitzi	9871 Fessler-Burton Rd	Piqua, OH, 45356	USA	NFS/CES	513/773-4818	93/03
Clausen, Bernard	903 Columbia Drive	Cedar Falls, IA, 50613	USA	NFS\CES		93/03
Clay, Karen	PO Box 321	Calistoga, CA, 94515-0321	USA	NFS	707/942-9587	93/03
Clayton, Becky	2379 Broad St	Brooksville, FL, 34609-6899	USA		904/796-7211	93/10
Clendenon, Michelle	16931 Sias St/Apt. C	Huntington Beec, CA, 92649	USA	NFS	714/725-2673	94/02
Cliff, Cathy	7642 Farmington Way	Madison, WI, 53717	USA	ESES	608/267-7529	94/01
Clifford, Mike	Extension 4-H Office	Nottoway, VA, 23955	USA	NFS/CES	804/645-9315	94/02
Clinton Co Conserv Bd,	Box 161	Grand Mound, IA, 52751	USA	ESES/NFS	319/847-7202	93/07
Clywire, Olga	11386 Konoct, Vista Dr	Lower Lake, CA, 95457	USA	ESES/CES	707/263-7249	93/08
Cochran, Rosalie	1315 250th St	Keota, IA, 52248	USA		515/472-5019	93/09
Cohen, Elana	185 Whittier Rd	New Haven, CT, 06515	USA	ESES/NFS/CES		93/10
Cohen, Michael	902 W New York St	Indianapolis, IN, 46202-5155	USA	ESES/NFS	317/274-6814	93/09
Cohen, Michael	Box 4112	Roche Harbor, WA, 98250	USA	NFS	206/378-6313	93/09
Cole, Molly	W MI University	Kalamazoo, MI, 49008	USA		616/387-2716	93/07
Colligan, Mary	12F Pickett St	Beverly, MA, 01915-3440	USA	ESES		93/03
Colomeda, Lori	738 Wright Drive	Maple Glen, PA, 19002	USA	ESS	215/482-7300	94/01
Coanes, Leslie	645 35th St	Richmond, CA, 94805-1753	USA			93/06
Connor, Jim	239 Greene Street/NY Univ	New York, NY, 10003	USA		212/475-1993	93/03
Cook, Susan	4885 W Sterling Rd	West Salem, OH, 44287-9513	USA		216/624-5385	93/01

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
Cooke, Denis	Rm 611/155 College St	Toronto, ON, M5T 1P6	CANADA		93/03
Cooper, Laurie	9559 Emerald Drive	Whistler, BC, V0N 1B9	CANADA	NFS	93/10
Cooper, Terri	W4206 CTH 32	Elkhart Lake, WI, 53020	USA	ESES/NFS	414/657-6888 93/06
Cooper, Amy	PO Box 13484	Roanoke, VA, 24034	USA	NFS	708/343-3241 94/01
Cope, Tony	711 Sandtown Rd	Savannah, GA, 31414	USA	ESES/ESS/NFS/CE	912/232-6022 93/07
Corcoran, Peter	Bates College	Lewiston, ME, 04240	USA	CES	207/786-6064 LIFE
Corson, Walter	1399 Orchard St	Alexandria, VA, 22302-4215	USA	ESS/NFS/CES	202/628-4022 93/11
Cotter, Chris	936 W Ternero St	Tucson, AZ, 85704-2736	USA	ESES/NFS	602/744-0961 93/05
Council of Outdoor Ed of ON, (COEO)	47 Rama Court	Hamilton, ON, L8W 2B3	CANADA		416/383-5696 AFIL
Covert, Douglas	101 Court St #906	Evansville, IN, 47708	USA	NFS	812/422-9550 93/05
Cowlin, Bridget	1181 E Walnut, Apt. 5-3	Carbondale, IL, 62901	USA		93/12
Cramer, Frances	766 OBISPO AVENUE	LONG BEACH, CA, 90804	USA	CES	LIFE
Crease -ECONEXUS, Skid	347061 15th Sideroad Mono	Orangeville, ON, L9W 2Y8	CANADA	ESS/ESES	519/942-0330 93/08
Creus, Kimberly	1875 Connecticut Ave	Washington, DC, 20009	USA		202/483-1100 93/08
Cripps, Robert	5405 RIMMEL DRIVE	VICKSBURG, MI, 49097	USA	CES	LIFE
Crowell, J Randolph	1303 Morris Ave	Opelika, AL, 36801-2117	USA	ESS	205/844-9090 93/04
Crowell, Mare	104 Worden	Ann Arbor, MI, 48103	USA		313/761-8142 93/10
Crookham, Carl	1511 S Humboldt St	Denver, CO, 80210	USA		303/922-0456 93/07
Crowley, Claude	5604 WEDGORTH ROAD	FORT WORTH, TX, 76133	USA	CES	LIFE
Cruz, Armando A	PO Drawer 6Y	Mississippi Ste, MS, 39762	USA	ESES/NFS/CES	601/325-3120 92/11
Ctr for Envir/Energy Ed,	Western Carolina University	Cullowhee, NC, 28723	USA		704/227-7476 94/02
Ctr for Geo & Env Ed/U of TN,	319 Claxton Addition	Knoxville, TN, 37996-3400	USA	ESES/ESS/NFS	93/12
Ctr for Research & Service, 6	400 Pell Av	Troy, AL, 36082	USA		205/670-3129 93/08
Cubberly, Pamela	2208 Colston Dr #202	Silver Spring, MD, 20920	USA	NFS	301/589-7153 94/02
Cuevas, Beatriz	Col. Reforma Iztaccihuatl	Mexico D.F., 08810,	MEXICO		52(5) 579-75-41 93/09
Cuevas, Rosa Ma	Col. Oxtopulco/Deleg Coyocan	Mexico, DF, 04310,	MEXICO		52(5) 554-46-99 93/09
Culver, Todd	159 Sapsucker Woods Road	Ithaca, NY, 14850	USA	CES	607/254-2403 93/09
Cummings, Meri	36 SW 27 Rd	Miami, FL, 33129	USA	NFS	93/10
Cummins, Catherine	LA State University	Baton Rouge, LA, 70803	USA	ESES/NFS	504/388-6867 93/09
Curiel Ballesteros, Arturo	Emerson #73	Guadalajara, Jalisco,	MEXICO 441		36/25-51-57 92/11
D'Angelo, Jim	2079 Lawrence Rd	Marcellus, NY, 13108-9610	USA	ESES/NFS	315/673-1350 93/04
Dagit, Rosemary	19989 Sischo Dr	Topanga, CA, 90290	USA	NFS	213/455-2001 93/08
Dahlberg, Duane	Concordia College	Moorhead, MN, 56562	USA		218/299-3395 93/09
Daly, Antonia	222 East 16th St	New York, NY, 10003	USA	ESES/NFS/CES	212/979-5030 93/09
Daniel, Claudine	Rt. 1, Box 448	Indianapolis, OK, 73552	USA	CES	405/429-3222 94/01
Danielson, Jane	315 Island Dr. #5	Madison, WI, 53705		NFS	94/03
Darst, David	PO Box 636	Louisville, CO, 80027	USA	ESES/NFS	303/665-9381 93/03
Darula, Robert	2488 Shady Oak Dr	GREEN BAY, WI, 54304	USA	CES	LIFE
Das, Dilip	The Morton Arboretum	Lisle, IL, 60532	USA	NFS/CES	708/719-2462 94/02
Daugherty, M.	131 OLD FORD DRIVE	CAMP HILL, PA, 17011	USA	CES	LIFE
Davies, Diane	350 Rock Eagle Rd	Eatonton, GA, 31024-9599	USA	NFS	706/485-2831 94/02
Davis, Andrea	1600 Thompson Pkwy	Sarasota, FL, 34236	USA	ESES/NFS/CES	813/388-4441 93/08
Davis, Don	371 Citrus Avenue	Imperial Beach, CA, 91932	USA		619/575-5201 93/03
Davis, George R	Moorhead State Univ	Moorhead, MN, 56563	USA	ESES/NFS	218/236-2904 93/05
Davis, Molly	1906 Biltmore St. #1	Washington, DC, 20009	USA	ESES/NFS/CES	202/467-8700 93/10
Dawson, Neil	PO Box 1006	Chapleau, ON, P0M 1K0	CANADA	CES	705/864-1710 93/05
De La Cour, Peter	17 Western Road	Oxford, OX1 4LF,	U K		44 71 730 8868 93/10
DeWispelaere, Laurie	PO Box 83486	Fairbanks, AK, 99708	USA	ESES/NFS	907/479-6142 92/11
Debelak, Janet	PO Box 162603	Austin, TX, 78716	USA	CES	512/327-9721 93/09
Defenders of Wildlife, 1	1244 19th St., NW	Washington, DC, 20036	USA	NFS	202/659-9570 93/08
Delehunt, Kate	6001 Larson	Kansas City, MO, 64133	USA	ESES/NFS/CES	816/871-8350 93/10

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Delfay, Bob	555 Danbury Rd	Wilton, CT, 06897	USA	CES	203/762-1320	93/11
Denver Public Library,	1330 Fox St	DENVER, CO, 80204-2602	USA	CES		LIFE
Dept of Cons/Rec/Div of St Pks,	203 Governor St/Ste 306	Richmond, VA, 23219-2010	USA	ESES/ESS/NFS/CES		93/08
Deresz, Don	1852 SW 24. Street	Miami, FL, 33145	USA	NFS	305/361-8097	93/08
DiNovo, John	14855 West Avenue	Orland Park, IL, 60453	USA	ESES/CES	708/429-0817	93/10
Diaz, Camacho, Arq Alejandro	Rio Elba #20 6 piso	Mexico D.F., 06500,	MEXICO			92/11
Dickinson, W.C.	805 North Quaker Ln	Alexandria, VA, 22302	USA	NFS/CES	202/720-5369	93/07
Dieterich, Jeanne	608 Memorial Parkway	Fremont, OH, 43420-3211	USA	NFS	419/334-4495	92/12
Dietz, Lou	9604 Garwood Street	Silver Spring, MD, 20901	USA	NFS/CES	202/778-9611	93/04
Dietzman, Gordon	W-11008 Lake Point D	Lodi, WI, 53555	USA	NFS	608/356-9462	93/03
Dines, W. H.	5 Delwood Circle	Durango, CO, 81301	USA			93/07
Dinkins, Tom	PO Box 1111	Tucson, AZ, 85702-1111	USA			94/02
Disinger, John	5377 Roche Drive	Columbus, OH, 43229-4274	USA	ESES/ESS/NFS	614/292-9884	LIFE
Ditsiou, Malamati	Lossif Str	Thessaloniki, 54622,	GREECE	ESES/NFS/CES		93/08
Dittrich, Linda	37 Colonial Lawns	Bath, NY, 14810	USA	NFS	607/776-9631	94/02
Dobler, Matthias	Westfailische Str. 34	D-1000, Berlin 31,	GERMANY		49-40-4123-3714	93/12
Dodge, Ph.D, Kay	143 Bostwick Ave	Grand Rapids, MI, 49503	USA		616/771-3935	93/11
Dodson, David	Box 115/Cedar Cove	Greenville, WV, 24945	USA			93/11
Dohmen-Goforth, Chris	214 S Kentucky St	Kingston, TN, 37763	USA	ESS/NFS	615/448-2246	93/11
Domingos, Irene	5 Parkway Forest Dr	Willowdale, ON, M2J 1L2	CANADA	ESES/NFS/CES	519/747-4141	92/11
Donner, JoAnn	Rt #1, Box 129	Hackensack, MN, 56452	USA		218/682-2325	93/10
Donohue, Janet	475 Park Ave S	New York, NY, 10016	USA		212/725-1262	94/02
Dorsey, Michael	School of Nat'l Resources	Ann Arbor, MI, 48109	USA		313/936-2195	93/10
Doty, G. Carol	17 Ridgeway Road	Norris, TN, 37828	USA		615/632-1759	94/03
Dougherty, Shirley	Room 651	St Paul, MN, 55101	USA	ESES/NFS	612/296-2723	93/10
Dowson, Rick	400 Clyde Rd/Box 729	Cambridge, ON, N1R 5W6	CANADA		519/621-2761	93/06
Doyle (no communicator), Patrick	Box 173	Murfreesboro, TN, 37132	USA	ESES/NFS/CES	615/898-2064	93/08
Drake, Hans	140 Garden Street	Prescott, AZ, 86301	USA		602/776-7693	93/01
Dreier, Patricia	Unit 26610, Box 364	APO, AE, 09244	USA	NFS	011/49-931-7298	93/06
Dresner, Marion	1711 McGee Avenue	Berkeley, CA, 94703	USA	ESS	510/841-5403	93/11
Dreves, Lorene	Route 2	Napoleon, OH, 43545	USA	CES		LIFE
Driskell, Judy	Forestry Building/Ridgeway Rd	Norris, TN, 37828	USA	ESES	615/632-1570	94/01
Drury, Lois	Box 143	Florissant, CO, 80816	USA			93/08
Drysdale, R	4747 53rd St	Red Deer, AB, T4N 2E6	CANADA	ESES	403/343-1405	94/02
Dudley, David	3600 136th Place SE	Bellevue, WA, 98006-1400	USA			94/02
Duffy, Ray	9820-106th St	Edmonton, AB, T5K 2J6	CANADA			93/07
Dumouchel, Denise	GGNRA/Bldg 1033	Seausalito, CA, 94965	USA	NFS	415/331-6243	93/02
Dunbar, Lin	309 Peabody Hall/CB #3500	Chapel Hill, NC, 27599	USA	ESES/ESS/NFS/CES	919/966-5922	93/04
Dunlap, Riley	Dept of Rural Soc	Pullman, WA, 99164-4006	USA	ESS	509/335-3810	94/02
Dunlap, David	7011 E Edgemont St	Tucson, AZ, 86710	USA	NFS	602/296-0295	94/01
Dunn, Peter	Hurlingham (16-86)	Buenos Aires,,	ARGENTINA	ESES/NFS/CES	011/541-6651807	93/05
Dupignac, Emily	308 Catherine Apt. 4	Ann Arbor, MI, 48104	USA	ESS/NFS	313/930-0957	93/10
Duquette, Roderick	207 Mitchell Hall	LaCrosse, WI, 54601	USA	ESS	608/785-8161	94/02
Duritsa-Henshrot, Mary	Rt 1, Box 32A	Shell Lake, WI, 54871	USA		715/468-2271	93/10
EE Association of OR,	7024 S.E. Pine	Portland, OR, 97215	USA			AFIL
Eads, Larry	4400 N 17th Street	Arlington, VA, 22207	USA	NFS	202/632-6485	94/03
Eager Travel Corp,	Suite 211	Orlando, FL, 32819	USA		1/800/	NON
Eagles, Kip	1704 Quince St. NE	Olympia, WA, 98506-3244	USA		206/753-2989	93/08
Ed Develop Specialists,	7505 E Carson #250	Lakewood, CA, 90713	USA	ESES/NFS	310/420-0814	93/07
Edinger, Susan	1161 Agad Room 224	W Lafayette, IN, 47907-1161	USA	ESES/NFS/ESS/CES	317/494-8439	93/10
Edison State Coa College,*	1973 Edison Drive	Piqua, OH, 45356-9253	USA		513/778-8600	93/10

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Edwards, Susan	Rt 1, Box 106N	Central Lake, MI, 49622	USA	ESES/CES	616/599-2296	93/02
Ehrhardt, Barbara	5954 N 450 E	Leesburg, IN, 46538	USA	ESES	219/982-5010	93/06
Eisenberg, Rose	Claveles 322	Estado de Mexic, 53160,	MEXICO	ESS	5-65-22-33	93/10
Elder, James	School for Field Studies	Beverly, MA, 01915	USA	ESS	508/927-7777	93/10
Ellingson, Robert	BOX 7921	MADISON, WI, 53707	USA	CES		LIFE
Elliott, Lynn	PO Box 82	Devault, PA, 19432	USA	ESS/CES	215/935-9777	93/04
Elliott Woodward, Laura	4560 Vista de la Tierra	Del Mar, CA, 92014	USA	ESES/NFS	619/792-1260	94/02
Ellis, Tina	RR 3, Box 839	Wiscasset, ME, 04578	USA		207/443-5451	93/10
Elwell, Laddie	PO Box 1176	Beaidji, MN, 56601	USA	ESES/ESS	218/751-1110	92/11
Elzernan, Alan	342 Computer Court	Anderson, SC, 29625	USA	ESS	803/656-3276	94/01
Emanuelson, Clifford	20 MARSH ROAD	EASTON, CT, 06612	USA	CES		LIFE
Emmons, Kate	15351 Rattlesnake Rd	Grass Valley, CA, 95945	USA	NFS/CES		93/04
Engleson, David	425 W Kohler St	Sun Prairie, WI, 53590	USA	ESES/CES	608/267-9266	LIFE
Enjeu & Env-Jeunesse Inc,	4545 Pierre-de-coube	Montreal, PQ, H1V 3R2	CANADA	NFS	514/252-3016	93/07
Erkerlin, Alida	Dept of Wildlife & Fisheries	College Station, TX, 77843-2258	USA	NFS/CES	409/696-94551	93/11
Env Education Fdn of FL,	Ste 1105, The Capitol	Tallahassee, FL, 32399-0001	USA		904/224-8238	93/09
Env'l-Division of King County,	3600 136th Place SE	Bellevue, WA, 98006-1400	USA			94/02
Environmental Resource Center,	PO Box 1111	Ketchum, ID, 83340	USA		208/726-4333	93/07
Environmental Ed Center (TWC),	Box 41/TN Wesleyan College	Athens, TN, 37303	USA	ESES	615/745-7504	94/03
Enyedy, Chris	HCR 1/Box 171	Livingston Manor, NY, 12758	USA			94/02
Erickson, Norm	6230 NW 34 Avenue	Rochester, MN, 55901-3711	USA	NFS	507/288-0046	94/03
Erickson-Eastwood, Linda	Box 12/500 Lafayette Rd	St Paul, MN, 55155-4012	USA		612/297-4919	93/09
Erler, Dave	Box 173 Rt 113	Holderness, NH, 03245	USA	NFS	603/968-7194	93/10
Ernst, Thomas	338 Reynolds Dr	Boulder Creek, CA, 95006	USA	ESES	408/358-9579	94/02
Ettenger, Kreg	739 Allen St	Syracuse, NY, 13210-2601	USA			93/06
Euler, Aline	204-05 43rd Avenue	Bayside, NY, 11361	USA	ESES/NFS	718/229-5505	93/03
Evans, Carol	1620 Swallows Nest Lane	Clarkston, WA, 99403	USA	CES		93/05
Evans, Charles	4201 Cathedral, NW	Washington, DC, 20016	USA		202/624-7833	93/05
Evans, Louise	POST OFFICE BOX 84	E WINDSOR HILL, CT, 06028	USA	CES		LIFE
FL Office of Env'l Ed,	FL Dept of Ed/Rm 514	Tallahassee, FL, 32399	USA		904/487-7900	93/01
Falk, Laurence	Dept of Sociology	Moorhead, MN, 56562	USA		218/299-3545	93/09
Fanning, Odoia	9206 Bulls Run Pkway	Bethesda, MD, 20817-2404	USA	NFS	301/530-8430	94/02
Faryniarz, Joseph	750 Chase Parkway	Waterbury, CT, 06708-3000	USA		203/575-8065	93/02
Faulconer, Tracy	17618 Blue Heron Rd	Lake Oswego, OR, 97034	USA	ESES	503/635-5555	93/03
Feist, Colleen	6809 Forest Glade Ct	Middleton, WI, 53562	USA	NFS/CES	608/231-9240	93/08
Felchle, Edith	PO Box 580	Fort Collins, CO, 80522	USA	NFS	303/221-6311	93/06
Feliciano, Donald	6850 Versar Center	Springfield, VA, 22151	USA	ESES/NFS	703/642-6934	93/04
Fernandez, Francisco	6-3A Coyoaccor Center	Mexico DF, 0400,	MEXICO		5/5546495	93/10
Ferris, Sharon	370 Marse Street	Coldwater, MI, 49036	USA		517/639-4201	93/10
Fialkowski, Carol	2001 N Clark	Chicago, IL, 60614	USA	ESES/NFS	312/549-0449	93/09
Field, Nancy	PO Box 620863	Middleton, WI, 53562-0863	USA	NFS	608/831-1410	93/08
Fien, Dr. John	Environmental Science	Nathan, 41111,	AUSTRALIA	ESES/NFS/CES	61-7-875-7105	93/12
Finger, Jack	S1280 Gray Fox Run	Delafield, WI, 53018	USA	ESES	414/521-8893	92/12
Finger, Matthias	106 Morningside Dr. No. 72	New York, NY, 10027	USA	ESES/NFS	212/678-3760	93/09
Finlay, A. Joy	51313 Range Road 232	Sherwood Pk, AB, T88 1B7	CANADA	ESES/NFS	403/467-7649	LIFE
Finstad, Carl	Biology Dept	River Falls, WI, 54022	USA	ESES	715/425-3362	93/06
Fish, Steven	111 Townsend Rd	Andover, CT, 06232	USA		203/566-5364810	93/05
Fisher, Richard	Rt. 3, Box 343	Toccoa, GA, 30577	USA	ESES/ESS/NFS/CES	706/886-7515	94/02
Fitch, Eric	7155 N 9th 101F	Pensacola, FL, 32504	USA	ESS	904/474-2334	93/10
Fitch, Letty	205 Old Commerce Rd	Athens, GA, 30607	USA	CES	703/613-3615	93/04
Fitzpatrick, Mark	PO Box 6324	East Lansing, MI, 48826	USA			93/07

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Fleaming, M. Lynette	11220 E Stetson Pl	Tucson, AZ, 85749-9550	USA	ESES/CES	602/749-4909	93/03
Flitter, Michael	604 2nd Ave.	West Bend, WI, 53095-4014	USA	NFS	414/334-4978	LIFE
Forbes, Anne	516 Wingra St	Madison, WI, 53715	USA	NFS	608/267-7622	94/03
Ford, Cindy	Biology Dept.	Pittsburg, KS, 66762	USA	ESES/NFS/CES	913/532-5530	93/10
Fortner, Rosanne	203 W Selby Blvd.	Worthington, OH, 43085-3938	USA	ESES	614/292-9826	93/02
Foster, Edward	714 Alden St	Meadville, PA, 16335	USA			93/05
Fowler, Susan	918 Lombard Ave	Evansville, IN, 47714	USA	CES	800/777-0838	94/02
Fox, Adrian	POST OFFICE BOX 327	LEEDS, ND, 58346	USA	CES		LIFE
Fox, Barry	Box 9081/VA State Univ	Petersburg, VA, 23806	USA	ESES/NFS	804/524-5964	93/09
Frase, Linda	606 Lolo Street	Missoula, MT, 59802	USA	ESES/ESS/NFS/CES	406/542-1694	94/02
Frandsen, Maude	129 NORTH 5TH AVENUE	BRIGHTON, CO, 80601	USA	CES		LIFE
Frank, Jeffrey	140 Guernsey St #3L	Brooklyn, NY, 11222	USA	ESES/NFS	212/566-0990	93/09
Franz, Cecilia	194 Bioscience	Oxford, OH, 45056	USA		513/529-4344	93/09
Franzen, Kay	36 Park Drive	Chappaqua, NY, 10514	USA	ESES		93/11
Fraser, Mike	Rt. 4, Cleveland Road	Houston, MO, 65483	USA	CES		94/04
Frazier, Ken	518 6TH	BOONE, IA, 50036	USA	CES	712/527-4811	LIFE
Freed, Michael	Rt 3, Box 451	Russellville, AR, 72801	USA	CES	501/968-0378	LIFE
Freeman, Jerry	95 El Rio Drive	Alamosa, CO, 81101	USA	ESES	719/589-2553	93/05
Freudenburg, Ph.D, William	Univ of WI	Madison, WI, 53706	USA		608/263-4893	93/07
Frey, Seulah	3873 COLDWATER DRIVE	ALLISON PARK, PA, 15101	USA	CES		LIFE
Fridley, Vern	522 S 1200 E	Salt Lake City, UT, 84102-3809	USA	ESES/CES	801/582-5212	93/09
Frisby, Toni	Ste 400/70 Forest Drive	Sul St Marie, ON, P6A 6V5	CANADA	CES	705/945-6725	93/10
Fritts, Lynda	122 W 6th	Claremore, OK, 74017	USA	NFS/CES	918/832-8112	94/02
Frost, Leslie	Highway 35	Dorset, ON, POA 1E0	CANADA	ESES/CES		93/06
Froude-Jones, Karen	PO Box 118	Brownsville, OR, 97327	USA	ESES	503/466-5918	93/06
Fulton, Jerome	1812 NE 45	Portland, OR, 97213	USA	ESES/NFS/CES	503/280-5240	93/06
Furness, Linda	Sch of Ed/902 W NY	Indianapolis, IN, 46202-5155	USA	ESES	317-274-6801	93/09
GRCDA/Lori Swain-Switch,	PO Box 7219	Silver Spring, MD, 20910	USA		301/585-2898	93/08
Gagnon, Gerard	Service des Achats Cp 690	Case postale 590, PO, 60C 1R0	CANADA			94/02
Gale, Robert	42 Prince Rupert Avenue	Toronto, ON, M6P 2A7	CANADA	ESS	416/392-2716	93/12
Galli, Anne	2 DeKorté Pk Plaza	Lyndhurst, NJ, 07071	USA		201/460-8300	93/07
Galloni	WH, Maria del	Buenos Aires, 1425,	ARGENTINA	ESES/ESS/NFS/CES	802-9390	93/07
Gamble, Leslie	RR 1, Box 1217	Bethel, ME, 04217	USA		207/665-2068	93/07
Gange, Richard	1301 Timber Oaks Rd	Edison, NJ, 08826	USA	ESES	908/789-4500	93/05
Gape, Lynn	PO Box N 4105	Nassah,,	BAHAMAS		809/393-1317	93/04
Garber, Gail	PO Box 35706	Albuquerque, NM, 87176-5706	USA	NFS/CES	505/255-7622	94/02
Garcia, Mario	17-12-00257	Quito, Pichincha,	ECUADOR	ESES/NFS/CES		94/01
Gardeila, Ron	College Station	Highland Height, KY, 41076	USA	ESES	606/572-5229	93/09
Gasperini, Jennifer	1536 Hewitt Ave	St Paul, MN, 55104	USA		612/641-2855	93/09
Gatty, Fenna	1348 Highland Blvd	Hayward, CA, 94542-1102	USA	ESES	510/471-2772	93/04
Gatz, Frances	801 Devon Place	Alexandria, VA, 22314	USA		703/549-6626	93/09
Gaughan, Sharon	Route 2	Keapton, PA, 19529	USA	NFS	215/756-6961	93/12
Gavin, Kathleen	PO Box 96	South Royalton, VT, 05068	USA	ESES/NFS	802/763-8303	93/09
Gaylen*, Nancy	Western State College	Gunnison, CO, 81231	USA		303/943-7041	92/11
Geis, Melissa	4815 Knickerbocker ST	Houston, TX, 77035	USA			93/09
George, Gail	1531 NW 92nd St	Des Moines, IA, 50325-6279	USA	ESES/NFS	515/281-5135	93/04
Gesner*, Susan	99 Wellesley Rm 5440	Toronto, ON, M7A 1W3	CANADA		416/314-2162	93/03
Ghinger, Patricia	8213 Carrbridge Cir	Towson, MD, 21204	USA	ESES/ESS	301/887-5270	92/11
Gibaldi, Steven	3240 Netherland Ave #5A	Bronx, NY, 10463-3403	USA	ESES/ESS/CES		93/04
Gleck, Charlene	1009 S Brooks St	Madison, WI, 53715	USA	CES	608/266-0545	93/09
Gilchrist, Susan	1350 Fearite Drive	Monona, WI, 53716	USA	CES	608/221-6350	93/09

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
Giles, Barbara	PO Box 155	Black Mountain, NC, 28711	USA		93/05
Gillan, Judith	Rt 3, Box 238-C	Tallahassee, FL, 32308	USA	NFS/CES	93/04
Giuliano, Jackie	3325 Primera Ave. #1	Los Angeles, CA, 90060-1570	USA	ESS	94/03
Glass, Sara	PO Box 133	Ft. Gaines, FL, 31715	USA	NFS	205/585-3464
Glew, Frank	46 Winding Way	Kitchener, ON, N2N 1M1	CANADA		92/11
Goche, Becky	Deer Ridge Commons, Apt. 4	Treacealeau, WI, 54661	USA	ESES/NFS/CES	93/09
Golden, Jack	Off 528 Leyden Rd	Greenfield, MA, 01301	USA		413/774-5483
Gonzalez, Charles	2601 Warren Way	Arcadia, CA, 91007	USA	NFS	818/304-2500
Gonzalez De C., Susana	Calle 64 # 437 x53 y 47A	97000 Merida, Yucatan,	MEXICO		93/10
Gonzalez Ramas, Maricela	Col. Universitaria	San Luis Potosi, SLP 78290,	MEXICO		93/09
Gonzalez-Gaudiano, Edgar	Rio Elba #20 7 piso	Mexico D.F., 06500,	MEXICO		52-5/553-9573
Goodale*, Monica	8652 Wakefield Ave	Panorama, CA, 91402	USA	ESES	818/892-6551
Goodlet, Martha	35600 136th Place SE	Bellevue, WA, 98006-1400	USA		94/02
Goodman, Eve	225 7th Avenue #4	San Francisco, CA, 94118	USA		415/221-2278
Gordon, Cathy	#662 Hawkins Graduate House	West Lafayette, IN, 47906	USA	ESES/NFS/CES	317/495-1120
Gorter, Jim	17765 NW Springville	Portland, OR, 97229	USA	ESES/CES	503/690-5402
Gottschalk, Kristen	126 Commercial Pk Rd	Wahoo, NE, 68066-0126	USA	CES	402/443-4675
Grant, Mary	3059 N Maryland Ave	Milwaukee, WI, 53211	USA		414/229-5398
Grant, Kristen	12 Alton Place #1	Brookline, MA, 02146	USA	ESES/NFS	617/566-3399
Grant, Tim	95 Robert Street	Toronto, ON, M5S 1K5	CANADA		NON
Gratton, Vivian	314 1/2 Elm St	Santa Cruz, CA, 95060-4317	USA	ESES	408/459-8942
Gray, Joseph F.	Box 1980	Jefferson, ME, 04348	USA	NFS	
Gray, Peggy	100 Van Morgan Dr	Golden Pond, KY, 42211-9001	USA		502/924-5602
Green, Anne	545 Franklin St	Stevens Point, WI, 54481	USA	ESES/NFS	715/346-4176
Green, D.S. 'Greb'	PO Box 299	Oregon, IL, 61061	USA	NFS	815/732-2111
Greenall Gough, Arnette	Geelong/3217	Victoria, ,	AUSTRALIA	ESES/NFS	+61 52 27 2988
Greene, Janice	PO Drawer 1400	Sinton, TX, 78387	USA	ESES/CES	512/364-2643
Gregory, William	4331 Elm Road	Gurnee, IL, 60031	USA	CES	708/623-5190
Grieser, Mona	11802 Saddlerock Rd	Silver Spring, MD, 20902	USA	NFS	301/593-8469
Griffin, Heather	Box 3 Nagles Place	St. John's, NF, A1B 2Z2	CANADA	NFS/CES	508/827-5907
Griffin, Shirley	PO Box 1333	Shirley, MA, 01464-1333	USA	ESES	508/827-5907
Griffithe, Barry	5050 Yonge St	Willowdale, ON, M2N 5N8	CANADA	ESES/ESS	416/225-4661
Grossman, Ann Carol	60 Blake Rd	Brookline, MA, 02146	USA		617/277-6639
Group for the South Fork,	117 Mean St/PO Box 569	Bridgeton, NY, 11932	USA	ESES/ESS/NFS/CES	516/537-1400
Gruppenhoff, John	6410 Rockledge Drive/#203	Bethesda, MD, 20817	USA		301/299-8503/301
Gruszynski, Rep Stan	PO Box 8952	Madison, WI, 53708	USA		608/267-9649
Gugliotti, Barbara	8053 26th Avenue N	St. Petersburg, FL, 33710	USA	NFS/CES	813/343-0777
Gulf of the Farallones,	Fort Mason/Bldg 201	San Francisco, CA, 94123	USA	NFS	415/556-3509
Guthrey, Rhonda	2178 San Marcos Pl	Claremont, CA, 91711	USA	ESES/CES	714/626-6746
Guzik, Nancy	500 N Maitland Ave	Maitland, FL, 32751	USA	ESES/NFS/CES	407/539-0990
Hahn, Elizabeth	121 Beckett Ct.	St Clairsville, OH, 43950-1600	USA	ESES	
Hale, Wendy	460 Hwy 436-Suite 200	Casselberry, FL, 32707	USA	NFS	407/260-8300
Hall, Russell	PO Box 8	Fulton, OH, 43321-0008	USA	ESES	419/866-8030
Hall, Sharon	4800 Allendale Ave	Oakland, CA, 94619	USA	ESS/NFS	
Hamilton, Mary	12809 HAMILTON LANE	GREENFIELD, OH, 45123-9446	USA	CES	
Hamilton, William	4205 N Cresthill Ct	Chester, VA, 23831-4623	USA		804/765-4613
Hammond, William	5456 Parker Dr	Ft Myers, FL, 33919	USA	ESS/CES	813/481-4676
Hanophy, Wendy	7373 W 84th Way #2003	Arvada, CO, 80003	USA	ESES	
Hanselman, David	College of Env Sci & Forestry	Syracuse, NY, 13210	USA		
Harako, Eiichiro	196 W 11th Avenue	Columbus, OH, 43210-1350	USA	NFS	614/292-8436
Hardenbrook, Elsie	6113 Minerva Drive	Las Vegas, NV, 89130	USA	CES	702/363-1921

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
Hardison, Preston	Univ of WA	Seattle, WA, 98195	USA	206/527-0119	92/11
Hardy, Leigh	RR 2, Box 2000	Shickshinny, PA, 18655	USA	NFS 717/864-3021	93/03
Harmon, Rance	RD #2, Box 1010	Dingsmans Ferry, PA, 18328	USA	NFS 717/828-2319	93/06
Harris, Josephine	PO Box 81	Middlefield, OH, 44062-0081	USA	CES 216/632-1380	94/01
Harrison, A.T.	1840 S. 1300 E	Salt Lake City, UT, 84105-9990	USA	ESS 801/488-4232	93/10
Harrison, Wendy	PO Box 927	Arnold, CA, 95223	USA	ESES/NFS 209/795-3840	93/04
Hart, E. Paul	166 Mayfield Rd	Regina, SK, S4V 0H5	CANADA	ESES 306/584-9570	LIFE
Hart, Homer	R.D. #1, Box 8	Linesville, PA, 16424	USA	ESES/ESS/CES 814/683-5545	94/03
Hartley, Don	1334 N Branciforte Ave	Santa Cruz, CA, 95065	USA	408/429-8354	93/11
Hartley-Urquhart, W Roland	One Ecker St/Suite 250	San Francisco, CA, 94105	USA	ESES 415/512-1465	93/02
Hartup, Sally	2950 Keystone Cir	Colorado Spring, CO, 80918	USA	NFS 719/578-6939	93/01
Hartwell, Penny	1549 N Vermillion Rd	Brownsville, TX, 78521	USA	ESES 210/831-8700	93/09
Haskins, James	PO Box 828	Hayden, CO, 81039	USA	303/276-3338	93/09
Hatcher, Kathryn	Ecology Bldg #13	Athens, GA, 30602	USA	CES 404/542-1555	93/03
Haven, Dorothy	4845 DORSHIRE DRIVE	TROY, MI, 48084	USA	CES	LIFE
Havinga, Dohria	270 Main Street	Schomberg, ON, L0G 1T0	CANADA	ESES/NFS/CES	93/07
Hawkins, Eleanor	17 KING PHILIP ROAD	SUDBURY, MA, 01776	USA	CES	LIFE
Hawthorne, Josetta	4014 Chatham Lane	Houston, TX, 77027	USA	ESES/NFS 713/622-7411	94/03
Heard, Virgil	100 N University SE 216	Fort Worth, TX, 76107	USA	817/871-2531	93/05
Heath, Michael	RR 2, Box 1200	Wiscasset, ME, 04578	USA	ESES 207/882-7323(W)	94/01
Heidelberg, Joan	5995 Horseshoe Bend Rd	Troy, OH, 45373	USA	NFS 513/698-6493	HONORARY/L
Heinze-Fry, Jane	6 Aerial Street	Lexington, MA, 02173	USA	ESS 617/721-2612	93/01
Henderson, Anna	2830 27th St. NW	Washington, DC, 20008	USA	ESES 301/951-4622	93/06
Henderson, Helen	1750 E Mound	Decatur, IL, 62526	USA	217/877-6566	93/01
Herry, Barbara	PO Box 91837	Austin, TX, 78709-1837	USA	ESES/ESS/NFS/CES 713/820-5145	93/10
Hepner, Lynn	1113 Deborah Lane	Wheeling, IL, 60090	USA	ESES/NFS/CES 708/948-7750	93/04
Hepner, Lenore	250 Cushman #1A	Fairbanks, AK, 99701	USA	NFS 907/451-7352	93/12
Hernandez Fernandez, Aida	Cd. University NAC4	Mexico D.F., 04510,	MEXICO	ESS/CES	94/02
Herning, DuWayne	2712 Mary Ann Lane	Hausau, WI, 54401	USA	CES 715/693-3607	93/10
Heron Lake Environ Ctr, 1	Box 429	Lakefield, MN, 56160-0429	USA	CES 507/662-5505	93/08
Herzig-Zurcher, Monica	Col. Del Valle Deleg , 03100,	Benito Juarez	MEXICO DF	ESES/ESS 925/594-6532	LIFE
Hewitt, Patricia	Campus View 527	Bloomington, IN, 47406	USA	ESES 812/856-8118	94/03
Hewko, Daniel	RD #1, Box 392	Reading, PA, 19607	USA	ESES 215/775-1411	93/08
Hewston, John	333 FICKLE HILL ROAD	ARCATA, CA, 95521	USA	CES	LIFE
Heyde, Russell	975 Indian Landing R	Millersville, MD, 21108	USA	ESS/CES 410/222-3822	93/12
Heyer, Theresa	1992 Folwell Ave	St Paul, MN, 55108	USA	CES 612/649-5239	93/09
Hibbs, Clyde	BALL STATE UNIVERSIT	MUNCIE, IN, 47306	USA	CES	LIFE
Hida, Allan	605 N. 104th Street	Hawtosa, WI, 53226-4327	USA	ESES 414/774-7805	93/09
Higgin, Debra	2448 Watson Court	Palo Alto, CA, 94303	USA	ESES 415/424-8035	93/06
Hilgers, Sara	409 West Street	Stevens Point, WI, 54481	USA	715/346-4716	93/10
Hill, Robert	2455 Brookwood St	Harrisburg, PA, 17104-2112	USA	NFS 717/541-7867	93/10
Hillyard, Fred	2153 Annex-Univ of Utah	Salt Lake City, UT, 84112	USA	ESS 801/585-5209	93/07
Hine, Deb	501-225 Metcalfe Street	Ottawa, ON, K2P 1P9	CANADA	NFS 613/233-8724	93/06
Hinkle, Laurie	10142 Nanford Rd	Cleveland, OH, 44102-1653	USA		92/11
Hoer, Martha	48 Rocky Hill Rd	Essex, MA, 01929	USA	508/768-6465	93/09
Hobbs, Diana	6584 Cedar Blvd	Newark, CA, 94560	USA	ESES 510/745-9205	93/11
Hodge, Jerry	48 Glenholme Avenue	Toronto, ON, M6H 3A9	CANADA	ESES/ESS 416/857-4160	93/10
Hodges, Lynn	TVA/Forestry Building	Norris, TN, 37828	USA	NFS 615/632-1640	93/09
Hoenig, Liz	PO Box 1967	Olympia, WA, 98501	USA	NFS 206/753-83914	93/09
Hogan, Christine	373 Sussex Dr	Ottawa, ON, K1A 0H3	CANADA	613/943-1534	93/09

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Hogan, Kathleen	Box R	Milbrook, NY, 12545-0178	USA	ESES/NFS	916/677-5358	93/09
Hoier-McCarthy, Hollis	255 Live Oak Drive	Vero Beach, FL, 32963	USA	ESES/NFS/CES	407/589-5050	93/08
Holben, Cheryl	97 E Pearl Street	Coldwater, MI, 49036-1931	USA			93/02
Hollums, W. Don	201 E Colfax	Denver, CO, 80203	USA		303/866-6787	93/09
Hollweg, Karen	8751 E Hampden Ave, Suite A1	Denver, CO, 80231	USA	ESES/NFS	303/696-0879	94/03
Holtz, Robert	275 N. Syndicate	St. Paul, MN, 55104	USA		612/641-8497	93/08
Hood, Trish	1773 South Llinta Way	Denver, CO, 80231	USA	ESES	303/695-6163	93/09
Hooper*, Jon	1870 Vallombrosa Ave	Chico, CA, 95926-1757	USA	ESES/CES	916/898-5811	92/11
Hopewell Valley Reg School Dis,	425 South Main Street	Pennington, NJ, 08534	USA			93/04
Hopkins, Libby	300 Westgate Cover Drive	Hadley, MA, 01035-9589	USA	ESES/NFS/CES		93/05
Horn, Joan	1075 Rt. 343	Yellow Springs, OH, 45387-9740	USA	NFS	513/767-7648	93/09
Horn, Patty	3300 W Camelback	Phoenix, AZ, 85017	USA	ESES	602/249-3300	92/12
Horta, Carlos	Col. Villa Fonta Mexicali	Baja California, 21180,	MEXICO		52(65) 55-16-36	93/09
Horton, Phillip	Science Ed Dept	Melbourne, FL, 32901	USA	ESES	407/768-8000	93/11
Horton, Susan	PO Box 365	Heflin, AL, 36264	USA	NFS/CES		93/08
Horvath, Rainy	148 Johnson Road	Scarsdale, NY, 10483	USA		914/723-1727	94/03
Horwitz, Ellie	32 Riverside Avenue	Concord, MA, 01742	USA	CES		LIFE
Hostetter, Karen	2321 S Leyden St	Denver, CO, 80222	USA	NFS	303/331-4118	94/02
Hostetter, Robert	14295 SW Wilson Dr	Beaverton, OR, 97005	USA	CES	503/646-4056	93/11
Hotaling, Carey	Box 574	Freeport, ME, 04032	USA	CES		93/07
Hove, Verne	PO Box 336	Wilmington, VT, 05363	USA	ESES/ESS/NFS/CES	802/4442-5427	94/03
Hubert, Robert	2207 Harvard Rd	Lawrence, KS, 66049-2612	USA	ESES/ESS/NFS/CES	816/871-1800	93/10
Hudson, Leslie	15 Webster Rd	Orono, ME, 04473	USA	ESES/NFS	207/866-4346	93/12
Hudspeth, Thomas	153 S Prospect	Burlington, VT, 05401	USA	ESS	802/656-4055	LIFE
Huff, Jane	8940 Jones Mill Rd	Chevy Chase, MD, 20815	USA	ESES/NFS/CES	301/652-5964	93/05
Hug, John	65 S Front/Rm 1005	Columbus, OH, 43266-0308	USA	ESES/CES	614/466-2211	94/02
Hughes, Jeffrey	2500 Redstone Rd. #27	Huntsville, AL, 35803	USA	ESES/CES	205/536-2882	93/04
Hulmes, Douglas	220 Grove Ave	Prescott, AZ, 86301	USA	ESS/CES	602/778-2090	94/02
Hungerford, Harold	RFD 4-Box 180 A	Carbondale, IL, 62901	USA	ESES	618/453-4211	94/02
Hunn, Diana	Chaminade 205/Teacher Ed	Dayton, OH, 45469-0525	USA	ESES	513/229-3346	93/07
Hunter, Rhonda	PO Box 47600	Olympia, WA, 98504-7600	USA	ESES/NFS	206/459-6147	93/10
Hutchinson, Ann	2659 E 7th	Maplewood, MN, 55119	USA		612/738-9383	94/01
Huter, Steven	1060 Taylor Street	Eugene, OR, 97402	USA			93/11
Hyde, Leslie	375 Main Street	Rockland, ME, 04841	USA	ESES/NFS/CES	208/596-2104	93/11
Hyland, Peggy	2010 Village Dr	Louisville, KY, 40205	USA	ESS	502/564-8100	94/03
Hyneman, Robert	PO Box 5423	Harrisburg, PA, 17110	USA	ESS		93/09
IN Association of IN,	968 East 600 North	Greenfield, IN, 46140	USA		317/267-8919	AFIL
Ignatz-Nowell, Pamela	1616 Prospect St	Elyria, OH, 44035-8281	USA	ESES/CES	216/323-1927	93/01
Ilgner, Susan	PO Box 6040	Knoxville, TN, 37914	USA	NFS	615/637-5331	93/05
Iarich, Steve	1050 Mass Avenue	Cambridge, MA, 02138	USA		617/472-7000	94/01
Indridadottir, Kristin	Bokasafn V/Stakkahli	REYKJAVIK 105,,	ICELAND		354-9(1)-688700	93/04
Ingham, Cheryl	901 Myrtle Avenue	Eureka, CA, 95501	USA		707/445-7078	93/09
Iovino, Carol	1869 Wicklow Way	Germantown, TN, 38139	USA	ESES	901/755-1042	93/02
Irvine, Kate	235 Prince George St	Annapolis, MD, 21401	USA	NFS/CES	416/268-5093	94/02
Isham, Mabelle	2199D 15 MILE ROAD	BELLEVUE, MI, 49021	USA	CES		LIFE
Isner, Robert	701-A S Rawlings	Carbondale, IL, 62901	USA	ESES/ESS	618/457-2961	93/07
Jackson, Marion	DEPT LIFE SCIENCES	TERRE HAUTE, IN, 47809	USA	CES		LIFE
Jackson-Gould, Janet	3400 W Girard Ave	Philadelphia, PA, 19104	USA	CES	215/243-1100	93/02
Jacob, T	Station A	Champaign, IL, 61820	USA	ESES/CES	219/333-2793	LIFE
Jacobson, Susan	Univ of Florida	Gainesville, FL, 32611-0304	USA	NFS/CES	904/392-8372	93/07
Jaeger, Scott	1132 Maitland Drive	Waukesha, WI, 53188	USA	NFS	414/542-4838	94/01

03/03/93

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Jahrke, Trish	1961 Meteor Dr	Flagstaff, AZ, 86001	USA	ESES/NFS	602/774-7537	93/12
Jamason, Barry	Box 294A Lape Rd	Nassau, NY, 12123	USA	ESES	518/474-5890	93/09
James, Karin	8480 Hagy's Mill Rd	Philadelphia, PA, 19128-1998	USA	ESS	215/482-7300	94/02
James, Kathy	1900 University Ave S	Minneapolis, MN, 55455	USA	NFS	612/625-9321	93/12
James, Anita	Ministry of Agricul	Castries, St Lucia,	WEST INDIES	ESES/NFS/CES	809/45-02086	93/11
Janke, Delmar	1221 BERKLEY STREET	COLL. STATION, TX, 77840	USA	CES		LIFE
Jarvis, Brad	Box 1D	Madison, VA, 22727	USA	NFS	703/948-6881	94/01
Jauden-Jascur, Stacey	63 Lemon St	St Augustine, FL, 32084	USA	ESES/NFS/CES	904/825-4616	93/03
Javornik, Michelle	Bldg EC5, Box 2068	Cedar Rapids, IA, 52406	USA	NFS	319/398-1266	94/01
Jeans, Stephen	4720 Chapel Rd. NW	Calgary, AB, T2L 1A6	CANADA	ESES	403/284-3630	93/06
Jenness, Mark	294 Glendale	Kalamazoo, MI, 49004	USA		616/387-5895	93/08
Jeske, Carol	822 SE Bel-Aire Rd	Ankeyn, IA, 50021	USA			LIFE
Jickling, Bob	114 Park Lane	Whitehorse, YK, Y1A 3E9	CANADA	NFS	403/668-8778	93/09
Jimenez-Silva, Maria del Pilar		Mexico D.F., 01070,	MEXICO	ESS	5484520	93/02
Johnson, Carl	630 N 300 E	Logan, UT, 84321	USA	CES	801/752-7945	93/11
Johnson, Carol	12030 Mayflower Circle	Minnnetonka, MN, 55305	USA	ESS/NFS/CES	612/624-1220525	93/10
Johnson, Craig	7305 Aldrich Ave. S	Richfield, MN, 55423	USA	ESES	612/937-7032	93/08
Johnson, Douglas	702 Eugenia Avenue	Madison, WI, 53705	USA		608/231-1890	94/02
Johnson, Paulette	Dept Parks & Recreation	Slippery Rock, PA, 16057	USA	ESES/CES	412/738-2599	93/09
Johnson, Rodney	PO Box 574	Callicoon, NY, 12723-0574	USA	NFS	914/887-4405	93/03
Johnston, Keith	PO Box 1d-42D	Wellington, ,	NEW ZEALAND	NFS/CES	64(04)471-0726	94/02
Jonasson, David	66 Patterson Drive	Regina, SK, S4S 3W9	CANADA			92/11
Jones, Elizabeth	3518 E 80th St	Bloomington, MN, 55425	USA	ESES/NFS	612/854-5900	94/02
Jones, Robert	2700 BAY AREA BOULEV	HOUSTON, TX, 77058	USA	CES		LIFE
Jorgensen, Eric	2175 The Alameda	San Jose, CA, 95126	USA	NFS	408/299-2630	93/01
Judson, Chris	HCR 1, Box 1, Hse 208	Los Alamos, NM, 87544	USA	NFS	505/672-3861	93/10
Judy, John	PO Box 886	Norris, TN, 37828	USA	ESES/ESS/NFS	615/632-1670	LIFE
Junkin, David	WELCH ROAD	NORTH JAVA, NY, 14113	USA	CES		LIFE
Jurin, Richard	2021 Coffey Rd	Columbus, OH, 43210-1044	USA	CES	614/292-9826	93/10
KY Assn for Env'l Ed/W KY U,	403 Page Hall	Bowling Green, KY, 42101	USA		502/745-4671	AFIL
Kagey, Cindy	PO Box 332D	Roanoke, VA, 24015	USA	NFS	703/345-5523	93/12
Kagle, Melissa	348 41st Street	Oakland, CA, 94609	USA	NFS	510/420-1555	94/03
Kahn, Jacob	106 Van Wagner Rd	Poughkeepsie, NY, 12603	USA	NFS	914/471-4500	93/11
Kaikow, Julius	POST OFFICE BOX 62	GRANITE SPRINGS, NY, 10527	USA	CES		LIFE
Kallstrom, James	809 East Coral Way	Grand Prairie, TX, 75051	USA	ESES/NFS	817/283-1771	93/11
Kaltenthaler, Henry	765 HARVARD AVENUE	UNIV CITY, MO, 63130	USA	CES		LIFE
Kane, Pat	PO Box 693	Bernardsville, NJ, 07924	USA	NFS	201/766-5787	93/04
Kaplan, Karyn	Physical Plant	Eugene, OR, 97403	USA	ESES/ESS/NFS/CES	503/346-1529	93/05
Karakashian, Stephen	165 W 91 St Apt 16F	New York, NY, 10024	USA	ESS	212/874-0570	93/11
Kasper, Michael	805 N Capital of TX Hwy	Austin, TX, 78746-5207	USA	NFS	512/250-9423	94/02
Kasprzak, Peter	Bldv #207	Canoga Park, CA, 91304	USA	ESES/ESS/NFS/CES	818/773-3044	93/10
Kauffman, Jennifer	761 Scotch Way	W Chester, PA, 19382	USA	NFS	215/344-0254	94/02
Kaufman, Donald	114 N University	Oxford, OH, 45056-1350	USA		513/529-3195	93/04
Kautza, Tim	401 NW Kimberly Lane	Ankeny, IA, 50021	USA	NFS/CES	515/964-7687	93/01
Kawashina, Kenshi	Mikage-cho	Higashinada-ku, Kobe, 648	JAPAN	ESES	078/843-4443	93/08
Kaye, Geraldine	24 Ocford St/Rm 201A	Cambridge, MA, 02138	USA	ESS	617/495-0368	93/06
Kayhart, Marion	100 College Drive	Allentown, PA, 18102	USA	ESS	215/437-4471	93/12
Keating, Arthur	7365 Leonardo da vinci	Tucson, AZ, 85704	USA			93/10
Keene, Pauline	PO Box 1960	Gallup, NM, 87305	USA	CES		93/09
Kelba, Nestor	515 Macleod Trl S.E.	Calgary, AB, T2G 2L9	CANADA	ESES		93/11
Kelley, Mary	PO Box 91837	Austin, TX, 78709	USA		512/328-7305	94/01

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Kellogg, Nancy	11285 Highline Drive	Northglenn, CO, 80233	USA	ESES	303/451-1561	93/05
Kelly, Barbara	47 Gregory St	Marblehead, MA, 01945	USA	ESES		92/11
Kelly, Christine	6216 43rd Avenue	Hyattsville, MD, 20781-1406	USA	ESES/NFS	301/405-3123	93/12
Kelly, Jennifer	6 Curtis St	Quincy, MA, 02169-1806	USA	ESES	617/287-7666	93/10
Kelly, Regina	RD 2, Box 272	Branchville, NJ, 07826	USA	ESES/NFS	201/948-4646	93/08
Keough, Peggy	6713 Neff	Houston, TX, 77074	USA			93/08
Keown, Dvane	Univ of WY	Laramie, WY, 82071	USA	ESES	307/766-3793	93/04
Kesselheim, A Donn	22 Pheasant Run Dr	Lander, WY, 82520	USA	ES/NFS/CES	307/332-7031	93/12
Key, Laura	PO Box 498	Oracle, AZ, 85623	USA	ESES/NFS/CES	602/896-2425	93/11
Keys, Robert	4105 Asbury Rd	Erie, PA, 16506	USA	NFS	814/835-5356	94/01
Kimbrough, Mark	PO Box 8867	Incline Village, NV, 89452	USA		702/831-0494	93/10
King, Barbara	PO Box 77	Ripton, VT, 05766	USA		802/352-4247	94/02
King, Lisa	2464 Halelasu	Honolulu, HI, 96816	USA	ESES/CES	808/956-2858	93/10
King, Roy	PO Box 15042	West Palm Beach, FL, 33416	USA	ESES	407/687-6891	93/10
Kinsey, Thomas	1300 Elmwood Ave	Buffalo, NY, 14222-1095	USA	ESES/ESS/NFS	716/878-4732	93/09
Kinter, Kathy	960 Disston View Dr	Lititz, PA, 17543	USA	ESES/CES	717/627-0598	93/02
Kirchman, Matt	628 W River St	Bourbonnais, IL, 60914	USA	NFS	815/932-0904	94/01
Kircos, Suzanne	600 N McClurg Ct #1010A	Chicago, IL, 60611	USA	ESES	312/355-8906	94/02
Kirk, John	RD 2, Box 272	Branchville, NJ, 07826	USA	ESES	201/948-4646	94/02
Klein, Peter	248 JONES STREET	SUN PRARIE, WI, 53590	USA	CES		LIFE
Kling, Emily	7100 Connecticut Ave	Chevy Chase, MD, 20815	USA	NFS	301/961-2828	93/12
Klinkhammer, Mary	1015 Island Lake Ave	Shoreview, MN, 55126-2940	USA	ESES	612/684-4250	94/02
Klippel, Judy	6141 N Hopkins	Milwaukee, WI, 53209	USA	ESES/NFS	414/527-0232	93/11
Klosiewski, Sherry	Box 818 107 Sutliff Ave	Rhineland, WI, 54501	USA		715/369-8966	93/09
Klunk, Edward	2855 West 46th Street	Chicago, IL, 60632	USA	ESES	312/534-2322(W)	93/09
Knapp, Clifford	Box 313	Oregon, IL, 61061	USA	ESES	815/732-2114	94/02
Knauf, Lisa	Station House #22	Augusta, ME, 04333	USA	NFS/CES	207/287-1061	93/04
Knotts, David	Box 347	Jamestown, CO, 80455	USA	CES	303/449-0603	93/10
Koebner, Linda	5001 Arlington Avenue	Riverdale, NY, 10471	USA	CES	212/796-3507	93/10
Koenig, Parea	122 Clorinda Ave	San Rafael, CA, 94901	USA	ESES/ESS/NFS/CES		93/10
Kohuth, Barbara	2 Gateway Dr	Syosset, NY, 11791	USA	NFS	718/780-1234	94/03
Kotila, Paul	Franklin Pierce Coll	Rindge, NH, 03461	USA	ESS		93/01
Kovan, Jessica	One Michigan Ave, East	Battle Creek, MI, 49017	USA		616/969-2060	93/12
Koval, Dan	1836 Logan St	Denver, CO, 80203	USA		303/830-0326	93/08
Kraemer-Doell, Patricia	12505 Edgewood Ave SW	Tacoma, WA, 98498-1156	USA	NFS/CES		94/01
Kramer, Kathryn	1301 S 46th Street	Richmond, CA, 94804	USA		510/231-9539	93/07
Krause, Delores	3600 136th Place SE	Bellevue, WA, 98006-1400	USA			94/02
Kravits, Carol	669 Mushrush Rd	Butler, PA, 16001	USA	ESES		93/10
Krische, Harold	20750 68th Avenue	Langley, BC, V3A 4P7	CANADA	ESES	604/530-5303	93/05
Krishna, Dr Manditha	1A, Eldems Road	Madras, 600 018,	INDIA	ESES/NFS/CES	451249/450397	93/10
Kronholm, Martha	1430 Apt. 6/23rd St. N	Wisconsin Rapid, WI, 54494	USA	ESES		93/11
Kronick, Sarah	6 Fairfield Rd	Toronto, ON, M4P 1T1	CANADA	ESES/NFS	416/487-9199	93/02
Krupnick, Jane	129 Assembly Ct	Cary, NC, 27511	USA		919/481-0791	92/11
Kruser, Ben	PO Box 5151, Stn. F	Ottawa, ON, K2C 3G7	CANADA		613/224-5131	94/02
Kucera, Maureen	102 State Capitol	St Paul, MN, 55155	USA		612/297-3494	93/10
Kuechle, Judith	Division of Ed	Morris, MN, 56267	USA	ESES	612/589-6413	93/09
Kugimiya, Nobue	6-1-21, 6-Chose Maikodai	Tarumi-ku, Kobe,	JAPAN	NFS	078/912-1193	93/10
Kunz Shuman, Dorothea	625 South Adams St	Moscow, ID, 83843	USA	ESES	208/885-6429	93/10
Kupchella, Charles	429 Hammet Hill Rd	Bowling Green, KY, 42101	USA		502/781-0311	93/04
Kusch-Tepper, Susan	3902 N E 55th St	Vancouver, WA, 98661	USA		206/693-0550	93/04
Kuska, Kia	717 Marion Avenue	Salinas, CA, 93901	USA	ESES		92/12

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
Kussmann, Steven	1515 Wilson Blvd	Arlington, VA, 22209-2470	USA	703/841-8670	93/06
LA EE Association,	2770 Jonquil St	New Orleans, LA, 70122	USA	504/947-3701	AFIL
LaCoss, Ronald	3922 Isbell St	Silver Spring, MD, 20906	USA	ESES 301/320-3200	93/09
Laforgia, Adalgisa	13400 Bartlett St	Rockville, MD, 20853	USA	ESES/NFS/CES 301/460-1382	94/02
Lambeth, Ellen	8636 Dellway Lane	Vienna, VA, 22180	USA	ESES 202/786-2727	93/09
Lane, Jackie	2915 Island Home Ave	Knoxville, TN, 37920	USA	615/577-4717	93/12
Lane, Jennie	408 W Scott St	Stevens Point, WI, 54481-3440	USA	ESES 715/341-2853	93/07
Langer, Shana	4526 Greenwood	Kneeland, CA, 95549	USA	707/443-6173	94/02
Lanier Museum,	2601 Buford Dam Rd	Buford, GA, 30518	USA	NFS 404/945-3543	93/05
Larabee, Madame Danielle	6, rue Bertrand	Ste-Therese, PO, J7E 2Y5	CANADA	ESES 514/630-9735	93/10
Lanson, Marion	68 Macintosh Lane	Leominster, MA, 01453	USA	ESES/NFS/CES 508/792-7270	93/07
Lawrence, William	166 Main St	Concord, MA, 01742	USA	ESES 508/569-6080	93/10
Lawrie, Peter	32915 Illinois	Livonia, MI, 48150	USA	CES 313/563-4310	93/11
Le Francois, Claude	25 De Ra Marelle	Hill, PO, J8Z 2T6	CANADA	ESES/NFS 819/771-4391	93/11
Leabeater, Jia	3100 Cambridge #C	Cameron Park, CA, 95682	USA	ESES/ESS/NFS/CES 916/676-9548	94/02
Leal P., Marina	Bosques de Tetlaneya	Mexico DF, 04730,	MEXICO	ESES 52/5-606-6499	93/03
Ledin, Dolly	658 WARF Bldg	Madison, WI, 53705	USA	608/263-4840	93/11
Lee, Cindy	Clemson University	Clemson, SC, 29634	USA	ESS 803/656-1006	94/02
Lee, Cory	11106-71 Avenue	Edmonton, AB, T66 0A4	CANADA	ESES/CES 403/320-1443	92/11
Lee, Steve	Star Route, Box 995	Frazier Park, CA, 93225	USA	ESES/NFS 805/245-3519	93/10
Lee, Mr. Chi-kin	Fairview Park	Yuen Long, N.T.,	HONG KONG	ESES/CES	93/08
Lee, Michele	HC 62 Box 9T	Port Angeles, WA, 98362	USA	206/928-3720	94/04
Leech, J. W	11600 Welch Rd	Dallas, TX, 75229	USA	214/363-6311	93/02
Leftridge, Alan		Arcata, CA, 95521	USA	707/826-4306	93/04
Legg, Michael	Box 6109 SFA	Nacogdoches, TX, 75962	USA	409/568-3301	93/09
Leggatt, Anna	2593 St Clair Ave East	East York, ON, M4B 1M2	CANADA	CES 416/832-2289	93/10
Leinberry, Charles	1717 20th St NW #207	Washington, DC, 20009	USA	202/667-7430	93/04
Lesons, John	Univ of New England	Biddeford, ME, 04005	USA	ESS 207/283-0171	93/09
Leon, Warren	26 Church Street	Cambridge, MA, 02238	USA	NFS 508/547-5552	93/01
Leonard, Betsy	10110 Kibler Drive	San Diego, CA, 92126	USA	ESES 619/271-6656	93/05
Lessow, Denise	Educ 1042	Bloomington, IN, 47405	USA	ESES/NFS 812/855-5656	93/08
Levermann, Thomas	13103 Pennerview Lane	Fairfax, VA, 22033	USA	703/378-6613	93/10
Levine, Bernard	7205 Hickory Hill Lane	Huntsville, AL, 35802-2527	USA	ESES/NFS 205/881-9174	94/01
Levine, Lynn	Rd #2, Box 764	Putney, VT, 05346	USA	NFS/CES 802/254-4717	93/03
Levings, Judy	1015 Harding Avenue	Ames, IA, 50010	USA	NFS 515/294-4764	93/10
Levy, Alison	51 Dearfield Dr	Greenwich, CT, 06831-5324	USA	ESES/NFS/CES	92/11
Levin, Bridget	880 San Marcos Road	Santa Barbara, CA, 93111	USA	ESES/ESS/NFS/CES 805/683-9402	94/03
Lewis, Lisa	1303 7th Ave SW	Olympia, WA, 98502-5316	USA	ESES/NFS	93/09
Lewis, Patricia	1226 Sardine Creek Rd	Gold Hill, OR, 97525-9730	USA		93/08
Lewis, Susan	1987 Upper Buford Circle	St Paul, MN, 55108	USA	612/625-5700	94/03
Lewis, Virginia	838 Hierra Ct	Los Altos, CA, 94024	USA	ESS/NFS	93/10
Lewis, Wynne	540 Plant & Soil Sciences	E Lansing, MI, 48824	USA	ESES	94/01
Liddle, Craig	# 1 Monroe Ave.	Salem, IL, 62881	USA	618/548-7004	93/09
Lindauer, Jessamyn	NW 810 Fisk	Pullman, WA, 99163	USA	ESES/NFS 509/534-9171	93/09
Lingelbach, Jenepher	VINS, PO Box 86	Woodstock, VT, 05091	USA	ESES 802/457-2779	93/06
Lisowski, Marilyn	521 Warren Avenue	Charleston, IL, 61920	USA	ESES 217/581-5728	93/08
List, Henrietta	RR 2/Box 806	Wells, ME, 04090	USA	ESES 207/646-1555	93/08
Litteljohn, Bruce	200 Lansdale Rd	Toronto, ON, M4V 1W6	CANADA	ESES/ESS/NFS/CES 416/488-1125	93/10
Little, Linda	5000 Hermitage Drive	Raleigh, NC, 27612	USA	919/733-0711	93/10
Lobaton, Sara Ayala	Col. Romero de Terreros Coyoaca	Mexico D.F., 04310,	MEXICO	52(5) 554-00-14	93/09
Lockhoof, Nancy	1600-B Smith Road	Austin, TX, 78721	USA	ESES/ESS/NFS/CES 512/473-9600	94/02

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Lofving-Henricksson, Ann	Skordevasen 17	76141 Norrtalje,,	SWEDEN	ESES	46/176-17783	93/08
Loaax, Lynn	1976 Onyx Street	Eugene, OR, 97403	USA	ESES/NFS	503/344-8786	93/02
Long, Angela Boyer	215 Double Oak Rd N	Prince Frederic, MD, 20678-4521	USA	ESES/NFS	202/296-4572	93/10
Lopez, Antonio	Mossen Cinto 156	25110 Alpicat-, Lleida,	SPAIN	ESES	34-73275662/FX	93/07
Lorbiecki, Marybeth	241 First Avenue North	Minneapolis, MN, 55401	USA	CES	612/332-3344	93/09
Loring, David	610 N Elm St	Gardner, KS, 66030-1273	USA	ESS	913/469-8500	93/11
Lorkovic, Bernie	21520 West Hwy 31	Gretna, NE, 68028	USA	NFS	402/332-4496	93/01
Lowell, Eleanor	1030 LOUISA STREET	WILLIAMSPORT, PA, 17701	USA	CES		LIFE
Lower, Glenn	809 S Front Street	Princeton, TX, 75407	USA	ESS	214/542-5566	94/01
Lowry, Susan	PO Box 3243	Flagstaff, AZ, 86003	USA	ESES/NFS/CES	602/779-1745	93/01
Loyola, Sofia	El Rosario Coyocan 04380	Mexico D.F.,,	MEXICO		52(5) 689-43-11	93/09
Lubbers, James	Biology/201 Louitt	Allendale, MI, 49401	USA	ESES/ESS	616/895-3623	94/02
Luera, Gail	1240 Astor Dr A2021	Ann Arbor, MI, 48104	USA	ESES/NFS		93/05
Lulling, Dennis	710 Topaz Lane	Madison, WI, 53714	USA	NFS	608/238-7889	93/01
Lusby, Linda	Acadia University	Wolfville, NS, B0P 1X0	CANADA	ESS	902/542-2201	93/09
Lutts, Ralph	1025 Jefferson Circl	Martinsville, VA, 24112	USA	NFS/CES		LIFE
Lutz, Linda	2024 McCormick	Evanston, IL, 60201	USA	ESES/NFS/CES	708/864-5180	92/11
Lyman, Jon	PO Box 25526	Juneau, AK, 99802	USA		907/465-4180	93/05
Lynn, Brian	PO Box 47600	Olympia, WA, 98504-7600	USA	ESES/NFS	206/459-6774	93/09
Lynn, Jennifer	PO Box 20	Carlisle, KY, 40311	USA	ESES/NFS/CES	606/289-3133	93/09
Lyon, Anne	Apt #112	Knoxville, TN, 37818	USA		615/691-5002	93/06
Lyons, Chandler	5856 N Prospect Rd	Peoria, IL, 61614	USA	CES		94/01
MD Assoc for Env'l & Outdoor E,	1663 Hudson Road	Cambridge, MD, 21613	USA		410/758-0883	AFIL
NE EE Association, 1	377 Gray Rd	Falmouth, ME, 04105	USA		207/797-5540	AFIL
MI Alliance for Env'l & Outdoo, 12	5615 Chickadee Lane	Clerkson, MI, 48346	USA			AFIL
MI United Conservation Club,	POST OFFICE BOX 3023	LANSING, MI, 48909	USA	CES		LIFE
MO Dept of Conservation,	PO Box 180	Jefferson City, MO, 65102	USA	CES	314/751-4115	93/08
MS Nat'l River & Rec Area,	175 5th St East	St Paul, MN, 55101-2901	USA		612/290-4160	93/10
MSU Inst of Water Res/GEN,	334 Natural Resources Building	E Lansing, MI, 48824-1222	USA	ESES/ESS/CES	517/353-3743	93/12
MT EE Association(MEEA),	PO Box 928	Dillon, MT, 59725-0928	USA		406/442-8090	AFIL
MacDonald, Marilyn	Simon Fraser U/Women Studies	Burnaby, BC, V5A 1S6	CANADA	ESES/NFS/CES	604/291-5688	93/04
MacFarlane, Cathy	615 W Jefferson	Ann Arbor, MI, 48103	USA	ESES	313/763-6352	93/10
MacGregor, Jean	L2211	Olympia, WA, 98505	USA	ESS	206/866-6000	94/02
MacGregor, Molly	Cass County Courthouse	Walker, MN, 56484	USA	NFS	218/547-3300	93/09
MacKinnon, Kathleen	644 Massachusetts Ave NE #508	Washington, DC, 20002	USA		202/260-4951	93/10
Macbeth, Eric	619 Second St	Hudson, WI, 54016-1576	USA	NFS/CES	715/386-9444	94/09
Macionus, Mgr of Ed, Rosemary	90 Sargent Drive	New Haven, CT, 06511-5966	USA	ESES/NFS	203/624-6671	94/01
Maestas, C.D.	4401 N Fairfax Dr/Rm 880	Arlington, VA, 22203	USA			93/04
Maires, Allison	1001 Partridge Dr	Ventura, CA, 93003-5662	USA	ESES/CES	805/658-4653	93/04
Makansi-Eriton, Jason	PO Box 215	Morrisville, PA, 19067-0215	USA		215/736-1153	93/02
Mann, Heather	3730 Sequoia Trail	Verona, WI, 53593	USA	NFS	608/798-4654	93/09
Mann, Lori	1509 Newlands Ave #1	Burlingame, CA, 94010	USA	ESES/ESS/NFS	415/342-7755	LIFE
Mappin, Mike	Kananaskis Field Stations, UofC	Seebe, AB, T0L 1X0	CANADA	ESES	403/202-5355	93/08
Marcinkowski, Thomas	150 W University Blvd	Melbourne, FL, 32901	USA	ESES/NFS	407/768-8000	94/02
Mardirosian, Intpret Planner, Johanna	PO Box #536	McLean, VA, 22101-1837	USA		703/525-3944	93/04
Marquez, Lirio	PTA Las Marias	Santurce, PR, 00913	USA	CES	809/763-9875	93/08
Marshall, Gail	2126 Skyview Drive	Lithia Springs, GA, 30057	USA	ESES/ESS	404/920-4500	93/02
Marshall, Karen	PO Box 11910	Lexington, KY, 40578	USA	NFS	606/231-1882	93/10
Martin, Chris	2123 U S Highway 278 SE	Social Circle, GA, 30279-9990	USA	ESES/NFS/CES	404/557-2591	93/09
Martin, Heather	#184 W. 11th Avenue	Columbus, OH, 43210	USA	CES	614/292-9828	93/12

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
Martin, Jim	370, 9939 Jasper Avenue	Edmonton, AB, T5J 2X5	CANADA	403/421-1697	93/10
Martin, William	McCreary 224	Richmond, KY, 40475	USA		92/11
Martinez, Mauricio Rendon	Col. Campestre Churubusco	, 04200, Mexico DF	MEXICO	52-5-549-07-07	94/02
Marty, Rebecca	12700 Bayleaf Church	Raleigh, NC, 27614	USA	NFS 919/846-99991	93/12
Marvin, Janet	RD 1 Wood Duck Lane	Guys Mills, PA, 16327	USA	CES 814/789-3585	93/09
Marzolla, Michael	5266 'A' Hollister Ave	Santa Barbara, CA, 93111	USA	NFS 805/681-5630	93/04
Maskel, Steve	3138 Sunset Terrace	San Mateo, CA, 94403	USA	ESES 415/879-0274	93/07
Maslowski, Caroline	120 Cedar Drive	West Milton, OH, 45383	USA	513/698-6645	93/09
Mason, James	Marine on	St Croix, MN, 55047	USA	NFS/CES 612/633-5198	93/07
Massey, James	3702 S 14th St	Arlington, VA, 22204	USA	NFS/CES 703/358-2504	94/02
Masters, Pat	5034 Chermian	Santa Rosa, CA, 95409	USA	707/546-3485	93/04
Mathews, President, David	200 Commons Rd	Dayton, OH, 45459	USA	*513/434-7300	NON
Mayritsch, Barbara	8925 Leesburg Pike	Vienna, VA, 22184	USA	CES 703/790-4368	93/08
Mazzei Cox, Michele	541 E. Peck St	Columbus, OH, 43206-1379	USA	NFS 614/292-9828	93/11
McCabe, Robert	1000 Venetian Way #1	Miami, FL, 33139	USA	305/372-9671	NON
McCart, Chris	3013 S. 5th Avenue	Sioux Falls, SD, 57105	USA	NFS/ESS/CES	92/12
McCartan, Sheila	911 NE 11th	Portland, OR, 97232	USA	NFS 503/231-6176	94/01
McClagherty, Charles	Mount Union College	Alliance, OH, 44601-3993	USA	ESES/ESS/NFS 216/823-3655	94/02
McClune, Marie	254 Verna Hill Rd	Fairfield, CT, 06430	USA	ESES 203/259-6305	93/04
McClure, Charles	Bernheim Forest	Clermont, KY, 40110	USA	502/543-2451	94/01
McCollum, Cheryl	195 S Thomas St	Elberton, GA, 30635-2569	USA	CES	94/04
McCrea, Betty	313 Central Ave	Oil City, PA, 16301	USA		93/05
McCrea, Edward	10718 Ashby Place	Fairfax, VA, 22030	USA	ESES/ESS/NFS/CES 703/591-3780	LIFE
McCutcheon, Malani	1520 St Olaf Avenue	Northfield, MN, 55057	USA	eses 507/646-3599	93/07
McDonald, Lisa	20 Webster Manor Dr-Apt. #6	Webster, NY, 14580	USA	ESES 716/787-1477	94/01
McEnerney, Virginia	1100 Avenue of America	New York, NY, 10036	USA	NFS 212/512-5928	94/01
McFarland, Kent	331 Walcott Ave	Middletown, RI, 02840	USA		93/06
McGlaufflin, Kathy	1250 Connecticut Ave	Washington, DC, 20036	USA	ESES/NFS/CES 202/463-2468	94/01
McGuire, Dianna	Rogers State College	Claremore, OK, 74017	USA	CES 918/341-7510	93/09
McInnis, Noel	5085 Woods Resort	Hedgesville, WV, 25427-9355	USA	NFS	94/01
McKenna, Harold	239 Manchester Rd	River Edge, NJ, 07861	USA	ESES/ESS/CES 212/650-7953	93/07
McKnight, Marguerite	206 Valley Street	Grove City, PA, 16127-1736	USA	NFS 412/738-2622	93/09
McKown, Scott	687 Sequoia Valley Rd	Mill Valley, CA, 94941	USA	ESS 415/388-1049	93/10
McLaughlin, Charles	3609 Chadam Lane #1C	Muncie, IN, 47304	USA	ESES/NFS 301/285-5649	93/10
McLaughlin, Mary	720 W Lake Ave	Guilford, CT, 06437-1305	USA	203/458-6725	93/07
McManus, Dennis	9 Egremont Rd #1	Brookline, MA, 02166	USA	617/236-6216	93/05
McMullen, Andy	169 Borden Drive	Yellowknife, NWT, X1A 3R1	CANADA	ESES/ESS/NFS/CES 603/910-3049	93/11
McNeely, Mark	Ridgeway Road	Norris, TN, 37828	USA	615/632-1662	93/08
McRae, Debra	9701 College Ave	Franklin, WI, 53132	USA	NFS/CES 414/761-1151	93/09
McReynolds, Mark	1073 Madison Avenue	Los Banos, CA, 93635	USA	209/826-0663	94/03
McSwain, June	2613 N Quincy St	Arlington, VA, 22207-5044	USA	ESES/CES 703/528-0427	94/02
Mead, Emilie	3101 P St NW	Washington, DC, 20007	USA	NFS 202/333-7934	93/07
Mechow, Fred	PO Box 716	Sherburne, NY, 13460	USA	NFS 607/674-4017	93/10
Medd, Robert	26377-274th Ave	Princeton, IA, 52768	USA	ESES 319/289-3214	93/11
Medina, Augusto	1121 24th St, NW#410	Washington, DC, 20037	USA	NFS 202/778-9608	LIFE
Meichtry, Yvonne	Learning Resource Center	Stevens Point, WI, 54481	USA	ESES 715/346-4943	93/09
Melear, Claudia	404 Westhaven Drive	Greenville, NC, 27834	USA	ESES 919/355-8115	93/05
Meredith, Joyce	130 Rugg Avenue	Newark, OH, 43055-4610	USA	NFS 614/292-3750	93/04
Messersmith, Donald	10418 Brookmoor Drive	Silver Spring, MD, 20901	USA	301/405-3142	93/09
Metropolitan Toronto Com Autho,	5 Shoreham Dr	Downsview, ON, M3N 1S4	CANADA	CES 416/661-6600	93/11
Metzger, Lee	Univ of Montana	Missoula, MT, 59812	USA	ESES 406/243-2535	94/01

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
Miami-Dade Com College,	11380 N.W. 27 Avenue	Miami, FL, 33167	USA	305/347-1153	93/07
Michaud, Howard	301 EAST STADIUM AVE	WEST LAFAYETTE, IN, 47906	USA	CES	LIFE
Middle TN St U Env Ed Ctr,	Box 60 MTSU	Murfreesboro, TN, 37132-0001	USA	615/898-2680	93/10
Miles, John	2612 Syvan St	Bellingham, WA, 98226	USA	206/676-3520	93/06
Miles, Mary	1408 ARLINGTON AVENU	ST PAUL, MN, 55108	USA	CES	LIFE
Miller, Adrienne	208 N Spring	Los Angeles, CA, 90012	USA	ESES/NFS	93/08
Miller, Gayle	100 E Cass St	St Johns, MI, 48879	USA	NFS	93/10
Miller, Joseph	#51	Notre Dame, IN, 46556-5001	USA	ESS	93/08
Miller, Judy	1505 N Broadway	Urbana, IL, 61801	USA	NFS/CES	93/10
Miller, Mary	PO Box 2948	Edgartown, MA, 02539-2948	USA	ESES/NFS	93/09
Miller, Stephen	PO Box 182, Bluff Road	Islesboro, ME, 04848	USA	ESES/NFS/CES	93/04
Mills, Ted	306 Gundersen-OSU	Stillwater, OK, 74078	USA	ESES	93/04
Minton, Ty	RFD #1, Box 219	Westmoreland, NH, 03467	USA	603/357-3122	93/10
Minudri, Trena	Rm 338 Kennedy Hall	Ithaca, NY, 14850	USA	ESES/ESS/NFS/CES	93/06
Mirando, Peter	83 Sunset Blvd	Angola, NY, 14006	USA	ESES/CES	93/10
Mitchell, Mark	809 Dwight	Ypsilanti, MI, 48198	USA	761-8142	93/10
Mitschke, Barry	Box 450	Lumsden, SK, S0G 3C0	CANADA	ESES	LIFE
Moffett, Conley	4900 Kingston Dr	Annandale, VA, 22003	USA	NFS	LIFE
Moller-Hergst, Susana	95-7 Inverlochy Blvd	Thornhill, ON, L3T 3R5	CANADA	476/881-2269	92/11
Molnar, Tia	Faculty of Ecuation	Edmonton, AB, T6G 2G5	CANADA	ESES/ESS/NFS/CES	93/09
Monroe, Martha	7127 Maple Street	Takoma Park, MD, 20912	USA	ESES/NFS	93/07
Moody, Joan	1800 N Kent	Arlington, VA, 22209	USA		NOV91/06
Koores, Brian	PO Box 5005	Ashland, VA, 23005-5505	USA	ESS	93/12
Mori, Ryo	Minami-Otsuka, Toshinaku	Tokyo, 170, 170	JAPAN	NFS	81-03-3233-0611
Morris, Erdie	2928 West Pierson	Phoenix, AZ, 85017	USA	ESS	93/05
Morshed, Khandaker	Brussels	1050 Bxl,,	BELGIUM	CES	93/08
Mortell, Catriona	PO Box 24	Oregon, IL, 61061	USA	ESS/NFS	93/10
Moseley, Christine	302 Gundersen	Stillwater, OK, 74074	USA	ESES/CES	93/10
Motley, Laura	502 Wentz Hall	Stillwater, OK, 74077-0060	USA	NFS	93/09
Moya, Jose	Edificio IF Ne207-V03	Caricua-,, Caracas,	VENEZUELA	582/631-4437	93/10
Mrazek, Richard	4401 University Dr.	Lethbridge, AB, T1K 3M4	CANADA	ESES/ESS/NFS	LIFE
Mulaik, Stanley	4391 Executive Drive	Stone Mountain, GA, 30083-1750	USA	CES	LIFE
Mullins, Gary	8961 Canoe Drive	Galloway, OH, 43119-9490	USA	NFS	93/10
Mumford, Deborah	RR 1/350 Sugar Hill	Purdys, NY, 10578	USA	NFS	96/03
Munzer, Martha	4411 TRADEINDS AVE	LAUDERDALE SEA, FL, 33308	USA	CES	LIFE
Murin, Susan	1700 SW 16th Ct Apt M26	Gainesville, FL, 32608	USA	NFS/CES	93/10
Murphy, Richard	8440 Santa Monica Blvd	Los Angeles, CA, 90069	USA	CES	213/656-4422
Murphy, Tony	29 W Woodruff Avenue	Columbus, OH, 43210	USA	ESS/CES	96/02
Murphy, Laura	% National Zoological Park	Washington, DC, 20008	USA	ESES	96/02
Murray State University,	Center for Environmental Ed	Murray, KY, 42071	USA	502/762-2747	93/09
Murrieta, Aura	Res. San Felipe/Jesus Maria	Lima 11, Lima,,	PERU	51.14/62-5410	93/10
Musquodoboit Valley Forest Nur,	PO Box 100/Middle Musquodoboit	Halifax Co, NS, BON 1X0	CANADA	902/384-3424	96/01
Nycio-Moers, Luba	1673 Carling Ave	Ottawa, ON, K2A 3Z1	CANADA		92/12
Nyshak, Richard	5030 Foothills Rd., Apt. F	Lake Oswego, OR, 97031-3210	USA	CES	LIFE
NC Wildlife Resources Com, 5	512 N. Salisbury St	Raleigh, NC, 27604-1188	USA	919/733-3391	93/11
NE Env'l Ed Association,	PO Box 265	Wahoo, NE, 68066-0265	USA	402/443-4675	AFIL
NEET Foundation,	915 15th St., NW, Suite 200	Washington, DC, 20005	USA	ESES/ESS/CES	93/07
NH Environmental Educators, 6	PO Box 298	Gorham, NH, 03581	USA	603/466-2721	AFIL
NV Nat'l Resource Ed Council,	PO Box 8867	Incline Village, NV, 89450-8867	USA	702/831-0494	AFIL
Nance, Leslie	PO Box 53504	Oklahoma City, OK, 73152	USA	405/271-4468	93/09
Nanri, Ken	19-8-109 Midorigsoka	Ashiya, 659, 659	JAPAN	81-797-38-5085	93/10

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY	PHONE	RENEW
Nat'l Asc for Humane & E Ed, 1	67 Salem Rd	East Haddam, CT, 06423-0362	USA	203/434-8666	93/09
Needham, Donna	14634 S.W. 98 Terrace	Miami, FL, 33186	USA	ESES/CES 305/237-2600	93/10
Nelles, Wayne	P0 Box 33739	Vancouver, BC, V6J 4L6	CANADA	604/732-6037	93/10
Nelson, Dennis	201 Culbertson Hall	Bozeman, MT, 59717	USA	406/994-5392	93/12
Nelson, Lebnard	P O Box 435	Bailey, CO, 80421	USA	ESES 303/623-6343	93/11
Nelson, Lonnie	234 Beechwood Ave	Frankfort, KY, 40601	USA	CES 502/564-4762	93/06
Nelson, Ray	Box 44	Benidji, MN, 56601	USA	ESS 218/755-2934	93/03
Nelson, Thomas	4516 N Rocky Creek Circle	Tucson, AZ, 85715	USA	ESES/NFS/CES 602/577-6042	93/10
Newirth, Melinda	611 Snow Rd	Sebastopol, CA, 95472-5020	USA	ESES	93/03
Newhouse, Chris	Natural Science	Spring Arbor, MI, 49283	USA	NFS 517/750-1200	93/10
Newton, Robert	Obley Rd	Dubbo/NSW, 2630,	AUSTRALIA		93/08
Nichols, Robert	1111 E Brown Deer Rd	Milwaukee, WI, 53217	USA	614/352-2880	94/02
Nicholson, Matthew	4158 Decoro Street Apt 40	San Diego, CA, 92122-1428	USA	ESES/NFS 619/558-8832	92/11
Nigg, Sallie	886 Cannery Row	Monterey, CA, 93940	USA	ESES/NFS/CES 408/648-4985	93/09
Nishball, Jill	P0 Box 1028	Blue Lake, CA, 95525	USA	ESES/NFS/CES 707/668-4261	94/02
Nores, Bio Ana Ines	CC 122	Cordoba, 5000,	ARGENTINA	54-51-35264	93/08
Noriego, Laura Navarro	Col Barros Sierra	Mexico D.F., 10380	MEXICO	ESES/NFS (5) 6-83-9425	94/02
Norman, Katherine	217A St. Paul	Stevens Point, WI, 54481-2291	USA	ESES 715/346-4356	93/09
Norris, Cliff	2750 Park Trail Lane	Clearwater, FL, 34619	USA	ESES/NFS/ESS/CES 813/462-6024	93/07
Norton, Cheryl	12 Sanderson Rd	Saithfield, RI, 02917-1606	USA	ESES/NFS 401/231-6444	93/10
Norton, Mary	RR 1	New Hartford, IA, 50660	USA	ESES/CES 319/266-2614	93/09
Nowak, Paul	1409 Normandy	Ann Arbor, MI, 48103	USA	313/763-1312	93/11
Nuccio, Patricia	1200 W N.W. Hwy #209	Mount Prospect, IL, 60056	USA	ESS	94/02
Nye, Donna	420 Fifth Avenue	New York, NY, 10018-2702	USA	NFS 212/852-5724	94/02
O'Brien, Micheal	305 Giles Rd #8	Blacksburg, VA, 24060-7207	USA	CES 703/231-4483	93/05
O'Brien, Pamela	3825 Miller View Rd	Elk, MN, 55020	USA	612/431-9229	93/09
O'Connor, Maura	2439 A Holomua Pl	Honolulu, HI, 96816	USA	808/735-8419	93/05
O'Donoghue, Rob	P0 Box 662	Pietermaritzbur, 3200 NATAL,	S AFRICA	0331-471961	93/10
O'Neill, Merle	12702 Via Cortina	Del Mar, CA, 92014	USA	619/793-0411	93/09
Oates, Maureen	P0 Box 6009	Falmouth, ME, 04105-6009	USA	ESES/NFS 207/781-2330	93/09
Oberst, M Claire	251 Lincoln Avenue	Mt Gilead, OH, 43338-1218	USA	ESS 614/292-6717	93/10
Obras Publicas Y	Biblioteca Despacho A-435	Castellana-67, 28046,	MADRID/SPAIN		93/09
Urbanismo, Ministerio					
Oechsle, Jonathan	100 N Tryon St, Flr 47	Charlotte, NC, 28202-4003	USA	704/331-1099	94/02
Ogle, Martin	2860 Marcey Rd	Arlington, VA, 22207-5235	USA	NFS 703/528-5406	93/08
Ogston, Brian	#401, 10033-89 Avenue	Edmonton, AB, T6E 2S7	CANADA	403/427-7009	93/09
Okun, Melva	302 Rainbow Dr	Carrboro, NC, 27510	USA	ESES 919/966-3332	93/09
Olds, Nancy	6 Normandy Hgts. Rd	Morristown, NJ, 07960	USA	NFS 201/538-0454	93/06
Olivolo, Betty	1511 Vivian Place	Silver Spring, MD, 20902	USA	ESES/CES 302/287-2063	93/10
Olson, Dennis	3025 Tower Ave	Superior, WI, 54880-5324	USA		93/03
Olson, Perry	6060 Broadway	Denver, CO, 80216	USA	NFS/CES 303/291-7200	93/10
Oltman, Marcie	720 Jacoby Rd	Xenia, OH, 45385	USA	513/767-7378	93/10
Omidpanah, Parvis	P0 Box 39311	Solon, OH, 44139-0311	USA	ESES/CES 216/248-0345	93/06
Opie, John	NJ Instiute of Tech	Newark, NJ, 07102	USA	ESS 201/596-3291	93/10
Oppeval, Tom	481 Horseshoe Bend Rd	Jonesborough, TN, 37659	USA	ESES 615/929-4290	93/11
Orantes Martinez, Teodoro	P0 Box 434394	San Ysiao, CA, 92143-4394	USA	ESES/NFS/CES	93/12
Orsich, Barbara	2549 Woodridge Dr	Decatur, GA, 30033	USA	ESS/NFS	94/03
Osorio, Richard	350 Rock Eagle Rd, NW	Eatonton, GA, 31024	USA	ESES/ESS/NFS/CES 404/485-2831	93/03
Osteen, Virginia	1899 Willamette	Eugene, OR, 97401	USA	NFS 503/454-1108	93/12
Ostenson, Burton	13001 Tule Lake Ave S	Tacoma, WA, 98444	USA	CES 206/537-3881	93/02
Oswald, Bob	2200 S Clarkson	Denver, CO, 80210	USA	CES 303/866-4640	93/07

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Quimbita, Grace	1600 Campus Rd	Los Angeles, CA, 90041	USA	ESS/CES	213/259-02973	93/08
Oustecky, Kimberly	PO Box 51	Plymouth, NH, 03264	USA	ESES	603/536-3889	93/03
Outdoor Education Center, 1	Rt 2 Box 25-B FM3188	Trinity, TX, 75862	USA			93/06
Oznowich, Tanya	726 Crown St 2nd Fl	Morrisville, PA, 19067	USA	ESES/NFS	215/295-7658	93/01
PA Game Commission, 2	2001 Elmerton Ave	Harrisburg, PA, 17110	USA	ESES/NFS	717/787-6286	93/08
PERC,	1055 Fort Crockhite	Sausalito, CA, 94965	USA	ESES		93/03
Pace, Rosemarie	61-02 77. Place	Middle Village, NY, 11379	USA	ESES	212/405-3280	93/05
Padalino, John	RD #2 Box 1010	Dingsmans Ferry, PA, 18328	USA	NFS	717/828-2319	LIFE
Paden, Mary	1709 New York Ave NW	Washington, DC, 20006	USA	ESES/ESS/NFS/CES	202/662-2573	93/04
Padilla-Galiano, Tubal	99 Clifton St	Boston, MA, 02125	USA	ESES/NFS	617/524-8888	94/01
Padua, Suzana	Av dos Operarios 587	Piracicabo, Sao Paulo, 134	BRAZIL		554/387259	93/10
Palmer, Jacquelin	507 Quail Creek Cr	Round Rock, TX, 78664-5944	USA		512/476-6861	93/09
Parkiewicz, Philip	SUNY College at Cortland	Cortland, NY, 13045	USA	ESES	607/753-2907	93/10
Papadimitriou, Vasiliki	14 Athinagorou Street	Thessaloniki, 54352,	GREECE	ESES		93/11
Parker, John	605 West Blvd. So	Columbia, MO, 65203	USA	NFS	417/865-0707	93/08
Parker, Suzann	255 East Brook Rd	Pittsford, NY, 14534	USA	CES		92/12
Parker Whitehouse, Patricia	PO Box 1006	Yreka, CA, 96097	USA	CES	916/842-5763	93/09
Parry, Jim	Camp. Classen YMCA/Route 1	Davis, OK, 73030	USA	NFS	405/369-2272	93/10
Parsons, Chris	PO Box 1271	Monterey, CA, 93942-1271	USA	NFS/CES	408/373-2044	93/09
Parsons, Thomas	13030 Waverly	Zion, IL, 60099	USA	NFS	708/872-0454	93/02
Parsons, Tim	180 Flynn Avenue	Burlington, VT, 05401	USA	ESES	802/863-1308	93/08
Paschall, Dean	PO Box 1111	Ketchum, ID, 83340	USA		208/726-4030	93/09
Passineau, Joe	College of Natl Res	Stevens Point, WI, 54481	USA	ESES/NFS/CES	715/824-2428	93/09
Patchin, Marie	BOX 224	MIDDLEFIELD, OH, 44062-0224	USA	CES		LIFE
Patrick, Thomas	3603 Fry Road	Jefferson, MD, 21755	USA	CES	301/834-9044	93/02
Paulk, append	210 Ailsie Drive	Knoxville, TN, 37920	USA	NFS/CES	615/632-3474	93/04
Pearson, Anne	319 Linden Ave	Annapolis, MD, 21401-3023	USA	CES		93/03
Peck, Phyllis	910 Sommer Dr	Dixon, CA, 95620	USA	ESES/CES	709/422-8672	93/03
Peaberton, Dixie	3118 19th St NW	Washington, DC, 20010-2610	USA	CES	410/228-8200	94/02
Peambleton, Seliesia	PO Box 817	Accokeek, MD, 20607-0817	USA	ESES/ESS	301/292-5665	94/01
Pendergraft, Bill	808 Woodland Avenue	Chapel, NC, 27514	USA		919/933-3003	93/08
Pepper, Barbara	5358 Breeze Hill	Troy, MI, 48098	USA	ESES	313/644-9310	93/05
Peri, Phyllis	1965 A Church St	Stevens Point, WI, 54481	USA	ESES/NFS	715/344-5379	94/02
Ferkins, John	1806 24th Ave., NW	Olympia, WA, 98502	USA		206/866-6000	93/10
Ferkins, Sarah	Principia College	Elsah, IL, 62028	USA		618/374-5272	93/10
Perrault, Michele	2979 Rohrer Drive	LaFayette, CA, 94549	USA	ESES/NFS	510/283-6683	94/02
Ferrine, Richard	22611 Kittridge St	West Hills, CA, 91307	USA	ESS	310/825-2636	94/02
Perry, Belinda	4321 MacEACHEN BLVD	SARASOTA, FL, 34233	USA	CES		LIFE
Person, Jane	Bunny Lane	Brodheads ville, PA, 18322	USA	ESES/CES	717/424-8471	93/04
Peters, Adelia	13670 Klopfenstein R	Bowling Green, OH, 43402-9520	USA	ESS	419/372-8207(h)	LIFE
Peterson, Allen	1221 DIVISION STREET	GREEN BAY, WI, 54303	USA	CES		LIFE
Peterson, Ervand	471 Goodman Rd.	Santa Rosa, CA, 95407	USA	NFS/CES	707/526-3363	93/09
Peterson, Margaret	54 Deer Run Rd	Wilton, CT, 06897	USA		203/762-7080	93/11
Peterson, Mark	1407 Osprey Court	Ft Collins, CO, 80525	USA	CES		LIFE
PetitJean, Herbert	351 N Fifth St	Danville, KY, 40422	USA		606/236-5573	93/10
Petsonk, Annie	3708 35th Street, NW	Washington, DC, 20016	USA	NFS/CES	202/514-1442	93/11
Peyton, R	930 Dart Rd	Mason, MI, 48854	USA	CES	517/353-3236	94/02
Pfeifer, Sharon	519 Holly Avenue	St Paul, MN, 55102	USA	ESS/NFS/CES	612/624-1746	93/11
Phillips, Anne	PO Box 47600	Olympia, WA, 98504-7600	USA		208/438-7094	93/10
Phillips, Julie	319 El Alamein	Felton, CA, 95018	USA	ESES/CES	408/335-2772	93/03
Phillips, Randy	1139 CROOKS	GREEN BAY, WI, 54301	USA	CES		LIFE

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Pitman, Barbara	3100 S Manchester St	Falls Church, VA, 22044	USA	ESES/NFS	703/931-9578	93/06
Place, Jr, R.F., Charles	731 Winchester Circl	Macon, GA, 31210-3436	USA	ESES/CES	912/974-2767	94/01
Plater, Zygant		Newton Centre, MA, 02159	USA	ESS	617/552-4387	93/12
Platt, Dwight	702 NE 24th St	Newton, KS, 67114	USA	ESS	316/283-2500	93/11
Plevel, Steve	7761 N Northern Ave	Tucson, AZ, 85704	USA	CES	602/670-4552	93/11
Poisoner, Jonathan	2800 Quebec St NW #517	Washington, DC, 20008	USA	CES	202/872-6942	93/08
Polunin, Prof. Nicholas	1218 Grand-Sacconex	Geneva,,	SWITZERLAND		022/98-23-83/4	LIFE
Ponce Correa, Pedro Alberto	Apartado No. 17-01-3891	Quito,,	ECUADOR	ESES/ESS/NFS/CES	244/803/241-573	94/01
Pontikes, Ph.D, Kathie	3046 Hawthorne Blvd	St Louis, MO, 63104	USA		314/968-5225	93/05
Porteous, David	15 Edstrom Rd	Marlborough, CT, 06447	USA	NFS	203/241-4784	93/07
Foscover, Benjamin	302A Garden Road	Towson, MD, 21204	USA		301/887-4251	93/06
Potter, Tom	7903-112 Street	Edmonton, AB, T66 1K1	CANADA	ESES/CES	403/431-1668	93/12
Potter, Gerald "Corky"	203 Henderson/Bld S	University Park, PA, 16802	USA		814/863-2000	93/10
Poulin, Barbara	PO 771306	Steamboat Sprgs, CO, 80477	USA	ESES	303/638-4558	93/07
Pous, Pere	La Vola	Manlleu, Spain, 08560	USA		34-3-8514428	94/02
Prell, Renee	PO Box 88	Wawatah, IN, 46390-0088	USA	ESS/CES	219/733-9557	93/11
Prentice High School,		Prentice, WI, 54556	USA	CES		LIFE
Pretzel, Holly	429 S Kenilworth	Oak Park, IL, 60302	USA	ESES		93/11
Price, Lina	Ministry of Energy	Toronto, ON, M7A 2B7	CANADA	ESES/ESS/NFS/CES	416/327-1514	93/10
Project Learning Tree,	3 Triad Center	Salt Lake City, UT, 84180-1204	USA	CES	801/538-5458	93/09
Project Wild Coordinator,	Box 10678/1100 Valley Rd	Reno, NV, 89520-0022	USA		702/688-1555	93/09
Fruneau, Diane	164 Du Golf	Loretteville, PQ, G2A 1G6	CANADA	ESES	865-7426	93/10
Punterney, Pam	1989 W Liberty	Ann Arbor, MI, 48103	USA	ESS/NFS	313/994-3612	93/10
Purdy, Walter	1701 Pennsylvania Ave, NW	Washington, DC, 20004 1	USA		202/508-5000	LIFE
Quinlen, Michael	10 Fifth Ave	Northampton, MA, 01060	USA	ESES	413/586-6976	93/11
Quinn, Adeline	1 Ocean Blvd	Lido Beach, NY, 11561-5021	USA	NFS/CES	516/897-2116	93/05
Quinn, Elizabeth	3303 W 3rd Avenue	Vancouver, BC, V6R 1R3	CANADA	ESES/NFS/CES	613/731-2613	93/09
Quinn, Ray	BOX 1270	HOT SPRINGS, AR, 71901	USA	CES		LIFE
Radatz, Edward	13422 StarDust Blvd	Sun City West, AZ, 85375	USA	ESES	602/546-0021	94/03
Radloff, Mark	9102 N Meridian St, Ste 405	Indianapolis, IN, 46260-1809	USA			93/01
Raebe Anderson, Ellen	6627 17th St North	St Petersburg, FL, 33702	USA		813/525-0105	93/08
Ragland, Chara	2200 Ferber Circle	College Station, TX, 77845	USA	NFS/CES	409/764-0517	93/12
Railton-Rice, Esther	41 Barcelona Ct	Denville, CA, 94526	USA	ESES/CES	415/881-3016	LIFE
Ramage, Patrick	655 15th St NW Ste #300	Washington, DC, 20005	USA		202/639-4080	93/10
Reasey, John	710 Park Knoll Lane	Katy, TX, 77450	USA	ESES	713/743-4966	94/03
Reasey, Linda	PO box 3179	Ruston, LA, 71272	USA	ESES	318/251-4573	93/08
Reasey, Paul	Dept of Biological Sciences	Ruston, LA, 71272	USA	ESS	318/257-4573	93/08
Rand, William	10016 S Green	Chicago, IL, 60643	USA		708/388-7733	94/01
Randolph, Carter	8680 Spooky Hollow	Cincinnati, OH, 45242	USA	CES	513/891-4227	93/09
Rasmussen, Marlene	Rt. 1, Box 45	Litchfield, NE, 68852	USA		308/446-2244	94/02
Ratner, Nancy	Box 240166	Douglas, AK, 99824	USA	ESES/NFS/CES	907/586-2874	93/09
Reuwerda, Laura	16731 Ferris St	Grand Haven, MI, 49417	USA	ESES	616/842-6957	93/08
Raze Jr, Robert	3068 N Fulmer Cir	Tallahassee, FL, 32303-1719	USA	ESES	904/385-7977	94/02
Redfearn, Danny	7721 E Mary Dr	Tucson, AZ, 85730	USA	NFS	602/790-7477	93/09
Reece, Patricia	1605A Blueberry	Harrisonville, MO, 64701	USA	CES	816/884-3391	93/08
Reeves, Don	General Delivery	South Freetown, PE, C0B 1L0	CANADA	CES	902/887-2876	94/02
Reigel, Meta	712 S Maple Bluff Ct	Stevens Point, WI, 54481	USA	NFS	715/824-2428	93/06
Reineck, Audrey	11861 W WOODLAND CIR	HALES CORNUS, WI, 53130	USA	CES		LIFE
Renewable Resources,	Gov't Yukon/Box 2703	Whitehorse, YK, Y1A 2C6	CANADA			93/09
Rensel, Janet	2499 Kapiolani Blvd	Honolulu, HI, 96826	USA	ESES	808/943-0836	93/05
Reyes de la Torre, Leticia	Av Pablo Neruda 2595 PBA Col	Prov/Guadalaajar, CP 44620, 79	MEXICO Jal			92/11

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Reynolds, Nancy	4455 West 7th St	Winona, MN, 55987	USA	ESES	507/454-9565	93/11
Rich, Patricia	1061 W. Oakland Pk Blvd	Ft Lauderdale, FL, 33311	USA	CES	305/565-7699	94/02
Rich, Paul	Biological Sciences	Lawrence, KS, 66045-2306	USA			93/11
Richard, Mary	143 Cove Road	Oyster Bay, NY, 11771	USA		516/922-3200	93/09
Richardson, Larry	28728 Wolf Rd	Bay Village, OH, 44145	USA	ESES/CES	216/871-2900	93/04
Ricker, Marvi	618 Richmond St	London, ON, N6A 5J9	CANADA		519/673-1280	92/11
Ricker, Maureen	161 Lakeshore Rd. West	Mississauga, ON, L5H 1S3	CANADA	NFS	416/274-6222	93/10
Rico, Luis	PO Box 21150	Rio Piedras, PR, 00928	USA		809/766-1717	93/10
Rico Bernal, ENEP, Manuel Faustino	es I-Zasagoza, 61	Del Iztabalapa, 09230,	MEXICO DF	ESS	744-12-17	93/11
Riechard, Donald	Emory Univ	Atlanta, GA, 30322	USA	ESES	404/727-0602	93/11
Rigby, Jennifer	13652 Carlsbad Drive	Santa Ana, CA, 92705	USA		714/838-4888	93/09
Rigerman, Alan	17910 N.W. 84th Ave	Hialeah, FL, 33015	USA	NFS	305/558-1305	93/09
Rinehart, J.	ROUTE 2	GLADWIN, MI, 48624	USA	CES		LIFE
Rinzler, Bob	14615 Tyler Foote	Nevada City, CA, 91959	USA			93/12
Ritter, William	1419 East Butler Pike	Ambler, PA, 19002	USA	ESES/ESS	215/641-0921	93/09
Roa, Michael	294 Murphy	Sebastopol, CA, 95472	USA	ESES/CES	707/829-5867	93/02
Roberts, JoAnn	PO Box 722	Huntingtown, MD, 20639	USA	ESES		93/01
Robertson, Alistair	2125 Main Mall	Vancouver, BC,	CANADA	CES	604/264-0430	93/08
Robottom, Ian	Faculty of Ed/Deakin U	Victoria, 3217,	AUSTRALIA	ESES	011-61-52271451	93/09
Rodriguez, Donald	CO State University	Ft Collins, CO, 80523	USA	ESS	303/491-5629	93/09
Rogers, Karen	2801 Mark Circle	Stillwater, OK, 74075	USA	ESES	405/744-6080	94/01
Rogers, Diana	1335 Dublin Rd #1160	Columbus, OH, 43215	USA	ESES/CES	614/487-9903	93/04
Rohwedder, W	1801 E Cotati Ave	Rohnert Park, CA, 94928	USA		707/664-2249	93/04
Rolandson, Yvonne	420 Steele Street	Mason, MI, 48854	USA	NFS	517/373-1263	93/08
Romine, Linda	11150 Snider Road	Cincinnati, OH, 45249-2218	USA	ESES/NFS	513/489-7295	LIFE
Roopal, Rawal	PO Box 390702	Mountain View, CA, 94039	USA	NFS		93/01
Root, Sandra	1911 Bayview Ave., #301	Toronto, ON, M4G 3E4	CANADA	ESES/ESS	416/481-9070	93/10
Rosselli, Helen	30 Oriole Ln	Trumbull, CT, 06611	USA	ESES/NFS	203/378-4853	93/04
Rosser, Arrye	1824A Amber Huis Drive	Akron, OH, 44313	USA	NFS/CES	614/292-3750	93/01
Rossov, Catherine	308 Second St., N	Stevens Point, WI, 54481	USA	NFS	715/346-4950	94/02
Roth, Charles	39 Mill Rd	Littleton, MA, 01460	USA	ESES/NFS	617/969-7100	93/04
Roth, Robert	570 Morning St.	Worthington, OH, 43085-3775	USA		614/888-6742	LIFE
Rowland, Paul	CEE at NAU	Flagstaff, AZ, 86011-5774	USA	ESES/ESS		LIFE
Royal, Maureen	Box 9158	Tampa, FL, 33674	USA	NFS/CES	813/985-3614	93/04
Rueston, Margaret	Old Westbury	Old Westbury, NY, 11568	USA	ESES		93/06
Ruiz, Hari	3506 Aaron Dr	Columbus, OH, 43228-7015	USA	NFS	614/644-2149	93/10
Ruskey, Abby	1016 Bukolt Ave	Stevens Point, WI, 54481	USA		715/346-4179	94/02
Russell, Helen	44 College Dr	Jersey City, NJ, 07305	USA	ESES/ESS/CES	201/432-1053	LIFE
Rusten, June	1733 Dunmore	Ann Arbor, MI, 48103	USA	ESES	313/996-2596	92/11
Rutan, Marcia	2930 Wetmore	Everett, WA, 98201	USA	ESES/NFS	206/221-3812	93/08
Ryan, Jack	131 Womack Rd	El Dorado, AR, 71730	USA		501/862-8131	93/06
Ryder, Richard	20 Bond Lane	Hicksville, NY, 11801	USA		516/883-1610	93/06
Rye, Robert	700 DAK/RR 2/Box 117	Guthrie Center, IA, 50115-9625	USA	CES	515/747-8383	LIFE
SUNY/CESF,	1 Forest Dr/331 Marshall Hall	Syracuse, NY, 13210-2778	USA		315/470-6551	93/10
SW Parks & Monuments Assoc, 2	102 Elk Creek	Gunnison, CO, 81230	USA		303/641-2337	94/01
Sacks, Arthur	1975 Willow Drive	Madison, WI, 53706	USA		608/262-9150	93/09
Sacks, Stephen	P O Box 64	Rancho Sante Fe, CA, 92067	USA	NFS	619/756-4117	93/07
Salas, Hermilo	Av. Insurgentes SUR 1877-202	Mexico City, D., 01020,	MEXICO		6-455338	93/10
Salgado, Rafael	4200 Smith School Rd	Austin, TX, 78744	USA	CES		92/11
Salmela, Aaron	4337 Lindahl Rd	Hermantown, MN, 55811	USA	ESES		93/07
San Julian, Gary	1400 16th St NW	Washington, DC, 20036-2266	USA	NFS/CES	703/790-4495	93/07

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Sanborn, Roger	Colorado OEC	Florissant, CO, 80816	USA	NFS	303/748-3341	94/02
Sander, David	PO Box 7753	San Francisco, CA, 94120-7752	USA		415/824-4609	93/10
Sanders, D Andrew	Route 28N	Newcomb, NY, 12852	USA		518/582-4551	93/02
Sanderson, Paul	Mahan Drive	Norwich, CT, 06360	USA		203/887-0062	93/11
Sandford, Floyd	COE College-Biology Dept.	Cedar Rapids, IA, 52402	USA	ESES/CES	318/399-8576	93/04
Sandiford, Shamili	2529 Old Tavern Rd/Apt. 14	Lisle, IL, 60532	USA	NFS/ESS/CES		93/05
Sandler, Alan	1735 New York Ave NW	Washington, DC, 20006	USA	ESES/NFS	202/626-7573	LIFE
Sandler, Oreon	13550 Conway Rd	St Louis, MO, 63141	USA		314/542-4677	93/10
Sansing, Shanda	340 Hillman Ave	Orlando, FL, 32803-5612	USA	ESS	407/295-9119	93/12
Santa, Elizabeth	12026 Towering Oaks Drive	Baton Rouge, LA, 70810	USA			94/01
Sarns, George	PO box 32	Traverse City, MI, 49686	USA	ESES/CES	616/943-8066	93/11
Sato, Pauline	1116 Smith St/Ste 201	Honolulu, HI, 96817	USA	NFS/CES	808/537-4508	93/06
Saulsbury, Nancy	1826 W Morse	Chicago, IL, 60626	USA	NFS	312/973-7380	93/08
Saunders, Gerry	RR 5, Box 151	Murphysboro, IL, 62966	USA	ESES	618/453-4215	93/08
Sauve, Lucie	781 Chemin Marieville	Richelieu, PQ, J3L 4A7	CANADA	ESES	514/658-4500	93/10
Savage, Ann	PO Box 15868	Los Angeles, CA, 90802	USA	ESES/CES	213/749-3601	93/08
Scarlett, Marty	PO Box 12	Dwight, ON, POA 1H0	CANADA		705/635-3541	94/03
Schafer, Rudolph	2820 Echo Way	Sacramento, CA, 95821	USA	ESES	516/985-2169	93/04
Schallern, Marti	1776 Peachtree Street NW	Atlanta, GA, 30509	USA		404/876-2900	93/12
Scheidecker, Zoe	410 Clay St	Ottawa, IL, 61350	USA			93/03
Scherrer, Wendy	2105 Highway 20	Sedro Woolley, WA, 98284	USA	ESES/NFS/CES	206/856-2700	93/05
Scherrer, Winnie	Box 149	Oley, PA, 19547	USA	ESES/ESS/NFS	215/779-8226	93/10
Schmitz, Wolfgang	Luxenburger Str R4-144	Cologne, NW, D-45000,	GERMANY		43-220-446359	93/10
Schneider, Michael	500 Wilshire Dr	Belleville, IL, 62223	USA	ESES	618/398-5280	93/03
Schneider, Rachael	9790 Misty Cone Lane	Gainesville, GA, 30506	USA	CES	706/536-0541	93/11
Schollenberger, Ronald	492 Court St #4	Brooklyn, NY, 11231	USA	ESES	212/722-5160	93/06
Schottke, Jennifer	621 East Capitol St	Washington, DC, 20003	USA		202/833-3420	94/03
Schuler, Donna	3202 Donegal	El Paso, TX, 79925	USA		915/591-5115	93/01
Schultz, Judith	9555 Plainfield Rd.	Cincinnati, OH, 45236-1007	USA	ESS	513/745-5613	LIFE
Schultz, Yvonne	21 Tracey Street	Stafford, VA, 22554	USA	CES	703/690-1297	93/10
Schulze, Salome	Unisa/PO Box 392	Pretoria, Tvl 0001,	S AFRICA	ESES	012/4294326	93/03
Schussman, Brenda	1750 Lake St	Ogden, UT, 84401	USA	CES	801/621-8430	92/11
Schwenholtz, Mary Kathryn	6028 Camp Ernst Rd	Burlington, KY, 41005	USA		606/586-7903	93/01
Schwartz, Alan	Environmental Studies	Canton, NY, 13617	USA		315/379-5357	93/09
Schwartz, Jeffrey	421 Stark Hwy N	Weare, NH, 03281	USA	ESES/NFS	603/224-9909	94/03
Scott, Roger	A133	San Diego, CA, 92123	USA	ESES/ESS	619/573-1716	94/02
Scull, Roberta	1 E. Fraternity Circ	Baton Rouge, LA, 70803	USA		504/388-4600	93/07
Scully, Patrick	200 Commons Rd	Dayton, OH, 45459-2799	USA		*513/434-7300	NON
Seacamp Assoc Inc.,	Rt. 3, Box 170	Big Pine Key, FL, 33043	USA		305/872-2331	93/06
Seaman, Kristie	PO Box 839	Sanibel, FL, 33957	USA	CES	813/472-2329	94/02
Sears, Gail	216 Elizabeth Terrace	Hot Springs, AR, 71901	USA	NFS	501/623-1433	93/04
Sebert, Dan	1814 Warren Dr	Stillwater, OK, 74075	USA	CES	405/521-2384	93/09
Sehnert, Rocky	1103 A 80th Street	Lubbock, TX, 79423	USA	ESS/CES	806/745-1041	93/11
Seilheimer, Jack	2200 N Bonforte Blvd	Pueblo, CO, 81001-4901	USA	ESS	719/549-2340	93/10
Seameyn, Robert	7550 22ND AVENUE	JENISON, MI, 49428	USA	CES		LIFE
Sendbuehler, Michael	5213 Byron	Montreal, PQ, H3W 2E8	CANADA	ESS/NFS	514/931-8792	93/10
Senecah, Susan	822 Worcester Dr	Schnechtady, NY, 12309	USA	ESES/CES	518/346-2007	93/09
Seravalli, Alba Bonelli	via Donizetti 10	Monticeli Terme, 43023,	PR ITALY	ESES/ESS		94/01
Sevebeck, Kathryn	1206 Glade Road	Blacksburg, VA, 24060	USA	CES	703/951-4154	94/01
Sewing, Daphne	1596 West N Temple	Salt Lake City, UT, 84116	USA	CES	801/538-4720	92/11
Sexson, Kathy	301 N.8th PO Box 499	Garden City, KS, 67846	USA	CES	316/276-1250	94/03

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Sexton, Alan	Rts. 611 & 313	Doylestown, PA, 18901	USA	ESES/CES	215/348-2940	LIFE
Seymoar, Nola	110 Eglinton Ave West	Toronto, ON, M4R 1A3	CANADA	ESS/NFS	416/482-9212	93/10
Sferrazza, Veronica	664 Emery St. E	London, ON, M6C 2G4	CANADA	ESES	519/672-3133	93/10
Sharff, William	900 East Boulevard	Bismarck, ND, 58505	USA	ESES/CES	701/224-4833	93/09
Sharp, William	110 Marvin Parkway	Jamestown, NY, 14701	USA	ESES/ESS	716/665-2673	93/08
Sharrow, Diane	1402 N Walnut Ave	Arlington Hts, IL, 60004-4666	USA	CES	312/886-6199	93/07
Shaw, Daniel	PO Box 474	Placitas, NM, 87043	USA	NFS	315/470-6841	93/09
Shaw, Horace	219 Bray Hall	Syracuse, NY, 13210-2784	USA		315/470-6888	94/01
Shearman, Richard	1 Lomb Mem Dr	Rochester, NY, 14623-0887	USA	ESS	716/475-6604	93/10
Shedd, Don & Edith	2499 Pannell Rd SE	Monroe, GA, 30655-9611	USA	NFS/CES	404/267-3534	LIFE
Shenk, Anne	1211 Marshall Wilkes Rd	Watkinsville, GA, 30677	USA	ESES/NFS	404/542-1244	93/06
Shepard, Clint	3510 NW 29th Terrace	Gainesville, FL, 32605	USA		904/373-0369	95/03
Shepherd, Phil	HC-30 Box 101	Ten Sleep, WY, 82442	USA		307/733-4765	93/09
Shepherd, Will	202 Architecture Annex	Blacksburg, VA, 24061	USA	ESES/ESS/CES	703/231-6863	93/05
Sherman, Robin	26 Church St	Cambridge, MA, 02238	USA	ESES/NFS	617/547-5552	93/07
Shiel, John	6512 Harts Rd	Ringwood, IL, 60072	USA	CES	815/678-4776	93/08
Shoemaker, Patricia	904 5th St	Radford, VA, 24141	USA	ESES	703/831-6311	93/11
Shotkin, Andrea	1255 23rd St NW/Suite 400	Washington, DC, no communi	cator		202/467-8753	NON/92
Shover, Charlotte	550 Cedar St, Rm 634A	St Paul, MN, 55101	USA	ESS	612/296-2726	93/09
Shreffler, Shelley	1600 Grand Avenue	St Paul, MN, 55105-1899	USA	ESS	612/696-6484	93/09
Sia, Archibald	22428 W Poplar St	Sta. Clarita, CA, 91350	USA	ESES	818/885-2621	93/09
Sigle, William	Box 139	Jamesburg, NJ, 08831-0139	USA	CES	908/521-4437	93/01
Sigaan, Marilyn	PO Box 240009	Douglas, AK, 99824	USA		907/465-4265(h)	94/01
Silman, Marcelle	400 2ND AVENUE	NEW YORK, NY, 10010	USA	CES		LIFE
Silva, Teresa	Los Reyes Coyoacan	Mexico D.F., 04330,	MEXICO		52(5) 689-74-25	93/09
Silver, Diane	316 2nd Street	Ann Arbor, MI, 48103	USA		313/662-6811	93/10
Silverberg, Judith	29 Albin Rd	Bow, NH, 03304	USA	CES	603/271-3211	93/11
Silverman, Gary	102 Health Center	Bowling Green, OH, 43403-0002	USA		419/372-7774	93/09
Sim-Saith, Belinda	2600 Cumberland Parkway	Atlanta, GA, 30339	USA	ESES	404/801-2112	94/03
Simmons, Bora	864 N 11th	DeKalb, IL, 60115	USA	ESES/ESS/NFS/CES	815/753-0205	94/03
Simmons, Stephanie	1113 12th Ave #1	Greeley, CO, 80631	USA	NFS		93/07
Simon, John	16324 Yttrium St. NW	Ramsey, MN, 55303	USA	ESES	612/422-5816	93/09
Simon, Kent	4440 Independence Tr	Evergreen, CO, 80439	USA	ESES	303/279-7768	93/12
Simonsen, Joedy	1525 Howe Street	Racine, WI, 53403	USA		414/631-2168	93/04
Simpson, Bob	212 Gardner St	Quesnel, BC, V3J 3G6	CANADA	ESES/NFS/CES	604/992-2131	93/07
Simpson, Patricia	205 11th St North	Sartell, MN, 56377	USA	ESES	612/233-0917	93/10
Singer, Al	49 O'Day St	Maplewood, MN, 55119	USA	ESES/NFS	612/348-2226	93/10
Sipe, Marianne	207 Pond Ridge	Libertyville, IL, 60048	USA	ESES	708/272-6400	93/10
Sirch, Jim	314 Unquova Rd	Fairfield, CT, 06430	USA	ESES/NFS/CES	203/259-6305	93/03
Siry, Joseph	Box 2753	Winter Park, FL, 32789	USA	ESS	407/629-6564	93/06
Sivek, Daniel	601 Indiana Ave	Stevens Point, WI, 54481-2204	USA	ESES	715/346-2028	94/02
Skalbeck, Thomas	2520 E 120th St	N St Paul, MN, 55109	USA	ESES/CES	612/770-4650	93/10
Skylander, Kimberly	19025 Arabian Lane	Frenchtown, HT, 59834	USA	NFS/CES	406/675-4800	93/11
Slade, Andrew	1411 N 51st Ave E	Duluth, MN, 55804	USA			93/04
Slattery, Britt	PO Box P	St Michaels, MD, 21663	USA	ESES	301/745-9620	93/09
Slinger, Lucille A	RR #3, 1 Pine View	LaCrosse, WI, 54601	USA	ESES	608/785-8147	93/12
Slocobbe, D. Scott	Wilfrid Laurier Univ	Waterloo, ON, N2L 3C5	CANADA	ESS	519/884-1970	93/08
Smith, Cynthia	13 Litzsinger Ln	St Louis, MO, 63124	USA	ESES/NFS/CES		92/12
Smith, Elizabeth	3 Collins Terrace	Saratoga Spring, NY, 12866-1000	USA	NFS/CES	518/587-9499(h)	LIFE
Smith, Gary	2204 Lizbeth	Anaheim, CA, 92806	USA	ESES		93/09
Smith, Steph	4401 N Fairfax Dr/Arlington Sq	Arlington, VA, 22203	USA			93/03

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Smith, Thomas	Smith School - Bonner Rd	East Brunswick, NJ, 08816	USA	ESES	908/613-6775	93/11
Smith, William	1255 23rd N.W.	Washington, DC, 20037	USA		202/862-1900	93/10
Smith, Lorne	Mowat Blk, 900 Bay St	Toronto, ON, M7A 1L2	CANADA	ESES	416/325-2539(W)	94/01
Smith-Sebasto, Nicholas	4 Mark Twain Drive	Trenton, NJ, 08690-2110	USA		609/587-1510	93/01
Smogor, Joe	530 W29525 Williams Way	Waukesha, WI, 53188	USA	ESES/ESS	414/521-8748	94/02
Snowden, Patricia	5145 Westbard Ave	Bethesda, MD, 20816	USA	ESES	301/229-2170	93/10
Solomon, Damian	110 Argyle Ave	Ottawa, ON, K1P 1B4	CANADA		613/232-1505	93/10
Somplatsky-Jarman, William	100 Witherspoon St	Louisville, KY, 40202-1396	USA		502/569-5809	93/12
Sookias, Zola	400 E 59th St. #7A	New York, NY, 10022	USA		212/353-1592	93/02
Soth, Carol	1125 Cherry	Missoula, MT, 59802	USA	ESES	802/254-3872	93/07
Sotomayor de Gil, Lucila	Prolongn Ref 3728	Puebla Pue., 72140,	MEXICO	ESES	91(22)48-31-47	92/11
Sowards, Alan	11 Scott Crescent	Austin, TX, 78703-1735	USA	eses	512/478-6631	93/05
Spagnolo, Joe	4410 Lincoln Rd	Louisville, KY, 40220	USA	ESES		93/10
Spector, Raul	9500 Sperry Rd	Mentor, OH, 44060-8199	USA	ESES/NFS	216/946-4400	93/04
Spokane Co Conservation Dist,	222 N Havana	Spokane, WA, 99202	USA	ESES/ESS/NFS/CES	509/353-2120	93/10
Sprengnether, Michele	301 Hunon Ave. #1	Cambridge, MA, 02138	USA	ESS	617/661-7678	93/10
Squillo, Michael	15677 Ott Ave	Glen Ellyn, IL, 60137	USA	ESES	708/790-4883	93/04
Staffileno, Jan	572 S Jefferson	Casper, WY, 82601	USA	ESES	307/517-4542	94/02
Staiano, Joe	4044 Carpenter Ave	Bronx, NY, 10466	USA	ESES/NFS/CES	718/956-4327	93/02
Stanford, Richard	414 Nicollet Mall	Minneapolis, MN, 55401	USA		612/330-6042	93/10
Staniforth, Susan	1404 200th Street	Langley, BC, V3A 4P4	CANADA	NFS/CES	604/530-4983	93/07
Stapp, William	2050 Delaware Drive	Ann Arbor, MI, 48103	USA		313/761-4854	93/05
Starz, Jane	Brown Cty Courthouse/Box 248	New Ulm, MN, 56073	USA	ESES/NFS	507/359-7900	93/09
Stayton, Vicki	581 Robin Hood Trail	Bowling Green, KY, 42101	USA	ESES	502/745-4641	93/10
Steel, James	Huntsman Marine Science Center	St Andrews, NB, E0G 2X0	CANADA		506/529-8895	93/11
Stein, Roland	RR 2, Box 54A	Pratt, KS, 67124	USA		316/672-5911	93/04
Steinbach, Alice	70 Cedar Lake	Chelsea, MI, 48118	USA	NFS/CES		93/09
Steinbach, Raymond	70 Cedar Lake	Chelsea, MI, 48118-9734	USA	CES	313/973-3459	93/09
Stenstrup, Al	2274 Manley Drive	Sun Prairie, WI, 53590-9686	USA		414/251-2229	93/08
Stephan, Sheryl	Eastern KY Univ	Richmond, KY, 40475	USA	NFS	606/622-1835	93/10
Stevens, Kris	4345 Rio Tinto Avenue	Sacramento, CA, 95821	USA	ESES/NFS/CES	916/481-4912	93/09
Stevenson, Robert	206 Ivyhurst Rd	Aberst, NY, 14226	USA	ESES	716/645-3162(W)	93/12
Stewart, Gerald	5100 Fort	Waco, TX, 76710	USA		817/772-3261	93/09
Stine, Sharon	1230 Grace Drive	Pasadena, CA, 91105	USA	ESS	714/869-4657	93/11
Stivers, Robert	Pacific Lutheran University	Tacoma, WA, 98447	USA		206/535-7318	93/05
Stokes, David	1111 E Brown Deer Rd	Milwaukee, WI, 53217	USA	NFS	414/352-2880	93/05
Stone, Jody	Univ of Northern IA	Cedar Falls, IA, 50614	USA	ESES	319/273-2414	93/05
Stone, Joel	118 Schenk St	Madison, WI, 53714	USA		608/266-2711	93/09
Stoner, Darleen	5500 University Pkwy	San Bernardino, CA, 92407	USA	ESES	714/880-5640	93/03
Stowell, Craig	1920 Oakdale Ave	West St Paul, MN, 55118	USA	NFS/CES	612/455-4752	93/12
Strand, Liz	PO Box 2947	Austin, TX, 78768-2947	USA	ESES	512/467-3631	93/06
Straughan, Pat	RD 2, Box 272	Branchville, NJ, 07826	USA	ESES/NFS/CES	201/948-4646	93/04
Street, Chris	6203 Marcial	San Diego, CA, 92111	USA	ESES	619/467-1864	93/12
Strickler, John	2610 Claflin Rd	Manhattan, KS, 66502	USA		913/537-7050	93/03
Stroha, Laura	SPEA 461	Bloomington, IN, 47408	USA		812/855-9783	93/11
Strong, S	1807-A Blue Crest Dr	Austin, TX, 78704	USA		512/476-7421	93/01
Stubbs, Harriett	601 Blenheim Drive	Raleigh, NC, 27612	USA	ESES	919/515-3311	93/05
Stump, Bart	300 N Park St	Dallastown, PA, 17313	USA			93/12
Sturgill, Carolyn	306 Madison St	Whitesburg, KY, 41858	USA	ESES/ESS	606/633-0108	93/09
Sullivan, Elaine	34 BAKER AVENUE	LEXINGTON, MA, 02173	USA	CES		LIFE
Sullivan, Lawrence	2033 E Speedway	Tucson, AZ, 85719	USA	NFS	602/621-3621	93/04

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Superintendent,	National Mont/# 185	Florissant, CO, 80816	USA	NFS	719/748-3253	93/01
Susskind, Yve	1322 S Forest Ave	Ann Arbor, MI, 48104	USA	ESES		93/04
Sutton, Mary Beth	400 Garden Rd	Chattanooga, TN, 37419	USA	ESES/NFS	615/821-1160	93/09
Suales, Janine	5658 Cornwallis St	Halifax, NS, B3K 1B5	CANADA	ESES/CES	902/425-4474	93/03
Swander, Lynda	11688 Bradshaw	Overland Park, KS, 66210	USA		913/469-8500	93/08
Swartout, Deborah	Grad School	Keene, NH, 03431	USA	ESES/NFS/CES	603/357-3122	93/07
Sweitaeln, Joel Anne	PO Box 2861	Pittsburgh, PA, 15230	USA	ESES/NFS	412/232-3444	94/02
Sydow, Wendy	8914 Walden Rd	Silver Spring, MD, 20901-3823	USA	ESES/NFS		93/02
Sykes, Sheri	8925 Leesburg Pike	Vienna, VA, 22184	USA	NFS/CES	703/790-4371	94/12
Sykora, Wendy	4PO	San Francisco, CA, 96301-0005	USA	ESES/CES		93/06
Szuhy, Donna	4648 JOHNSTOWN ROAD	GAHANNA, OH, 43230-1824	USA	CES		LIFE
TN EE Association,	Great Smoky Mtn/R 1, Box 700	Townsend, TN, 37882	USA		615/448-6709	AFIL
TVA Library, 2	100 Van Morgan Dr	Golden Pond, KY, 42211-9000	USA			94/03
TX Asc for Env't Ed,	7032 Creek Bend	Dallas, TX, 75252	USA		214/248-6283	AFIL
Talbot, Janet	1607 Granger	Ann Arbor, MI, 48104	USA	ESS	313/964-4350	93/10
Tallman, Dr. Erika	Box 777	Aberdeen, SD, 57401	USA	ESES/ESS	605/226-2255	93/07
Talsman, Valerie	Star Rt. Box 15/Shively Rd	Bruce Crossing, MI, 49912	USA	ESES	313/741-7117	93/10
Tanner, Thomas	1971 205th St	Boone, IA, 50036	USA	ESS	515/294-7253	93/02
Tanzer, Claudia	8510 Mysen Ct	Cordova, TN, 38018	USA	ESES		93/04
Taylor, Joyce	1921 NE 29th Street	Lighthouse Poin, FL, 33064	USA	ESES/CES	407/367-3295	93/09
Teich, Thea	11500 Northlake Dr	Cincinnati, OH, 45249-1642	USA	NFS	513/530-6235	93/04
Tepper, Frank	2420 Marlene Way	Henderson, NV, 89014	USA	ESES/CES		93/12
The Environmental Magazine,	PO Box 5098	Westport, CT, 06881	USA			NON
The National Park Foundation,	1101 17th St., NW/Suite 1102	Washington, DC, 20036	USA	CES	202/785-4500	93/07
The OH Alliance for the Env't, 2	445 King Avenue	Columbus, OH, 43201-2631	USA		614/421-7819	AFIL
The Ohio State Univ,	210 Kottman Hall 202	Columbus, OH, 43210-1085	USA		614/422-2265	93/10
The Sage Foundation,	Ste 405/21 Water Street	Vancouver, BC, V6B 1A1	CANADA	ESES/CES	604/669-6298	94/02
The Wilderness Society 2,	900 17th St., NW	Washington, DC, 20006-2596	USA		202/833-2300	93/09
Theiss, Nancy	2614 N Hwy 53	LaGrange, KY, 40031	USA		502/222-9368	93/03
Thiel, Nadia Henry	24 East Ave/Ste 1300	New Canaan, CT, 06840	USA		203/966-2099	NON/90/07
Thiele, Eberhard	RR-3, Box 1455	Fort Kent, ME, 04743	USA	ESS	207/834-3162	93/10
Thiele, Harold	7414 Dalgren Drive	Aftton, MO, 63123	USA	ESES	314/842-3870	93/10
Thomas, Susan	903 Goodrich Ave #A	St Paul, MN, 55105	USA		612/625-1977	94/03
Thomas, Teresa	540 Plant & Soil Sciences	E Lansing, MI, 48824	USA	ESES		94/03
Thomas-Jimenez, Cynthia	1615 N St Mary's/Box 15830	San Antonio, TX, 78212	USA	ESES	512/222-2204	93/02
Thomashow, Cynthia	PO Box 366	Dublin, NH, 03444	USA		603/357-3122	93/09
Thompson, Bruce	937 Browning Avenue	Salt Lake City, UT, 84105-2307	USA	ESES/ESS/NFS/CES	801/467-3240	94/03
Thompson, Joan	60 Pavane Linkway	Don Mills, ON, M3C 2Y6	CANADA	ESES	416/396-2200	93/03
Thompson, Kimberly	12304 Holsclair Hill Rd	Brooks, KY, 40109	USA	NFS/CES	502/561-6103	93/01
Thompson-Tucker, Richard	PO Box 1170	Conway, NH, 03818	USA	ESES/NFS	603/447-6991	92/11
Thoreen, Janet	6840 State Rt 718	Pleasant Hill, OH, 45359-9705	USA	NFS	513/676-2514	93/12
Thorne Ecological Institutes,	5398 Manhattan Circle	Boulder, CO, 80303	USA	ESES/CES	303/459-3647	93/12
Thornton, Beth	HC 69 Box 121	Provencal, LA, 71468	USA	ESES/CES	318/672-9841	93/04
Todt, David	Shawnee State University	Portsmouth, OH, 45662	USA	ESS	614/355-2239	93/09
Togawa, Takashi	2-B20-301 Matsubara	Soka-shi, Saltama, 340	JAPAN	CES	03-3203-4141	93/10
Toler, Elizabeth	PO Box 790	Richmond, VA, 23206	USA	ESES/NFS	804/644-5000	93/09
Tooley, Pam	Rt. 6, Box 22	McKinney, TX, 75069	USA	NFS	214/542-5566	93/11
Toonsen, Duane	Grimes Bldg	Des Moines, IA, 50319	USA	CES	515/281-3146	LIFE
Torgler, Monica	Apartado Aereo 77700 Zona 2	Santa Fe Bogota, Columbia,	S AMERICA			93/01
Toscano, Sharon	1982 Summit Ave S	St Paul, MN, 55105	USA	ESES/ESS/NFS/CES		93/03
Toth, Jane	4330 Tanager Dr	South Euclid, OH, 44121-3522	USA	ESES	216/587-3200	94/01

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NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Toth-King, Susan	2705 Maplewood Dr	West Palm Beach, FL, 33415	USA	ESES/NFS	407/686-6600	93/09
Tourtillott, Leeann	2160 Penny Lane	Napa, CA, 94559	USA		707/258-0540	93/04
Townsend, Robert	230 E 9th St-11th Fl	Cincinnati, OH, 45202-2198	USA	ESES	513/369-4964	93/04
Traina, Frank	103 Gibson Lane	Wilders, KY, 41076	USA	ESES/NFS/CES	606/781-5502	94/01
Tranbaki, Jani	Gujarat Housing Bd/Kalavad Rd	Rajkot, 360001,	INDIA	ESES	43957-44098	93/01
Tribe, David	19 Nalya Road	Cromer N SW, 2099,	AUSTRALIA	ESES/NFS/CES	(02)907-9672	93/10
Trisler, Carmen	3 Foxworth Lane	Cincinnati, OH, 45218	USA	ESES/NFS	614/292-1078	93/10
Troup, Victoria	2055 Purcell Way/Capilano Coll	N Vancouver, BC, V7J 3H5	CANADA	ESS	604/986-1911	93/10
Troy, Thomas	1903 Branston Rd	Baltimore, MD, 21228	USA	NFS		LIFE
Truex, Barbara	10001 E Morrill Way	Tucson, AZ, 85769	USA	ESES	602/749-1472	94/01
Tuber, Karen	3519 Greenwich St	Columbus, OH, 43224-3447	USA	NFS/ESS		93/10
Tucker, Kristen	62 Marston Avenue	San Francisco, CA, 94112	USA	ESES	415/337-9544	93/06
Tudor, Margaret	5130 Rubac Drive S.E.	Olympia, WA, 98503	USA	ESES, NFS	206/753-1702	93/04
UFR Sea Grant, 7	HUC Station	Humacao, PR, 00661	USA	ESES/ESS/NFS	809/850-0710	93/04
US EPA,	345 Courtland St NE	Atlanta, GA, 30365	USA			93/03
US Geological Survey,	PO Box 25046 MS 416	Lakewood, CO, 80225	USA		303/236-9404	93/08
UT Society for EE,	230 S 500 E, Suite 280	Salt Lake City, UT, 84102	USA		801/328-1549	AFIL
Univ Interamericana de PR,	PO Box 363255	San Juan, PR, 00936-3255	USA	NFS		94/01
Univ of Alabama in Huntsville, 2	SB 201/Environmental Studies	Huntsville, AL, 35899-0001	USA	ESES	205/895-6361	94/02
Univ of TX at Arlington. EITT,	PO Box 19050	Arlington, TX, 76019	USA	ESES/ESS	817/273-2300	93/11
Univ of WA Libraries,	Serials Division	Seattle, WA, 98195	USA			92/11
Univ of WI-Madison/IES,	1007 WARF/610 Walnut	Madison, WI, 53705	USA			93/12
Urbanik, Sandra	1318 N Lloyd	Aberdeen, SD, 57401	USA	ESES/NFS	605/226-0980	93/09
Urien, Laura	PO Box 1582	Marathon, FL, 33050	USA	NFS	305/743-4771	93/04
Usher, Laurie	9730 Manitou Place	Bainbridge Isle, WA, 98110	USA	ESES		93/06
VA Assoc for EE, 7	% Council on Env't/202 N 9th	Richmond, VA, 23219	USA		804/786-4500	AFIL
Vallentyne, Jack	36 Longwood Rd N	Hamilton, ON, L8S 3V4	CANADA	NFS	416/336-4586	93/10
Van Creveld, Barbara	2820 SE Ferry Slip Rd	Newport, OR, 97365	USA	ESES/NFS/CES	503/867-3474	94/01
Van Derbloemen, Agnes	1703 Lilac Dr	MANITOWOC, WI, 54220-6703	USA	CES		LIFE
Van Gelderen, Ines	19 Breeze Ave #1	Venice, CA, 90291	USA	ESES/ESS/CES	310/314-2235	94/02
Van Hook, Tonya	Box 51 Psychology Bld	Gainesville, FL, 32611	USA	CES	904/376-6319	93/08
Van Norman, Karen	500 Lafayette Rd	St Paul, MN, 55155-4007	USA	CES	612/297-2423	93/09
Van Schoik, D. Rick	One Bayview Drive	Huntington, NY, 11743	USA	ESES/NFS/CES		93/01
Van Wissen, Fiona	1312 Robie St	Halifax, NS, B3H 3E2	CANADA	NFS	902/494-3632	92/11
Van der Swissen, Betty	131 Natural Res Bld	East Lansing, MI, 48824-1222	USA		517/353-5190	LIFE
Vasilios, Psaellidas	Amarissos	Attikia 19013, Hellas,	GREECE	ESES/ESS/CES	031-99.28.96	93/12
Vaughan Chavez, Dorothy	4107 Mark Rae Dr	Austin, TX, 78727	USA	ESES/ESS	512/218-1122	93/07
Velazquez, Ivelise	1120 Connecticut Ave/Ste 900	Washington, DC, 20009	USA	CES	202/857-5662	94/02
Velen, Doris	405 N Chestnut	Lindsborg, KS, 67456	USA	CES		93/11
Ver Steeg, Gay	Rt. 4, Box 205-B	Porterville, CA, 93257	USA	ESES	805/548-6482	93/12
Versage, Linda	4127 Woodlawn Ave N	Seattle, WA, 98103	USA	ESES/NFS/CES	206/632-6231	94/01
Vickery, John	2010 Mass Ave., NW, Ste 420	Washington, DC, 20036	USA	CES		93/10
Vignaroli, Vivian Lavalle	Laprids 1373/San Isidro (1642)	Buenos Aires,,	ARGENTINA		703/528-7059	93/04
Vining, Stewart	1300 Lafayette E#509	Detroit, MI, 48207	USA		313/256-9362	93/08
Visitor Act Branch/C.P.S.,	Environment Canada/4th Floor	Ottawa, ON, K1A 0H3	CANADA			93/06
Voel, Robert	1230 E Honey Creek Rd	Oregon, IL, 61061	USA		815/732-2111	93/10
Voel, Sonia	1230 E Honey Creek Rd	Oregon, IL, 61061	USA		815/732-2111	93/10
Volgstadt, Genny	500 Kings Gap Rd	Carlisle, PA, 17013	USA	ESES	717/486-5031	93/08
Wolk, Trudi	Curriculum & Instruc	Carbondale, IL, 62901	USA	ESES	618/453-4214	94/02
Woodward, Jan	14-20 Port Royal St	Kingston,,	JAMAICA	NFS	809/922-9267	93/10
Voorhis, Ken	Rt #1 Box 700	Townsend, TN, 37882	USA	ESES/NFS	615/448-6709	94/02

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Votaw, Thom	Box 3 CUR NMSU	Las Cruces, NM, 88003	USA	ESES	505/646-6273	96/10
WA Dept of Fisheries,	PO Box 43155	Olympia, WA, 98504-3155	USA			93/11
WA EE Association,	% Dept of Ecology	Olympia, WA, 98504-7600	USA		206/459-6167	AFIL
WI Assoc for EE, Inc.,	7290 County MM	Amherst Junction, WI, 54407	USA		715/824-2428	AFIL
WY Game & Fish Dept,	5400 Bishop Blvd	Cheyenne, WY, 82006	USA	ESS		93/08
Wade, Suzanne	1450 Linden Drive	Madison, WI, 53706	USA	NFS/CES	608/265-3257	93/11
Waldo, Cherie	5332 Constitution Rd	San Diego, CA, 92117	USA	NFS/CES	619/483-9355	94/01
Walker, Susan	101 Locust Place	Williamsburg, VA, 32188	USA	NFS	804/262-4822	94/02
Wallace, Cindy	5333 Zoo Dr	Los Angeles, CA, 90027	USA	NFS	213/666-4650	93/11
Wals, Arjen	Hollandseweg 1/6706 KN	Wageningen,,	THE		+31 8370 84833	93/10
			NETHERLANDS			
Wambach, Carla	3000 Villard #189	Helena, MT, 59601	USA	CES	406/442-2220	93/08
Wang, Dennis	12 Hullcrest Ln	Shelburne, VT, 05482	USA	ESES/NFS		93/11
Wanless, Mary	3146 Shadow Lane	Topeka, KS, 66604	USA	ESES/NFS/CES	913/232-4747	93/07
Ward, Tara	417 Detroit St	Ann Arbor, MI, 48104	USA	ESES/NFS	313/995-5888	93/10
Washburn, Julia	7012 Poplar Avenue	Takoma Park, MD, 20912	USA	NFS	202/619-7077	93/09
Wasserman, Pamela	1400 Sixteenth St. NW	Washington, DC, 20036	USA	ESES	202/332-2200	93/04
Watson, Michael	Blue Ridge Acres/Box 7	Harpers Ferry, WV, 25425	USA	NFS	304/535-6215	94/02
Watson, Nancy	232 D Mark Twain Circle	Athens, GA, 30605	USA	NFS/CES	706/549-6171	94/02
Webb, Jr, Frederick	1206 North Park Rd	Plant City, FL, 33566-2799	USA			93/11
Webber, Glenn	220 4 Ave SW/Box 2989	Calgary, AB, T2P 3H8	CANADA		403/292-4759	93/09
Weber, Gary	455 N Woods Mill Rd	Chesterfield, MO, 63017	USA	ESES	314/469-8520	93/03
Weber, Jim	366 Fenwick	San Antonio, TX, 78239	USA	ESES	512/684-1414	93/09
Weilbacher, Mikael	PO Box 49	Narberth, PA, 19072	USA	ESES/NFS	215/660-9455	93/04
Weiser, Brenda	14300 N Penn #178	Oklahoma City, OK, 73134	USA	ESES/NFS/CES	405/521-2384	LIFE
Welsh, Bill	PO Box 12039	Denver, CO, 80212	USA	ESES/NFS	800/892-0777	93/07
Wertz, Susan	6034 Butterball Lane	Olympia, WA, 98506	USA		206/493-2900	93/09
Wescott, Celeste	965 Mervin Rd	Raleigh, NC, 27606	USA	ESES/CES	919/733-7123	93/09
Wester, Charles	6709 Cresthill Dr	Davenport, IA, 52806-1575	USA		319/359-1371	93/09
Western Regional EE Council,	4014 Chatham Lane	Houston, TX, 77027	USA		713/622-2219	AFIL
Westmoreland, Gail	1103 Forest Path	Stone Mountain, GA, 30088	USA	ESS	404/727-0619	93/12
Weston, Shann	ODFW PO Box 59	Portland, OR, 97207	USA			93/09
Wheeler, Ann	59800 S Hwy 97	Bend, OR, 97702	USA	NFS	503/382-4754	93/01
Whelan-Enns, G	Box 22	Saint Agathe, MA, R06 1Y0	CANADA		204/802-2481	93/11
White, Laura	2948 Trem Rd	Fuguay-Varina, NC, 27526	USA			93/05
Whitehouse, Patricia	PO Box 1006	Yreka, CA, 96097	USA		916/842-5763	93/10
Hickless, Mimi	211 N. 12th St.	Lincoln, NE, 68508	USA		402/474-5655	93/09
Wicks, David	3200 Tucker Station	Louisville, KY, 40299	USA	NFS	502/473-3295	93/09
Wilcox, Lisa	8711 2nd Avenue	Silver Spring, MD, 20910	USA	ESES/NFS/CES	202/333-1063	93/10
Wiley, Marcia	8222 Ashworth Ave North	Seattle, WA, 98103	USA		206/525-4465	93/09
Wilke, Richard	UW - Stevens Point	Amherst Jct, WI, 54481	USA	ESES/NFS/CES	715/346-2853	93/05
Wilkins, Dennis	Campus Box 287	Boulder, CO, 80309-0287	USA		303/443-2450	93/11
Williams, Christopher	179 W Kent Dr	Chandler, AZ, 85224	USA	NFS/CES	602/640-5183	94/10
Williams, Frank	9021 Knights Ct	Indianapolis, IN, 46250	USA	ESES	317/254-5412	93/10
Williams, Kathy		Palmdale, CA, 95043	USA	NFS		93/08
Williams, Peggy	23504 3rd Ave SE	Bothell, WA, 98021	USA	ESS		93/07
Williams, Robert	Box 2222	Edwardsville, IL, 62026	USA	ESES	618/692-3788	93/09
Williams, Tami	668 Hollister Hall	Ithaca, NY, 14853-3501	USA		607/255-7535	92/12
Williams, Valeria	1190 Durfee Avenue	S. El Monte, CA, 91733	USA	ESES/CES	818/302-0247	93/07
Williams-Bulliner, Melissa	1200 So Lake Shore D	Chicago, IL, 60605	USA	ESS	312/986-2289	94/01
Williamson, Ron	2050 Guelph Line	Burlington, ON, L7R 3Z2	CANADA	ESES/ESS/NFS/CES	416/335-3663	93/02

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Wilson, Dee Ann	12108 E 57th Terrace	Kansas City, MO, 66133	USA	ESES	816/871-8350	93/07
Wilson, John	996 Aullwood Rd	Dayton, OH, 45405-2519	USA	ESS	513/274-3059	LIFE
Wilson, Kristie	2009 Feather Lane	Lewisville, TX, 75067	USA	ESES/ESS/NFS/CES	817/565-2985	93/09
Wilson, R. J.	1201 Wesleyan	Ft. Worth, TX, 76105	USA	ESES	817/531-4440	93/09
Wilson, Ruth	3226 Goddard Rd	Toledo, OH, 43606-1828	USA	ESES/NFS	419/372-7278	93/09
Wilson, William	#2 921 7th Ave North	Saskatoon, SK, S5T 2V7	CANADA	ESES/NFS/CES	306/966-7711	93/10
Wilson, Gina	8925 Leesburg Pike	Vienna, VA, 22184-0001	USA	ESES/CES	703/790-4582	94/01
Wing-Ronca, Melissa	15220 Leslie	Oak Park, MI, 48237	USA	ESES	313/967-4074	93/07
Winkelman, Doretta	12702 Via Cortina	Del Mar, CA, 92014	USA		619/793-0411	93/09
Winstel, R. Allen	2651 Cornwall Dr	Cincinnati, OH, 45231-2939	USA	NFS	513/563-4513	94/03
Winther, Austin	617 N Springer	Carbondale, IL, 62901	USA	ESES	618/458-4213	93/10
Wintz, Mildred	1615 Terwood Rd	Huntingdon Vall, PA, 19006	USA	ESES/NFS/CES	215/659-7164	94/02
Wise, Mirian	mail returned	New York, NY,	USA			93/08
Wishart, A.	10040 El Pinar Dr	Knoxville, TN, 37922	USA	ESES/CES	615/974-6660	93/11
Withington, Janice	4070 Kendall Street	Wheat Ridge, CO, 80033	USA	ESES	303/237-7711	93/12
Wittenberger, Ted	Dept of State/Banjul	Washington, DC, 20521-2070	USA	NFS/CES		93/11
Wittorff, Sue	PO Box 579	Carmichael, CA, 95609	USA	ESES/NFS/CES	916/489-4918	93/09
Wobst, Susan	36 College Hill Rd	Soaerville, MA, 02144	USA			93/04
Woelflein, Luise	4004 Edmunds St NW #3	Washington, DC, 20007	USA	ESES/NFS	202/337-5833	93/10
Wolf, Nancy	625 Broadway	New York, NY, 10012	USA	ESES/ESS	212/677-1601	94/01
Wolfe, Carl	1130 H Street, #709	Lincoln, NE, 68508	USA	ESS/CES	402/471-5581	93/09
Wolfe, Francine	886 Cannery Row	Monterey, CA, 93940	USA	ESES/NFS/CES	408/648-4849	93/07
Wolff, Robert	6601 W College	Palas Heights, IL, 60463	USA		708/597-3000	93/07
Wolff, TCDT, Dennis	PO Box 519	Nukualofa, TONGA,	SOUTH PACIFIC	ESES/NFS/CES		93/06
Wood, David	6706 5th St. NW	Washington, DC, 20012	USA	ESES/CES	202/537-8150	93/05
Wood, Sonya	25371 Oak Ridge Dr	Orange Beach, AL, 36561	USA	NFS	904/477-0953	93/07
Woods, Aaanda	150 W Univ Blvd	Melbourne, FL, 32901	USA	ESES/NFS	407/768-8000	93/04
Woodward, Laura Elliott	4540 Vista de la Tierra	Del Mar, CA, 92014	USA	ESES/NFS	619/792-1260	94/01
World Wildlife Fund-US, 5	1250 24th St NW 500	Washington, DC, 20037	USA		202/293-4800	93/10
Worth, Julie	1420 Taughanock Blvd	Ithaca, NY, 14850	USA	NFS		93/03
Wright, Ann	100 Van Morgan Drive	Golden Pond, KY, 42211	USA		502/924-1201	93/07
Wright, Emmett	237 Bluemont Hall	Manhattan, KS, 66506-5301	USA	ESES/NFS/CES	913/532-7838	93/12
Wylie, Janet	1240 Astor #2021	Ann Arbor, MI, 48104	USA	NFS	313/769-0391	93/01
Yackey, Sister Jeanene	2307 S Lindbergh	St. Louis, MO, 63131	USA		314/862-3456	93/11
Yaich, James	1600 Riverside Rd	Jamestown, NY, 14701	USA	NFS	716/569-2345	94/03
Yandala, Deborah	2410 Thurmont Rd	Akron, OH, 44313-5444	USA	NFS	216/836-8328	93/03
Yaple, Charles	PO Box 2000	Cortland, NY, 13045	USA	ESES/ESS/NFS	607/753-4968	LIFE
Yee, Ms Bev	9820-106th St	Edmonton, AB, T5K 2J6	CANADA		403/427-6310	93/07
Yellin, Joseph	3224 Shelburne Road	Baltimore, MD, 21208-5623	USA	ESS	410/836-4434	93/04
Yockers, Dennis	3755 Token Rd	DeForest, WI, 53532	USA	ESES/CES	608/267-9268	94/03
Yonusaitis, Linda	2890 Morgan Drive	Wantagh, NY, 11793	USA	ESES/CES		93/03
Young, Carolyn	811 SW Sixth Ave	Portland, OR, 97204	USA	ESES	503/229-6271	93/02
Young, Charlotte	9700 S Cass Avenue	Argonne, IL, 60439	USA		708/252-3189	93/10
Younger, Patricia	A Blok D10	Etiler, Istanbul,	TURKEY			92/12
Yungwirth, Lori	320 Tranquil Hills	Lenoir, NC, 28645	USA	ESES/NFS/CES	704/758-7030	93/04
Zalewski, Jill	401 Fensalir Ave	Pleasant Hill, CA, 94523	USA	ESES/NFS		93/01
Zar, Jerrold	Dept of Biological S	DeKalb, IL, 60115	USA	ESS	815/753-0433	LIFE
Zavala, Sara	9 Gas Light Court	Gaithersburg, MD, 20879	USA	NFS/CES	301/990-8537	94/02
Zemach, Peggy Millett	2001 Colorado Blvd	Denver, CO, 80205	USA	NFS	303/370-6321	LIFE
Zeph, Paul	11 Railroad Ave	Shiremanstown, PA, 17011	USA	NFS	717/783-7005	94/03

NAAEE MEMBERSHIP AS OF MARCH 1993

NAME	ADDRESS	CITY, STATE, ZIP	COUNTRY		PHONE	RENEW
Ziegler, Tim	1525 North Rim Ct #238	San Diego, CA, 92111	USA	ESES	619/262-0763	93/10
Zuman, John	72 Hibbert St	Arlington, MA, 02174	USA	ESES/NFS	617/643-1975	93/04
Zweizig, Miriam	1528 N Wakefield	Arlington, VA, 22207-2238	USA	ESES/ESS		93/10

994.03

Who's Who in Environmental Education

A Directory of Organizations and Agencies

Premier Edition, 1993

compiled and published by

The Pembina Institute for Appropriate Development
Drayton Valley, Alberta

059(71)370:577

P 4
1993

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Acknowledgements

The Pembina Institute gratefully acknowledges the financial support provided by Employment and Immigration Canada through a Section 25 Unemployment Insurance Job Creation Program. Their assistance has made possible the research, systems development, and compilation of the Directory.

Our sincere thanks are extended to those who took the time to fill out and return the questionnaires and to provide us with information about agencies and organizations included in this directory.

A final note of appreciation. Thank you to all the educators, whether you are working in the formal education system or in the grassroots of the community, for your energy and enthusiasm for protecting the environment. This directory has been created with the hope that it will make your job easier.

Who's Who in Environmental Education

A Directory of Organizations and Agencies, 1993

To order additional copies of this directory please contact:

The Pembina Institute

Box 7558

Drayton Valley, AB

TOE 0M0

Ph: (403) 542-6272 Fax: (403) 542-6464



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Prices are subject to change without notice.

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INTRODUCTION

There are hundreds of organizations providing environmental education services and programs in Canada - services which range from making public presentations and designing educational resources to providing post-secondary degree programs. As environmental education is increasingly integrated into classrooms, community service projects, and public education programs, the need for ready access to credible information about who is doing what in environmental education in Canada has become essential.

Education will play a crucial role in equipping Canadians with the knowledge, skills, and values necessary for resolving problems over the long term. To make the most efficient use of scarce human and financial resources, people requiring environmental education services should be able to identify the educational support organizations closest to their community, quickly and easily. As well, educators who are responsible for developing and implementing environmental education programs need to be able to identify each other - to share information, expertise, and experience.

This Directory is an attempt to meet these needs by providing detailed, accessible information about organizations and agencies that offer such services and programs in a single, effective reference tool.

What's Inside?

The Directory provides listings of over 350 environmental education organizations and agencies. Each organizational listing includes the following information:

Contact information: the name, address, and phone numbers of the organization as well as the names and phone numbers of up to two representatives.

Purpose or aims of the organization: including the three issue categories with which their environmental education work is most concerned.

Nature of the organization: including its type classification, structure, and membership information.

Educational services or programs offered: including identification of target audiences and the name and frequency of the group's main environmental publication.

The organizations and agencies listed represent a variety of perspectives, and have expertise and information across a full spectrum of environmental issues.

To improve the usefulness of the Directory, we have developed 40 broad issue categories from which we asked organizations to classify their

three primary areas of educational concern. (Note that these three issues represent their major focus - organizations may be active in many other areas.)

The issue categories are our attempt to categorize the huge body of environmental concerns in a manageable format. We have not provided a category for every concern, but most issues fit into one of the categories in an intuitive fashion. Turn to page x for the full list of issue categories, each of which is explained briefly.

We have also developed a **keyword cross reference** (see page xii) which makes the link between common environmental terms and the issue categories used in the Directory. Those interested in rainforest protection for example, will be directed to Forest Issues by the keyword cross reference to find relevant information.

The organizations listed have been indexed in a variety of ways to make your searches faster:

Environmental Issues Index: lists organization names alphabetically within the issue categories. Once you have determined which issues to search under using the keyword cross reference, this index will narrow your search by identifying a select group of organizations from which to choose.

Province Index: lists organization names alphabetically within the province in which the group is located. This index will assist those seeking local resources to identify those active their region.

Networking Association Index: lists organizations that specialize in networking around environmental education. If you cannot find an appropriate group in the Directory, contact one of these organizations for help identifying additional groups in your region.

Alphabetical Index: lists organization names alphabetically for faster name searches.

We Want to Hear From You!

This is the first edition of the Directory. We plan in future editions to increase the coverage of both english- and french-language environmental education organizations and agencies.

We would like in that next edition to incorporate your comments and corrections. Please take a few moments to send us your observations. As well, if you know of groups who should be listed in the next edition, or of changes to the information printed here, use the form on pages vii and viii to let us know about them.

Who's Who in Environmental Education: A Directory of Organizations and Agencies - Listing Form -

Return to: The Pembina Institute
Box 7558, Drayton Valley, AB T0E 0M0
ph: (403) 542-6272 fax: 542-6464

For Office Use Only

Set: _____
Entered: _____ By: _____
Follow-up: _____

ALL NAME OF ORGANIZATION OR AGENCY: _____

Acronym: _____

ADDRESS: _____

City: _____ Province: _____ Postal Code: _____

Organization Phone: (_____) _____ Fax: (_____) _____

OPERATING LANGUAGE: _____ (indicate E/english, F/french), or B/oth) ELECTRONIC MAIL I.D. _____

CONTACTS: (name: position/title)

1: _____ Phone: _____ hm wk (circle one)

2: _____ Phone: _____ hm wk (circle one)

ISSUES List the three top-priority environmental issues which your programs/services focus on (used for directory indexes):

_____, _____, _____ (please list codes)

AB	Aboriginal Issues	ES	Ethics, Spirituality & Philosophy	OU	Outdoor Recreation
AD	Acid Deposition	GN	General Environmental Issues	PP	Population
AG	Agriculture	GL	Global Issues	PS	Pesticides
AQ	Air Quality	FR	Forest Issues	RC	Recycling & Waste Reduction
AR	Arctic & Northern Issues	HZ	Hazardous Chemicals	RM	Resource Conservation/Management
BT	Biotechnology	HL	Health	SD	Sustainable Development
CC	Climate Change	ID	International Development	UR	Urban Issues
CN	Consensus Building & Conflict Resolution	LD	Land Use Conflict/Management	TR	Transportation
CR	Critical Thinking re: Environment	LW	Law & Government Policy	WM	Water Management
EM	Economy & Environment	LF	Lifestyle	WQ	Water Quality
EC	Energy Conservation & Renewables	MR	Marine	WD	Wilderness & Parks
EN	Energy Development (conventional)	ML	Militarism & Environment	WL	Wildlife & Habitat
ET	Environmental Technology	MN	Mining (non-energy)		Other (please specify) _____
		NU	Nuclear Energy		_____

You may identify up to 8 additional issue areas: _____ (please list codes)

TYPE OF ORGANIZATION (select a maximum of 3 from the list below): _____

AED	Adult Education Organization	PGP	Performance Group
BRD	School Board	PER	Producer of Educational Resources
C/N	Coalition or Network of NGOs*	PRO	Professional Association
DEV	Development NGO*	PEE	Professional Environmental Education Group
ENG	Environmental NGO* or Conservation Group	PUB	Publisher
EDU	Formal Educational Institution	ONG	Other NGO* or Public Interest Group
FUN	Funding or Grant Agency	REL	Religious Institution
GOV	Government Department, Agency or Board	RES	Research Institution
IND	Industry Association or Committee	SPK	Speaker (Individual)
LAB	Labour Organization	TCH	Teacher Support NGO*
LER	Leamer or Resource Centre	TTA	Teacher Training Agency
MED	Media (Press) Agency	YTH	Youth or Student Organization
NAT	Native Organization		Other (please specify) _____

*NGO Non-Governmental Organization

The Directory of E.E. Organizations and Agencies
Listing Form - page 2

PURPOSE OR AIMS OF THE ORGANIZATION *re: environmental education* eg. to protect..., to inform..., to produce..., etc.:

*
*
*
*

DESCRIBE THE NATURE OF THE ORGANIZATION structure, incorporated status, affiliation or branch relationships, etc.:

SERVICES OR PROGRAMS PROVIDED: (*indicate the primary environmental education services/programs offered - max. 15*)

- | | | |
|---|---|--|
| <input type="checkbox"/> Classroom Visits | <input type="checkbox"/> Field Trips | <input type="checkbox"/> Post-secondary Degrees/Diplomas |
| <input type="checkbox"/> Computer Bulletin Board Information | <input type="checkbox"/> Film Festivals | <input type="checkbox"/> Public Workshops/Education Programs |
| <input type="checkbox"/> Computer Network | <input type="checkbox"/> Funding Initiatives or Organizations | <input type="checkbox"/> Public Resource Library |
| <input type="checkbox"/> Conferences | <input type="checkbox"/> Interpretive Programs | <input type="checkbox"/> Publications |
| <input type="checkbox"/> Corporate / Industry Planning Strategies | <input type="checkbox"/> Media Contacts | <input type="checkbox"/> Recycling Program |
| <input type="checkbox"/> Credit Courses | <input type="checkbox"/> Music/Drama Production | <input type="checkbox"/> Resource Lists/Information |
| <input type="checkbox"/> Develop Educational Resources | <input type="checkbox"/> Networking Facilitation | <input type="checkbox"/> Speaking Events/Public Presentations |
| <input type="checkbox"/> Ecotourism Opportunities | <input type="checkbox"/> Non-credit Courses | <input type="checkbox"/> Video Scripting/Production |
| <input type="checkbox"/> Educator Training/Professional Development | <input type="checkbox"/> Outdoor Education Facilities | <input type="checkbox"/> Volunteer Opportunities |
| <input type="checkbox"/> Env-friendly Educational Products | <input type="checkbox"/> Outdoor Education Programs | <input type="checkbox"/> Other (<i>please specify</i>) _____ |

AUDIENCE SERVED: (*indicate which audiences are the major focus of educational activities or services*)

- | | |
|--|--|
| <input type="checkbox"/> BUS Business | <input type="checkbox"/> PSS Post-Secondary Students |
| <input type="checkbox"/> COM Community Groups | <input type="checkbox"/> REL Religious Congregations |
| <input type="checkbox"/> DEV Development NGOs | <input type="checkbox"/> RES Researchers |
| <input type="checkbox"/> ENG Environmental NGOs | <input type="checkbox"/> SCH School Students: (<i>please indicate grade range ie. K-7</i>) |
| <input type="checkbox"/> GEN General Public | <input type="checkbox"/> TCH Teachers/Community Educators |
| <input type="checkbox"/> GOV Government Agencies/Departments | <input type="checkbox"/> WMG Womens' Groups/Women |
| <input type="checkbox"/> IND Industry | <input type="checkbox"/> YTH Youth or Student Groups |
| <input type="checkbox"/> MED Media (Press) | <input type="checkbox"/> Other (<i>please specify</i>) _____ |
| <input type="checkbox"/> NAV Native Groups/Individuals | |

SCOPE OF ACTIVITIES (*indicate one of: L/ocal, P/rovincial (regional), N/ational, I/nternational*): _____

NEWSLETTER / MAIN PUBLICATION: _____ **Frequency:** _____
(title) *(issues per year)*

Do you provide a free catalogue or listing of educational resources on request? (Y/N) _____ *If yes, please include.*

FOR MEMBERSHIP ORGANIZATIONS:

Year Founded: _____ **Number of Staff:** _____ (*full time equivalent*) **Number Of Members:** _____

Fees: _____ (*amount, and fee categories if applicable*)

Membership Criteria / Restrictions ("Open" if none): _____

NAME OF PERSON completing this listing: _____ **Date:** _____

The Canadian Environmental Education Catalogue

There are a great number of environmental and sustainable development education resources available. Unfortunately, many of these resources can be difficult for educators to find, and often reach only a limited audience. At the same time, educators seeking specific materials face the daunting task of sorting through these resources to identify those suitable for their needs.

The Catalogue meets the need to have quick access to credible information by broadening awareness of the resources available, and presenting them in a manner that makes it easy for educators to find what they are looking for.

For developers of educational materials and products, the Catalogue is an opportunity for them to identify existing resources to use as background information, or to avoid replicating the efforts of others by "re-inventing the wheel" - resulting in a more efficient use of educational resources.

The electronic version of the Catalogue performs fast, sophisticated searches to enable the user to narrowly define what resources they are interested in. For example, an educator could easily get a short list of resources that were specifically: *curriculum materials* that deal with the *rainforest in Africa*, and that were designed for *grades 4-6*.

The program then allows the user to print customized lists and order forms. The electronic version is available for both Macintosh and MS-DOS systems and comes with an easy-to-use program that requires no additional software to operate.

Organizations that publish or distribute resources appropriate for school or public environmental education should contact us as soon as possible to ensure that their materials are listed in the next supplement.

The Catalogue is a companion volume to *Who's Who in Environmental Education* - together they provide the information educators need to get support for their programs.

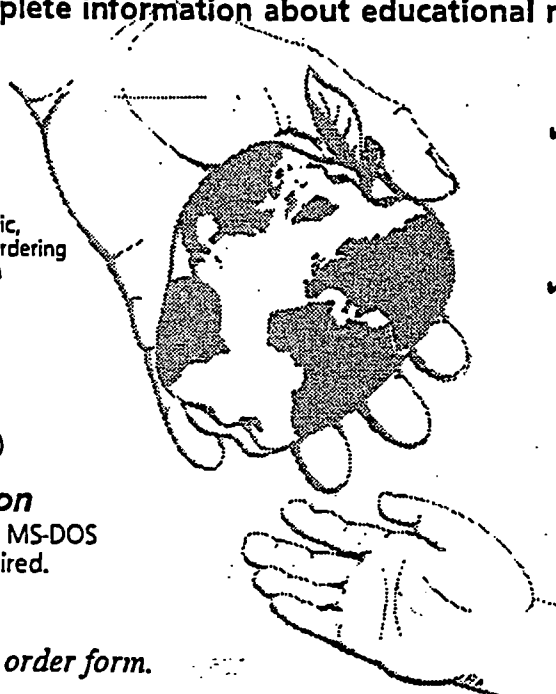
The Canadian Environmental Education Catalogue

For School and Community Educators...

Quick access to complete information about educational resources!

- ✓ more than 1600 resources listed
- ✓ review of resource content, format, educational usage, and environmental topic focus

- ✓ extensive, easy-to-use cross-index
- ✓ complete bibliographic, price and ordering information



- ✓ features: audiovisual material, curriculum kits and packages, books, factsheets, periodicals, music, puzzles, posters, computer programs and networks, environmental fiction, teaching techniques, and more!
- ✓ electronic edition enables faster, sophisticated searches, and the creation of custom lists and order forms

\$55.00 - Print Edition

receive the main volume plus two supplementary volumes of new resources. (Please add 7% GST)

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Ph: (403) 542-6272
Fax: (403) 542-6464

See last page of Directory for order form.

KEYWORD CROSS REFERENCE

Many common terms are listed here with the corresponding environmental issue categories used in the Directory

3 R's - reduce, reuse, recycle *lifestyle, recycling & waste reduction*
 acid precipitation *acid deposition, air quality*
 acid rain *acid deposition, air quality*
 advocacy *general, law & government policy, lifestyle*
 alternative energy *energy conservation & renewables*
 alternative products *hazardous chemicals, lifestyle, pesticides*
 arms race *international development, militarism*
 biological controls *biotechnology*
 biomass *energy conservation & renewables, forest issues*
 business *economy and environment, general*
 carbon dioxide (CO₂) *acid deposition, air quality, climate change*
 carrying capacity *population*
 CFC's (chlorofluorocarbons) *air quality, climate change*
 citizenship *environmental education, lifestyle*
 climate change *air quality, climate change, energy - conventional*
 coal *energy - air quality, climate change, conventional*
 coastal issues *marine*
 community action *community development, lifestyle*
 community development *community development, lifestyle, sustainable development*
 composting *agriculture, lifestyle, recycling & waste reduction*
 consumerism *ethics / spirituality / philosophy, lifestyle*
 cultural survival *aboriginal issues*
 dams *energy - conventional, land use conflict/management, water management*
 deforestation *forest issues, land use conflict/management*
 desertification *agriculture, forest issues, international development*
 developing countries *global issues, international development, militarism*
 direct action *lifestyle, recycling & waste reduction*
 disarmament *militarism*
 drinking water *urban issues, water quality*
 ecology (general concepts) *general, wilderness & parks, wildlife & habitat*
 economics *economy and environment, sustainable development*
 ecophilosophy *ethics / spirituality / philosophy*
 empowerment *environmental education, lifestyle*
 endangered spaces *wilderness & parks*
 endangered species *wildlife & habitat*
 energy conservation *energy conservation & renewables, lifestyle*
 energy efficiency *energy conservation & renewables*
 environmental policies *environmental assessment, law & government policy*
 environmental protection technology *environmental technologies*
 environmental regulations *environmental assessment, law & government policy*
 erosion *agriculture, forest issues*
 ethics *ethics / spirituality / philosophy, lifestyle*
 extinction *wildlife & habitat*
 famine *international development, agriculture, land use conflict/management*
 fish *marine, water management, water quality, wildlife & habitat*
 fisheries protection *marine, water quality, wildlife & habitat*
 forest protection *forest issues*
 fossil fuel *acid deposition, air quality, climate change, energy conserv. & renewables*
 garbage *recycling & waste reduction*
 gardening *lifestyle, agriculture, pesticides*
 genetic engineering *biotechnology*
 global environmental education *env'l education, int'l development, militarism*
 global warming *air quality, climate change, energy - conventional*
 government *law & government policy*
 green consumer *lifestyle*
 green spaces *urban issues*
 greenhouse gases *air quality, climate change, energy - conventional*
 ground level ozone *air quality*
 groundwater *agriculture, water quality*
 habitat destruction/protection *wilderness & parks, land use conflict, wildlife & habitat*
 hazardous chemicals *hazardous chemicals, recycling & waste reduction*
 herbicides *agriculture, hazardous chemicals, pesticides*

household hazardous products *hazardous chemicals, lifestyle*
 hunting *aboriginal issues, outdoor recreation, wildlife & habitat*
 industrial waste/effluent *hazardous chemicals, urban issues, water quality*
 irrigation *agriculture, water management*
 landfill *recycling & waste reduction, urban issues*
 legislation *law & government policy*
 low level radiation *health, nuclear energy*
 management of public lands *land use conflict/management, law & government policy*
 municipal environmental policies *law & government policy, urban issues*
 national parks *wilderness & parks, wildlife & habitat*
 native land claim *aboriginal issues, land use conflict/management*
 natural history *wilderness & parks, wildlife & habitat*
 nitrogen oxide (NO_x) *acid deposition, air quality, climate change*
 nuclear power *nuclear energy*
 nuclear weapons *global issues, militarism*
 occupational health *health, law & government policy*
 ocean dumping/pollution *hazardous chemicals, marine, water quality*
 office practices *lifestyle*
 oil spill *hazardous chemicals, arctic & northern, marine*
 organic agriculture/gardening *agriculture, lifestyle, pesticides*
 outdoor environmental education *environmental education, outdoor recreation*
 ozone depletion *air quality*
 packaging *lifestyle, recycling & waste reduction*
 peace *militarism*
 permaculture *agriculture, community development, sustainable development*
 petroleum *energy - conventional*
 philosophy *ethics / spirituality / philosophy, general*
 pollution *air quality, hazardous chemicals, water quality*
 pollution control *environmental technologies*
 population *general, lifestyle, population*
 pulpmill pollution *air quality, water quality*
 radioactive waste/radiation *hazardous chemicals, nuclear energy*
 rain forest *forest issues, land use conflict/management*
 reforestation *forest issues*
 religion *ethics / spirituality / philosophy, lifestyle*
 renewable energy sources *energy conservation & renewables*
 river protection *water management*
 smog *air quality, climate change*
 soil conservation *agriculture, water management*
 solar energy *energy conservation & renewables*
 species extinction *wildlife & habitat*
 spirituality *ethics / spirituality / philosophy, aboriginal issues, lifestyle*
 stewardship *ethics / spirituality / philosophy, agriculture, lifestyle*
 sulphur dioxide (SO₂) *acid deposition, air quality, climate change*
 sustainable agriculture *agriculture, pesticides, sustainable development*
 sustainable development *sustainable development, economy, international development*
 sustainable forest issues *forest issues*
 theology *ethics / spirituality / philosophy*
 third world *international development, global issues, militarism, population*
 toxic chemicals *acid deposition, air quality, hazardous chemicals*
 uranium mining *nuclear energy*
 urban expansion/sprawl *land use conflict/management, urban issues*
 urban wildlife *urban issues, wildlife & habitat*
 war *global issues, militarism*
 waste disposal *land use conflict/mgmt, hazardous chem, recycling & waste reduction*
 waste incineration *air quality, hazardous chemicals, recycling & waste reduction*
 water conservation and efficiency *lifestyle, water management*
 water treatment *urban issues, water quality*
 watershed *water management, forest issues, water quality*
 wetlands *wilderness & parks, water management, wildlife & habitat*
 wilderness camping/tripping *outdoor recreation*
 wind energy *energy conservation & renewables*

Environmental Issue Categories

ABORIGINAL ISSUES: indigenous/native peoples and the environment, cultural survival, wilderness preservation

ACID DEPOSITION: acid rain and acidic deposition, causes and effects, controls, Canada/US negotiations, industrial air emissions, forest die-offs, structural erosion

AGRICULTURE: environmentally-damaging practices, alternative agriculture, soil conservation, sustainable and organic agriculture, organic gardening

AIR QUALITY: urban air quality, toxic air emissions, climate change and greenhouse gases, ozone depletion

ARCTIC AND NORTHERN ISSUES: environmental issues specific to arctic and northern development

BIODIVERSITY: maintaining genetic diversity and the resilience of the earth's living systems, biosphere reserves

BIOREGIONALISM: living by what the earth provides rather than making the earth fit human needs, living within the limits provided by a particular region

BIOTECHNOLOGY: concerns about genetic engineering, "playing" with nature, biological pest control

CLIMATE CHANGE: global warming, greenhouse gases, impact of human activity on the global climate

COMMUNITY DEVELOPMENT: defining or developing sustainable communities, developing skills within a community for solving problems and meeting challenges

ECONOMY AND ENVIRONMENT: the relationship between economic costs or opportunities and protection of the environment

ENERGY CONSERVATION & RENEWABLES: technologies and practices regarding energy conservation and efficiency, and clean renewable energy sources including solar, wind, biomass, and other alternatives

ENERGY DEVELOPMENT - CONVENTIONAL: issues related to petroleum, gas, oilsands and coal development and mining, and hydroelectric energy (needs, dams, flooding, water degradation)

ENVIRONMENTAL ASSESSMENT: a public and/or government process that evaluates the impact of development projects on the environment

ENVIRONMENTAL EDUCATION: ideas and methodology for teaching about the environment for school, community, and adult educators

ENVIRONMENTAL TECHNOLOGIES: examples and development of pollution control and environmental protection technologies, and alternative technologies

ETHICS, SPIRITUALITY AND PHILOSOPHY: ideas and discussions related to environmental ethics, ecophilosophy and religion, or spiritual elements of environmental problems and solutions

FOREST ISSUES: deforestation, sustainable forestry, forest protection, rainforests, forest ecology

GENERAL ENVIRONMENTAL ISSUES: applies to organizations that deal with many topics

GLOBAL ISSUES: environment and development concerns that have a global impact or relevance ie. global warming

HAZARDOUS CHEMICALS: industrial, commercial, and household toxic waste - reduction, alternatives, safe collection and disposal, spills

HEALTH: environmental pollutants and human health

INTERNATIONAL DEVELOPMENT: environment and development issues and linkages

LAND USE CONFLICT/MANAGEMENT: direct conflicts between resource extraction or urban expansion and non-disturbing uses of land, management of public lands

LAW AND GOVERNMENT POLICY: environmental law and regulation, enforcement, development or critique of government policy

LIFESTYLE: individual actions, environmental or conservator lifestyle practices, environmentally-responsible office practices

MARINE: ocean and coastal pollution, fisheries protection, marine wildlife concerns

MILITARISM & ENVIRONMENT: links between peace, disarmament, militarism, the arms race, security, and the environment

MINING: environmental disturbances from mining of metals and minerals (uranium mining is listed under "Nuclear Energy")

NUCLEAR ENERGY: nuclear energy systems, uranium mining, radioactive waste

OUTDOOR RECREATION: recreational and camping interests in nature and wilderness, outdoor education practices

PESTICIDES: pesticide toxicity and contamination, alternatives

POPULATION: population pressures on earth's resources, impact of over-population on the environment, carrying capacity

RECYCLING & WASTE REDUCTION: waste/garbage avoidance and reduction, landfills, recycling

RESOURCE CONSERVATION/MANAGEMENT: management and/or protection of natural resources

SUSTAINABLE DEVELOPMENT: ideas and discussions of the concept of sustainable development

Environmental Issue Categories

TRANSPORTATION: reduced pollution through public transit, bicycling, vehicle efficiency, and better planning

URBAN ISSUES: specific municipal environmental policies, urban environmental quality, green space

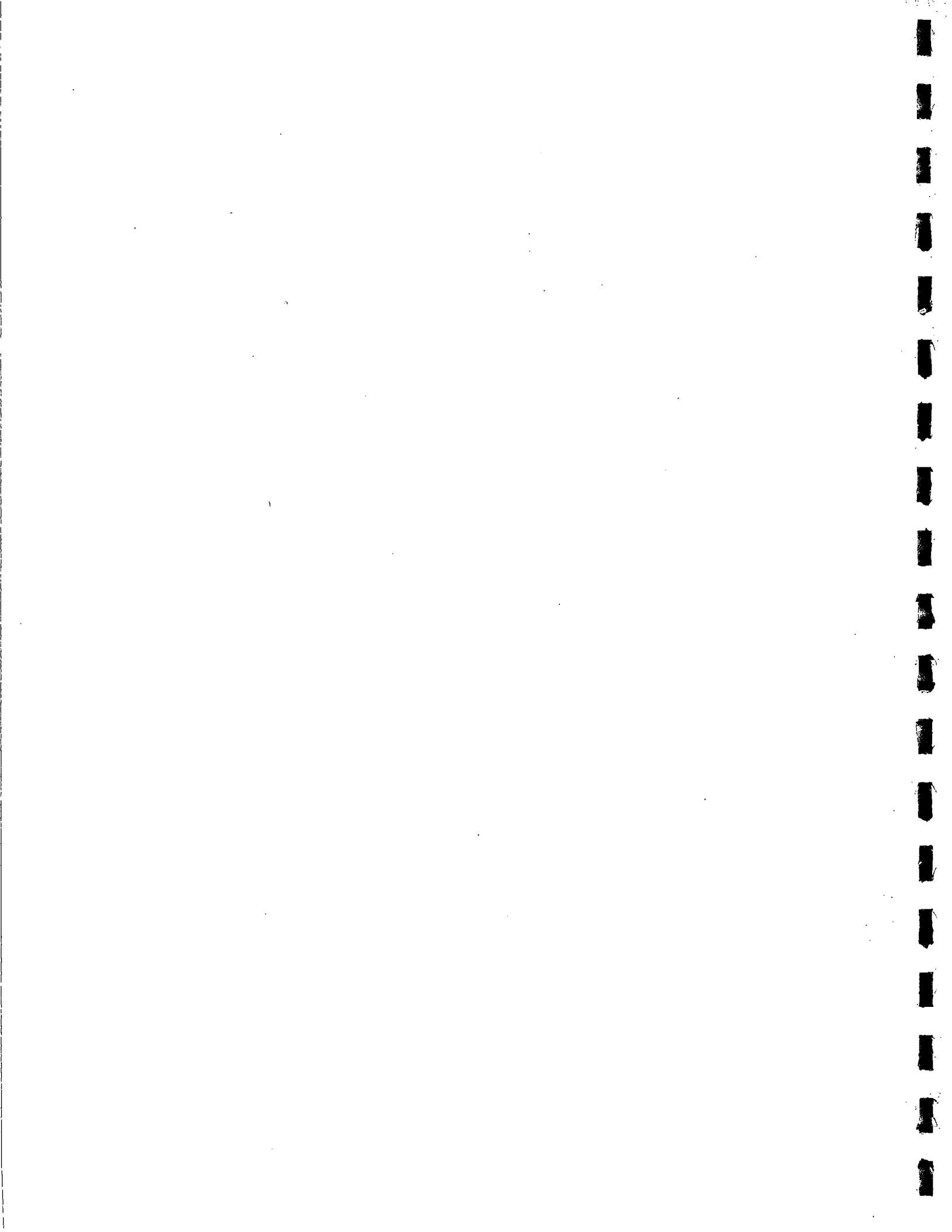
WATER MANAGEMENT: water conservation and efficiency, river protection, the impact of dams and water supply works

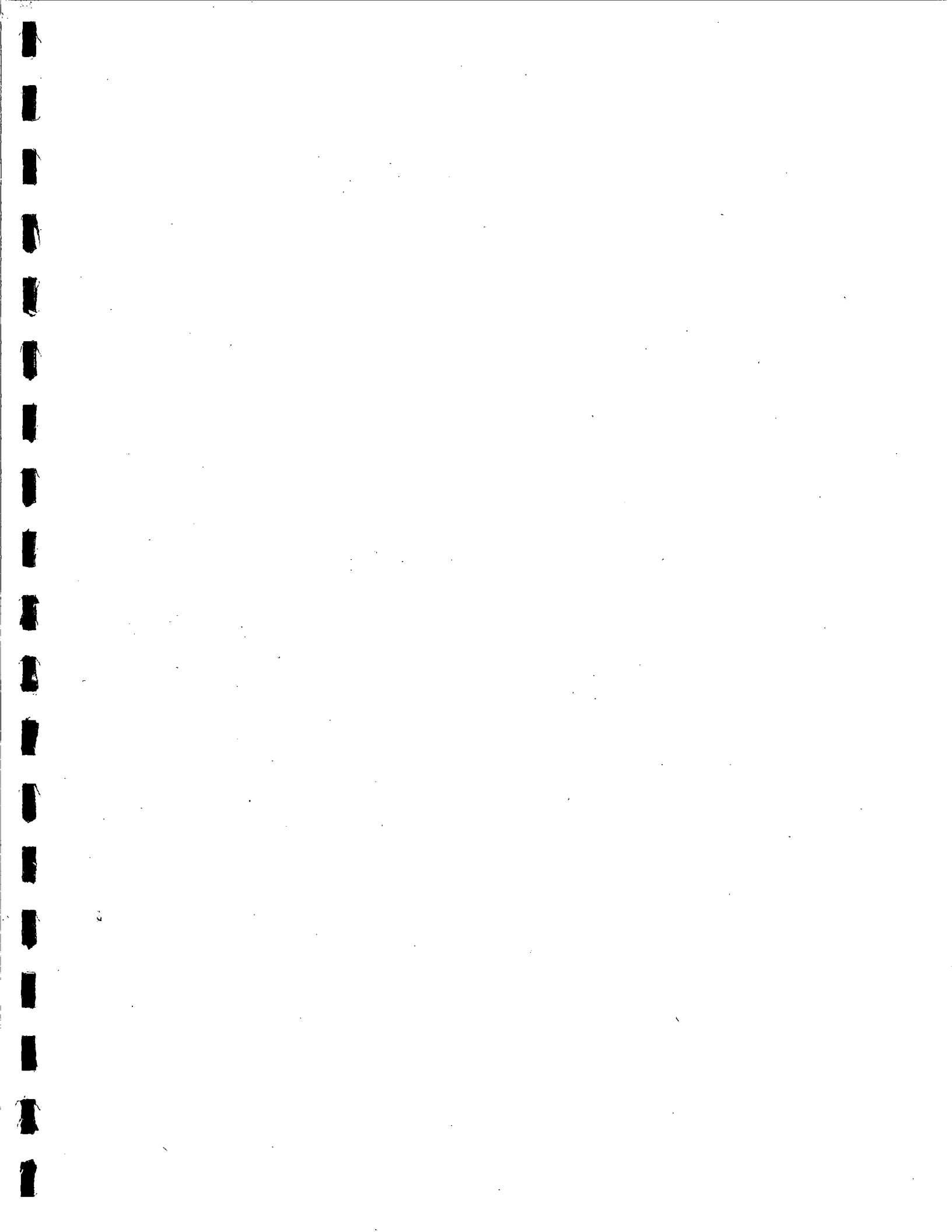
WATER QUALITY: water pollution, effluent controls and standards, drinking water quality

WILDERNESS & PARKS: protection of natural areas, endangered spaces, national parks and reserves, wetlands

WILDLIFE & HABITAT: wildlife protection, endangered or threatened species, habitat protection

To help you find the desired environmental topic, many other common terms are listed in the Keyword Cross Reference on the following page.





SECTION IV

SELECTED ENVIRONMENTAL EDUCATION TEACHING MATERIALS AVAILABLE IN CANADA

Title	Brief Description	Contact Name and Address	Comments	pages
<p>Bay of Quinte Remedial Action Plan - Environmental Education Kit</p>	<p>▪ A teaching resource developed to foster awareness and understanding of the environmental problems facing the Bay of Quinte region.</p>	<p>Dianne Lawrence Faculty of Education Queen's University Kingston, ON K7L 3N6 T 613-545-6209 F 613-545-6584</p>	<p>▪ Not available yet but will send to IDRC when complete</p>	<p>1</p>
<p>Being So Green and Hardly 13</p>	<p>▪ CBC video production in association with the Atlantic Centre for the Environment</p>	<p>G.M. Media Productions Limited 10 Austin Street P.O. Box 13789 Stn. A St. John's, NF A1B 4G3 T 709-579-5162 F 709-579-1711</p>	<p>▪ Available at IDRC</p>	<p>N/A</p>
<p>EarthWarden Guide Book- Living Lightly on Planet Earth</p>	<p>▪ A book of environmental education activities for children and communities.</p>	<p>Shirley St. Pierre EarthWarden 327 Chartersville Road Dieppe, NB E1A 1K5</p>	<p>▪ Also available - "EarthWarden" video ▪ Available at IDRC</p>	<p>2 - 3</p>
<p>Elements of Environmental Literacy</p>	<p>▪ A Framework for thinking about environmental education produced for the Summer Institute in Environmental Education at Simon Fraser University.</p>	<p>Milton McClaren Field Relations and Teacher In-Service Faculty of Education Simon Fraser University Burnaby, BC V5A 1S6 T 604-762-7600 F 604-861-4850</p>		<p>4 - 18</p>

<p>Finding the Balance - For Earth's Sake</p>	<p>■ Text book for grades 7-12 developed for youth of Newfoundland and Labrador</p>	<p>Clyde Rose President Breakwater Books 100 Water Street P.O. Box 2188 St. John's, NF A1C 6E6 T 709-722-6680 F 709-753-0708</p>	<p>■ Available at IDRC</p>	<p>19 - 23</p>
<p>Global Change and Canadians: A Teacher's Guide</p>	<p>■ Intended for senior high school through adult audiences, it deals with issues such as ozone depletion, climate and sea-level change, global economics, energy etc.</p>	<p>Canadian Global Change Program Secretariat Royal Society of Canada P.O. Box 9734 Ottawa, ON K1G 5J4 T 613-991-5639 F 613-9916996</p>	<p>■ Available at IDRC</p>	<p>24 - 27</p>
<p>Ground Truth Studies Teacher Handbook</p>	<p>■ An interdisciplinary, activity-based program that draws on a range of sciences and remote sensing to study global change.</p>	<p>Milton McClaren Field Relations and Teacher In-Service Faculty of Education Simon Fraser University Burnaby, BC V5A 1S6 T 604-762-7600 F 604-861-4850</p>	<p>■ Available at IDRC</p>	<p>28 - 32</p>
<p>No Small Wonder</p>	<p>■ An environmental music video (27 minutes) combining original music with the environmental projects of young people throughout NFLD and Labrador.</p>	<p>North By East Productions P.O. Box 6201 St. John's, NF A1C 6J9 T 709-722-0966</p>	<p>■ Available at IDRC</p>	<p>N/A</p>



BAY OF
QUINTE
REMEDIAL
ACTION
PLAN

Bay of Quinte Remedial Action Plan ENVIRONMENTAL EDUCATION KIT

The Bay of Quinte Remedial Action Plan Environmental Education Kit is a teaching resource which has been developed to foster an awareness, and understanding of the environmental problems affecting the Bay of Quinte region.

The kit includes:

- over 50 teaching activities, and related support material
 - background material for educators
 - two videos "Time to Decide", and "Time to Act"
 - computer program "Bay of Quinte Environmentally-Friendly House"
 - Bay of Quinte poster
- The kit is presented in five sections: "The Great Lakes and AOC's"; "Bay of Quinte Problems"; "The Ecosystem Approach"; "Where did we go Wrong?"; and "Making it Right". Collectively, the activities provide an integrated, inter-disciplinary thematic unit on our local environment. Independently, activities can provide local examples of environmental concepts developed in teaching units already in use.
 - Activities are designed to meet Ministry of Education curriculum objectives at the Intermediate level. Links to the curriculum by subject and grade level are made within each activity. Suggested extensions and alternatives are also listed to give educators flexibility in their transition years planning.
 - Activities are based on Bay of Quinte research findings, and use actual scientific data. Student sampling and comparison of results is encouraged.
 - Activities use a variety of learning strategies, with an emphasis on co-operative learning, decision-making, and critical thinking skills. Some activities highlight content, others emphasize skill development, and still others, values and attitudes.
 - The kit has been designed by educators in the Mathematics, Science, and Technology Education Group at the Faculty of Education, Queen's University, in consultation with the Bay of Quinte Remedial Action Plan Public Advisory Committee. The project has been supported by federal and provincial environment ministry grants.



EARTH FRIEND GUIDE BOOK

*Living Lightly on
Planet Earth*

Developed by Shirley St. Pierre

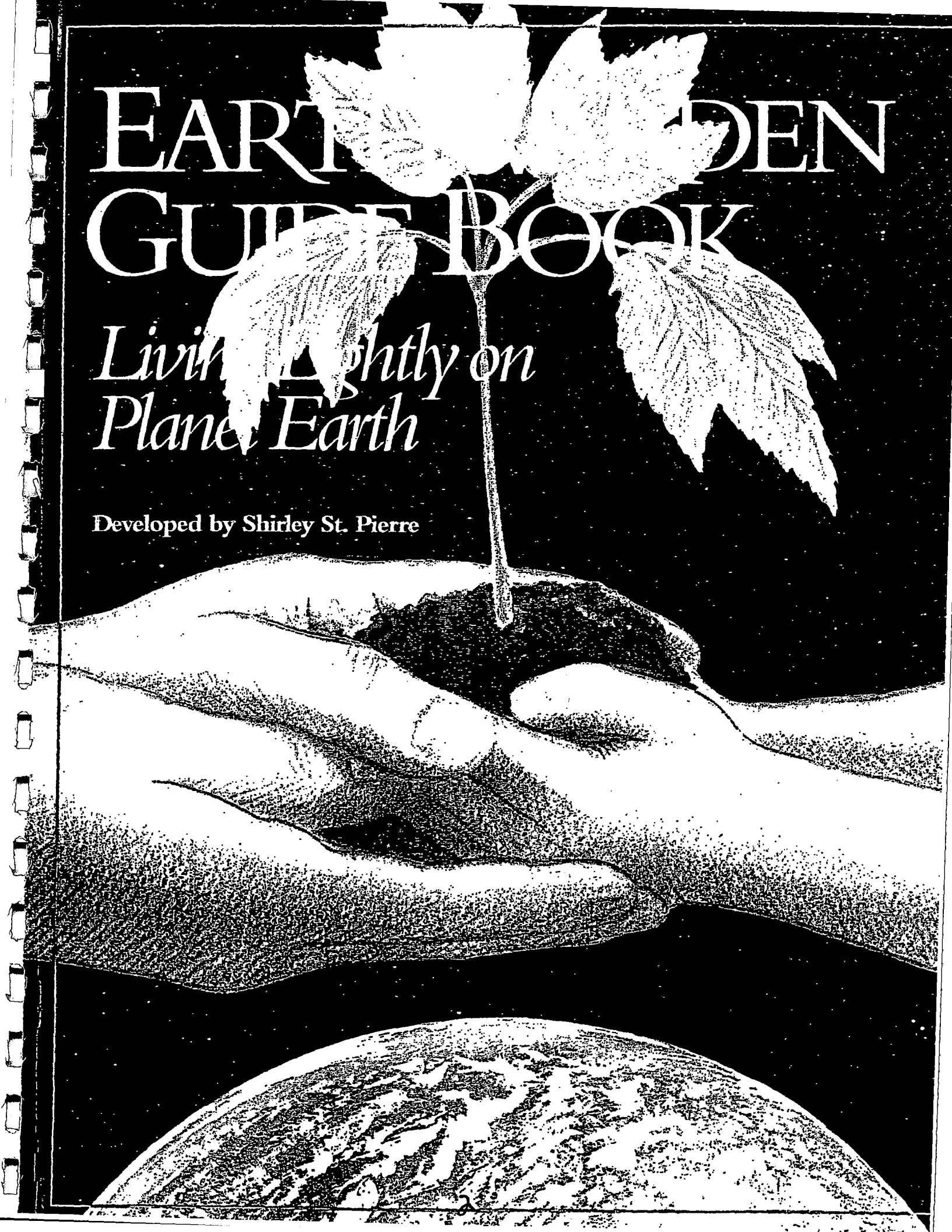


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Published by the EarthWarden Program with funding provided from New Brunswick's Environmental Trust Fund. The opinions expressed are those of the EarthWarden Program.

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First published in 1994

ISBN 1-55137-242-8

Written by Shirley St. Pierre and Marisa Piccini

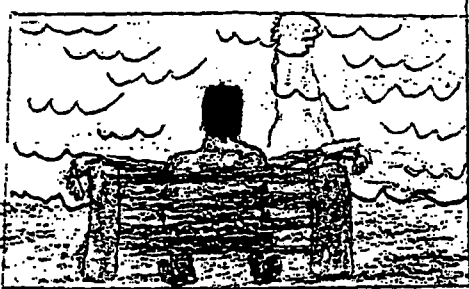
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**Those who help preserve
the earth are those who
enjoy it's beauty.**

Illustration and quote by
Jordon Halliday
Grade 6
Lewisville Junior High
Moncton, New Brunswick

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Elements of Environmental Literacy.

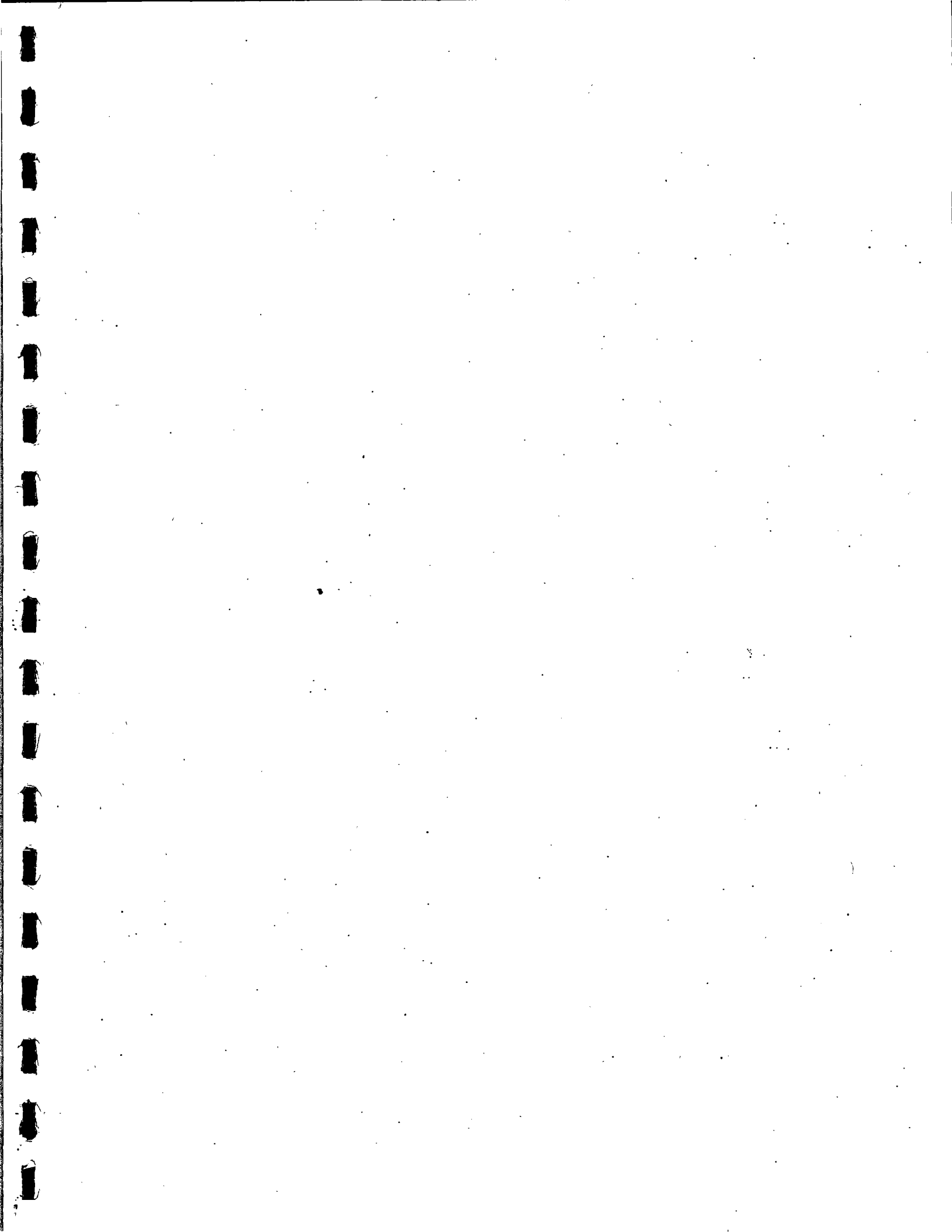
**A Framework for Thinking about
Environmental Education.**



**Summer Institute in Environmental
Education.**

July, 1994.

Simon Fraser University.





What is Environmental Literacy?

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In the 1994 Summer Institute in Environmental Education we will be working with a conception of Environmental Literacy based on the article which follows. There are other views about Environmental Literacy and of Environmental Citizenship but many of them contain some or all of the elements which follow. However, to be literate means having the capacity to integrate the components of literacy in a meaningful, effective, and appropriate way. Literacy in any domain is more than the sum of its parts, as convenient and helpful as creating lists and taxonomies can be. Thus, during this month we will frequently ask that you address these concepts and apply them to different settings and teaching/learning problems.

In order to help you recall these elements we have developed a set of graphical devices or logos to represent the components. We suggest that you paste these into some of the pages of your field journals and use these pages as places to capture thoughts about that element of Environmental Literacy or to note examples of its application in experiences in the course.

Milton McClaren
Bill Hammond
Kim Fulton.
July, 1994.



What is Environmental Literacy?

3

Environmental Literacy.

A Critical Element of a Liberal Education for the 21st Century.

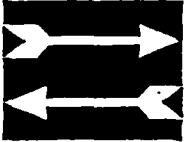
Recent surveys of Canadian public opinion by the Decima polling agency, as by other major polling firms have shown a sharp rise in the concern for, and priority given to the environment by people in all regions of the country. A recent Maclean's magazine survey found that 44 percent of Canadians think that by the year tap water will be undrinkable. In the same study 61 percent of respondents stated that they would be willing to spend between ten to twenty dollars more per week on household products that were less harmful to the environment. In the major news media reports concerning Acid Rain, the degradation of the ozone layer, or the problems of the Greenhouse Effect are common. The warnings that have been given by the scientific community for many years now appear to be taken seriously by many people, and even by some politicians.

But environmental concerns have risen, peaked, and declined in the past, with little fundamental change in human behaviour. Some environmentalists maintain that clean-up campaigns to address local pollution problems are merely cosmetic approaches to a disease which has much deeper causes. If we take the scientific findings concerning global environmental changes seriously, then they indicate the need for a much higher level of public awareness and greater commitment to personal and community action. As major agencies of education and socialization, public schools can play an important role in developing citizens who are environmentally informed and aware. But before programs can be developed or implemented effectively, we need to develop a clear understanding of the elements of environmental literacy.



What is Environmental Literacy?

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Elements of Environmental Literacy.

1. The Ability to Think About Systems.

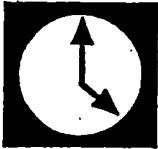
This might be described as the ability to think Eco-systematically. The central message of modern ecology is that everything is in fact connected ultimately to everything else. It may be convenient, and even necessary to separate a system into components in order to analyse and understand it, but it is also required that we think things together again. Approximately one third of all paper produced in North America is used in packaging. We take this for granted, but meantime the forests of the planet are vanishing at a rapid rate in order to produce things that have an actual use measured in minutes. Technology makes our lives easy, but it insulates us from the consequences of many of our actions. We don't know where our electrical power is produced, or where our wastes go when they disappear down the drain. It has been noted, with some measure of truth, that for many of today's urban children meat is produced in the supermarket and milk comes from vats in the grocery basement. So, the first challenge to developing environmental literacy is to reconnect ourselves to the planet, to understand where things come from, where they go, and how much energy and material is used along the way.





What is Environmental Literacy?

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2. The Ability to Think in Time: To Forecast, to Think Ahead, and to Plan.

Along with systems thinking we also need to introduce the concept of time. We need to work at extending people's capacity to think beyond the here and now. What seems to be a quick and convenient "fix" today has often turned out to be the genesis of serious environmental problems in years to come. Many human beings in the modern world seem to have genuine difficulty thinking beyond the term of their own life span. In fact, many seem to have difficulty thinking beyond this year. Most environmental problems will not be solved quickly. They will require extended effort over many years. Children living in an age of instant electronic miracles are impatient with the idea that something might produce results only after many years, if in their lifetimes. We need new modern fables and creative curricular activities to foster the capacity to think beyond the here and now.



3. The Ability to Think Critically About Value Issues.

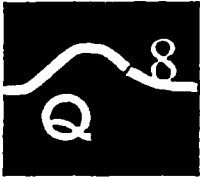
Almost all modern problems, environmental or otherwise, have an important component based in human value systems. Contemporary society is pluralistic and multicultural. We do not have a common, culturally agreed set of values. Many environmental educators are people who value the outdoors in natural settings, if not real wilderness. Yet it has been estimated that the average North American now spends about 4% of his or her total life actually out of doors. For many children today the shopping mall offers more attractions than the forest or seashore. What we value is reflected in our actions. If we really value a healthy environment then we may have to sacrifice some of our conveniences. We will have to learn to ask hard questions even when besieged by the inducements offered through the mass media. We will have to learn to think about issues of quality.





What is Environmental Literacy?

6



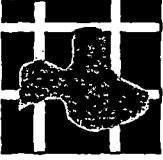
4. The Ability to Separate Number, Quantity, Quality, and Value.

Many people in the modern world are confused about the differences between these elements. People assume that bigger or faster, or more expensive is better. We confuse the possession of many material possessions or money with higher moral authority. We have difficulty distinguishing between the medium and its messages. We assume that if a lot of people do something, or believe something that it must be right or true. We assign numbers to things that can really only be assigned qualities, and assume that because we have enumerated them we have also addressed their value. Why do we need more trees? Why should we try to have high quality, clean water? Isn't the number of our possessions an indicator of our success and of the quality of our lives? Such problems are at the core of many environmental decisions. In the structure of modern life it is often apparently less expensive to pollute or to waste than it is to conserve. Only the capacity to think through number, quality, quantity and value issues can enable us to challenge these assumptions.





What is Environmental Literacy?



5. The Ability to Distinguish Between the Map and the Territory.

We are surrounded by high quality representations of the world. We have photos in full colour, video, stereo, models, and simulations. They can be very useful in helping us to understand components of the environment. We often become so fond of our maps that we forget that they may not be entirely faithful representations of how things actually are.

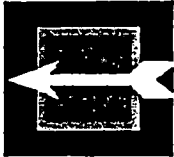
Many of our notions about the environment are in fact elaborate stereotypes. We have learned ideas about animals from the cartoon creatures of our childhood. As enjoyable as these were, they are less than reliable representations of how animals actually behave. We also have stereotypes about the "wilderness" and about the beauties of nature. Not all natural environments are obviously beautiful in the "calendar art" sense of the term. Few North Americans have ever seen the equatorial rain forest and few are likely to. Most would find this incredibly important ecosystem uncomfortable and forbidding, if not frightening, at least at first. But this would hardly be an argument against its conservation. Natural environments seldom measure up to the manicured pleasure gardens we have been taught to expect.





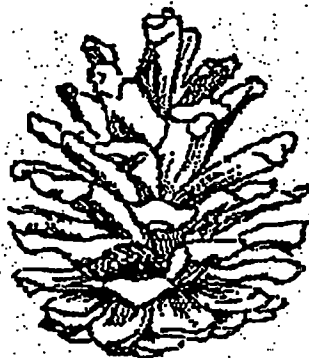
What is Environmental Literacy?

8



6. The Capacity to Move From Awareness to Knowledge, to Action.

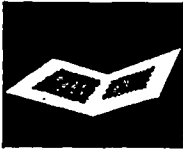
The need to have people take personal actions that contribute to the solution of environmental problems has been widely recognized by writers about environmental education. A popular slogan has been: Think Globally, Act Locally. In actual fact, however, the link between awareness, knowledge, and action is poorly understood by many educators and curriculum designers. It is important to understand that knowledge, and certainly information, carries no automatic set of instructions converting it into appropriate actions. Many a young scientist learns the hard way that no matter how much data you gather the data itself makes no decisions. Furthermore, there are things to be learned that can be learned only through action itself. Thus, a class may learn about water pollution and about how to test for various aspects of water quality. They may become aware of problems in a local creek. But, if they actually decide to act upon the problem then they move into new territory, territory where they will confront the need for tools, the requirement to act politically, to be able to interact with various community groups. From these experiences they will gain powerful new learning, most of it not available other than through action. By continually disconnecting the cycle of learning from action we have removed from schooling some of the most important resources for educational development.





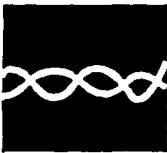
What is Environmental Literacy?

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7. A Basic Set of Concepts and Facts Plus the Ability to Learn New Ones and to Unlearn the Old.

There are concepts to be learned and useful facts to be recalled in the course of developing environmental literacy. Ecological principles and concepts are important organizers for experiences in the environment and provide insights to be applied to critical thinking about environmental issues. Students need to understand biological and geological cycles, bioenergetics, food and energy relationships, and concepts such as adaptation and diversity. But, equally as important there is a need for students to become expert in learning how to access information and how to evaluate its quality. Environmental citizenship often requires the ability to use up-to-date, accurate information. Learning how to find this information is an important aspect of environmental literacy. At the same time, students must also learn to expect that many of the things they learn today, especially specific facts and figures, may prove to be wrong tomorrow. This is to be expected given the rate of growth of new knowledge and the deployment of new technologies. Life long learning is as essential to environmental education as to any other field.



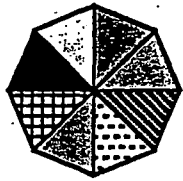
8. The Ability to Work Cooperatively With Other People.

There is scarcely any modern environmental problem that we can expect to be solved by a single person. It has been noted that many environmental issues are complex. They will require international cooperation as well as cooperation among neighbours in local communities. Effective skills in group processes and communication will be very important. Many specialists will have to work in interdisciplinary teams. These teams will have to learn to solicit and employ citizen participation. Experts alone cannot solve environmental problems. Thus, cooperative learning becomes as critically important here as it is in many other fields of endeavour today.



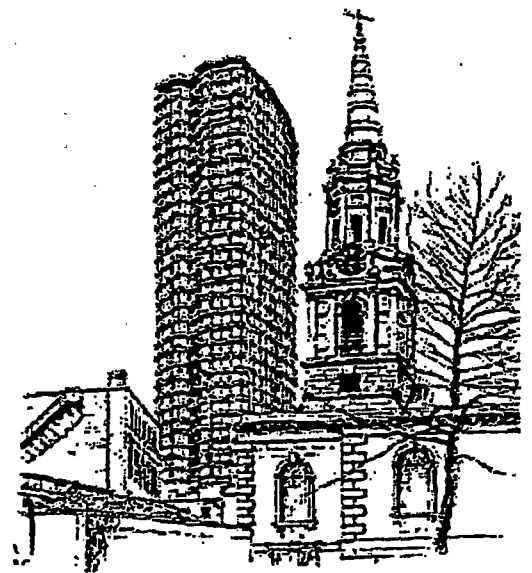
What is Environmental Literacy?

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9. The Capacity to Use Skills in Eight Processes: Knowing, Inquiring, Acting, Judging, Opening, Imagining, Connecting, and Valuing.

This set represents an "ecosystem" of processes that are essential to effective intelligence. They are generic not only to environmental education, but to all forms of education. In order to develop them fully, curricula need to be designed to attend to them all at some time or another during the student's development in the course of schooling. Not all need receive equal emphasis at all times, but all need emphasis during some phases of learning. All are equally important. They need not be seen as being in any universally appropriate logical sequence in all contexts. In some situations, students may begin with their awareness of a problem or opportunity (Opening). In others, taking stock of what is known and developing strategies for finding out more is of central importance (Knowing and Inquiring). In still other situations, starting with value positions may be most useful. However, by encountering a variety of educational problems and by learning in a variety of contexts, through a number of teaching models, students can develop proficiency in these process elements.





What is Environmental Literacy?

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10. The Capacity to Develop an Aesthetic Response to the Environment.

When this paper was originally published I intended that this element of Environmental Literacy would be included as a strand woven through the others. Unfortunately, things which are left as implicit messages sometimes are missed completely. Hence, this revision calls the aesthetic dimensions of Environmental Literacy explicitly to the fore as a separate element of the whole.

Many people become concerned about their environments when they first notice a degradation in the quality of their lives, when their favorite trout fishing stream no longer produces fish and becomes laden with pollution or silted up, or when they notice that the air they breathe no longer smells fresh even after a spring rain, or when the sun seems to be continuously filtered through a screen of haze. Other people become aware of the shoddy quality of urban development, of housing tracts where one unit after another march across the landscape without a break for greenspace or parkland, of malls built more for the convenience of cars than people, or of the loss of heritage buildings. When people have a sense of loss, of quality being eroded, or of poor design and thoughtless planning, they are often responding to aesthetic dimensions of their life experiences as much as to scientific or economic facts.

Some of the world's leading scientists study animals and plants which have little, if any, economic value. While scientific inquiry doesn't require justification on economic grounds, scientists also have to eat and so much research is supported by claims of potential economic or utilitarian value. But, in the final analysis, many of these investigators study the things they study because they find them beautiful, fascinating, and engaging. Many a scientific research project has germinated because the investigator first became enthralled with an interesting and beautiful plant or animal. Hence, no consideration of the environment, whether built or natural, can be complete without contemplation of its aesthetics and of the responses which these awaken in us.



What is Environmental Literacy?

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Environmental Education—a set of new courses or a thread woven through the tapestry of schooling?

Public schools are asked to address a host of modern problems, from AIDS to Driver Education, from Drug Abuse to Child Abuse. As a result the curriculum has become crowded and incoherent. For this reason I prefer to see environmental education not as a separate special course, but as an element of virtually all courses. In fact, many courses now in place provide ample opportunities for the development of environmental literacy as described above. However, there is always the danger that this approach results in teachers assuming that environmental education is anything and everything, and that it has been dealt with. In fact, we need a clear focus on environmental understanding in teaching some of the courses which now provide opportunities for it. We also need to exploit special events and programs, including Environment Week, field trips, energy conservation programs, recycling drives, programs like Project Wild or the SEEDS energy education materials, and school trips to residential outdoor centres. Environmental education is likely to be accomplished only if there is school wide planning, supported by district policies and ministry or department incentives. By blending a thematic approach with special events and programs over the 12-13 year course of public schooling we can hopefully graduate students who are environmentally literate citizens of tomorrow. Perhaps we can also raise the awareness of more adults in the process. But to do that we will need to make the development of environmental literacy a clear priority as an element of a 21st century liberal education.

Milton McClaren.
Originally Published in Education Manitoba,
January, 1989.

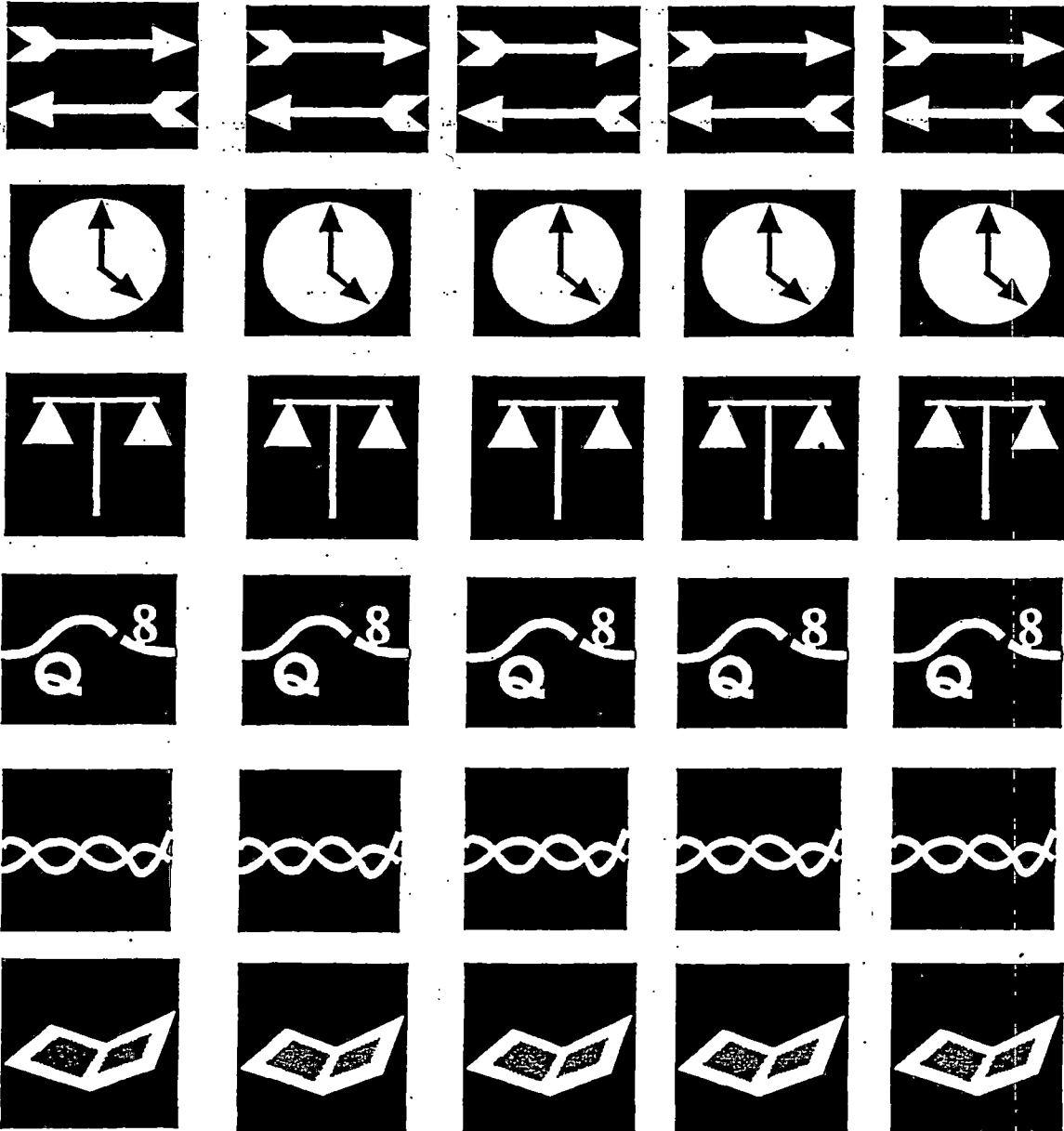
1. Milton McClaren is an Associate Professor in the Faculty of Education and an Associate Member of the Faculty of Science, Department of Biological Sciences and Director of Field Relations and Teacher In-Service Education at Simon Fraser University, in Burnaby, British Columbia. He has been a member of the program committee of the Man and Biosphere Program of UNESCO, Canada, and was a member of the Steering Committee of Project Wild in the United States. He is a member of the Board of Advisors of the Aspen Global Change Institute and a member of the Project Team of the B.C. Water Stewardship Project. In 1993 he was the recipient of the Minister's Environmental Award for Environmental Education in B.C.



What is Environmental Literacy?

13

Logos.

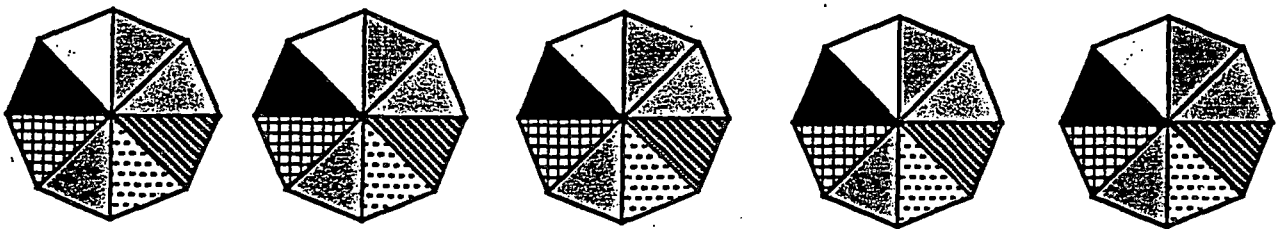
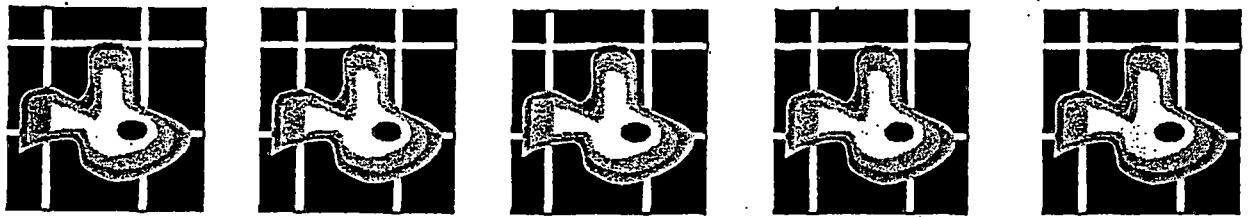
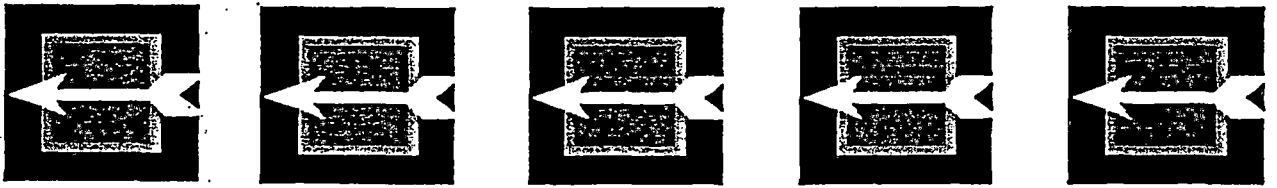




What is Environmental Literacy?

14

Logos.





What is Environmental Literacy?

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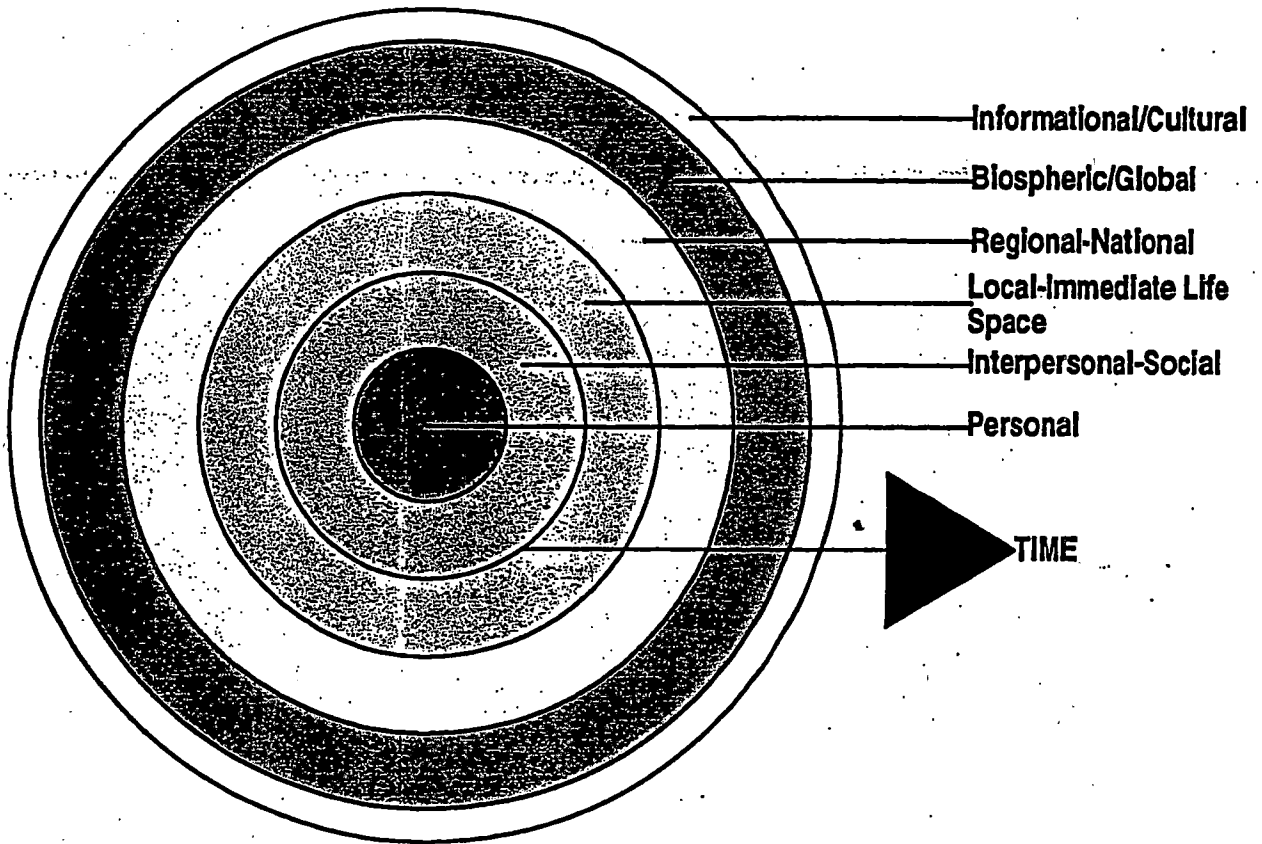


Figure 1. A Conceptual Model for Thinking about the Dimensions of the Human Environment.

FINDING THE BALANCE

FOR EARTH'S SAKE



DENNIS MINTY
HEATHER GRILLIN
DAN MURPHY

Foreword

The main thrust of this book is the search for a reasonable approach in dealing with global ecological and environmental issues. Currently the care and protection of our environment are constant concerns. There are problems affecting our environment that just will not go away. We must first learn to understand these problems and then try to find ways to deal with them. There is no better place to begin than at home. Here is where we can begin to understand what is happening to our earth. Here is where we may find better ways to do things to protect our earth. Whatever we do in the way of understanding and action will be for earth's sake.

This book has been developed for the youth of Newfoundland and Labrador. It is the result of a vision held by a small group of people, comprising curriculum consultants, teachers, environmentalists and others, who feel that we, all of us, can do things better. In fact, there appears to be no choice. We must do things better. We must find the balance.

As publishers we have been challenged, as never before, by this awesome project. Our authors have given their best and we have been inspired by their sense of mission. We have made every effort to make the book itself a 'thing of beauty' that is in harmony with our environment. However, time and circumstances did not allow the publisher to pursue all the available paper products that would complete that harmony. There are other things that can be done. We are not yet satisfied. Perhaps as we take the message of this book out to young Canadians across the land we'll learn too and improve upon what we are offering our youth.

Meanwhile, enjoy this book. Learn from it. And do something for earth's sake!

Clyde Rose
Publisher

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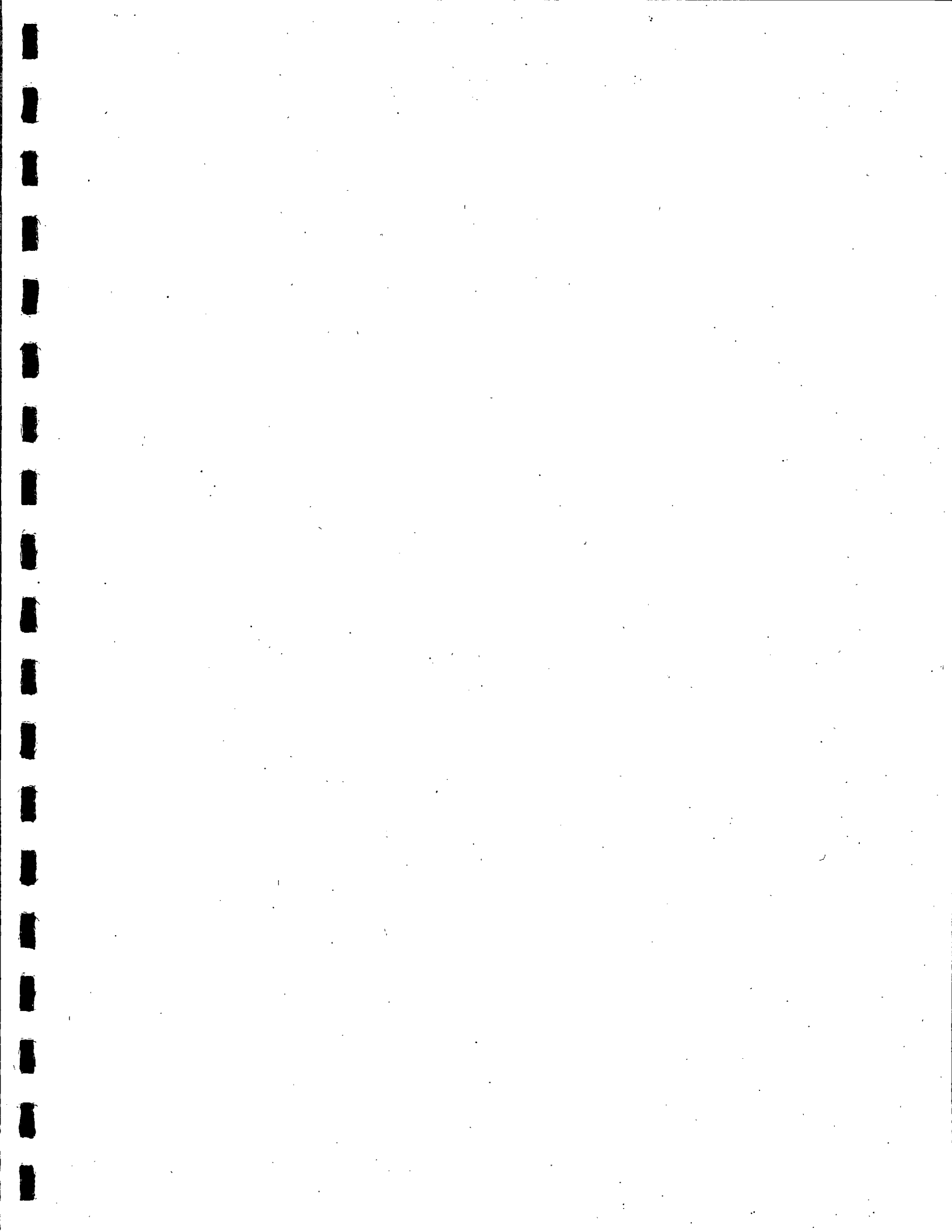
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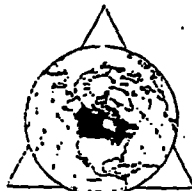


ROYAL SOCIETY OF CANADA

GLOBAL CHANGE *and Canadians*



— A Teacher's Guide —



CANADIAN GLOBAL CHANGE PROGRAM

The Canadian Global Change Program (CGCP) is the national focus for global change information, education and research activity in Canada. Its activities are closely linked to those of the Royal Society of Canada, which established the CGCP in 1985.

The CGCP is a conduit to other national and international efforts, including the World Climate Research Program (through the Canadian Climate Program), the International Geosphere-Biosphere Program, and the International Human Dimensions Program.

Core funding for the CGCP is provided by the federal government through Environment Canada's Green Plan, and by the Natural Sciences and Engineering Research Council and the Social Sciences and Humanities Research Council. Additional funds and other support are provided by federal research agencies, provincial governments and agencies, the private sector and non-governmental organizations.

For more information on the Canadian Global Change Program or to acquire the accompanying document, *Global Change and Canadians*:

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Global Change and Canadians is a 60 page book about global environmental change and how it affects Canadians.

Produced under the auspices of the Royal Society of Canada, the book contains facts, figures and explanations that have been developed under the watchful eyes of several of Canada's top global change researchers.

Global Change and Canadians is intended for a senior high school through adult audience. It objectively tackles such topics as ozone depletion, climate change, sea level change, global economics, energy, and culture and values, to name a few. In addition to providing readers with the most recent statistics and theories behind these topics, the book explains where consensus has been reached and where uncertainty still exists. Finally, it outlines their significance for individual Canadians and the country.

Complemented with many graphs, tables and illustrations, this soft-cover book is a reliable reference tool suitable for classroom use, as well as being enjoyable, straightforward reading.

The cost of the book is CAN \$5.00 per copy, with bulk prices available on request. The price includes shipping costs (GST and PST not applicable). *Global Change and Canadians* is available in English and in French.

Global Change and Canadians: A Teacher's Guide

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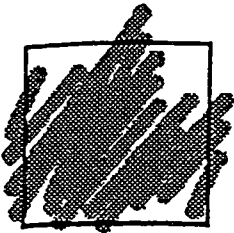


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***Ground
Truth
Studies***

Teacher Handbook

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◆ Comments Welcome

The Ground Truth Studies is an ongoing curriculum development project. The GTS Teacher Handbook is revised periodically to incorporate teacher evaluations and new approaches. We welcome your comments, criticisms, and suggestions about your experience using GTS activities. Your evaluations will be reviewed each time the Teacher Handbook is revised.

Please send your comments to the Aspen Global Change Institute.

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Preface

Ground Truth Studies is an interdisciplinary activity-based program that draws on the broad range of sciences that make up the study of global change and the complementary technology of remote sensing. Satellite and aerial imagery open a unique window onto the face of the Earth. These images are inviting and, once they become familiar, offer the learner — of any age — a new language, a visual language with direct relevancy to local as well as global environmental change. A key element of remote sensing is to go out into the area covered by an image and make observations and measurements. This direct observation or “ground truthing” complements and verifies the remotely-sensed data, hence the title of this book. The *Ground Truth Studies Teacher Handbook* provides supplementary program material for use by both primary or secondary teachers. The Handbook contains an introduction to global change and remote sensing, a generic set of images, a set of student activities, and reference materials.

Critical global change issues which are gaining recognition in this decade — unprecedented biodiversity loss, climate change, and stratospheric ozone depletion — will all remain center stage as we enter the 21st century. A clear and necessary educational challenge is to face these issues with the information to make wise decisions. These issues are rich in the fundamentals of science. Educational approaches which build on the strength of individual disciplines such as biology, while at the same time fostering the integration across disciplines, are required for gaining a grasp of the complex new field of study described as Earth system science. How people interact with the process of global change is not only fascinating, it is becoming central to how we chart our future as a species.

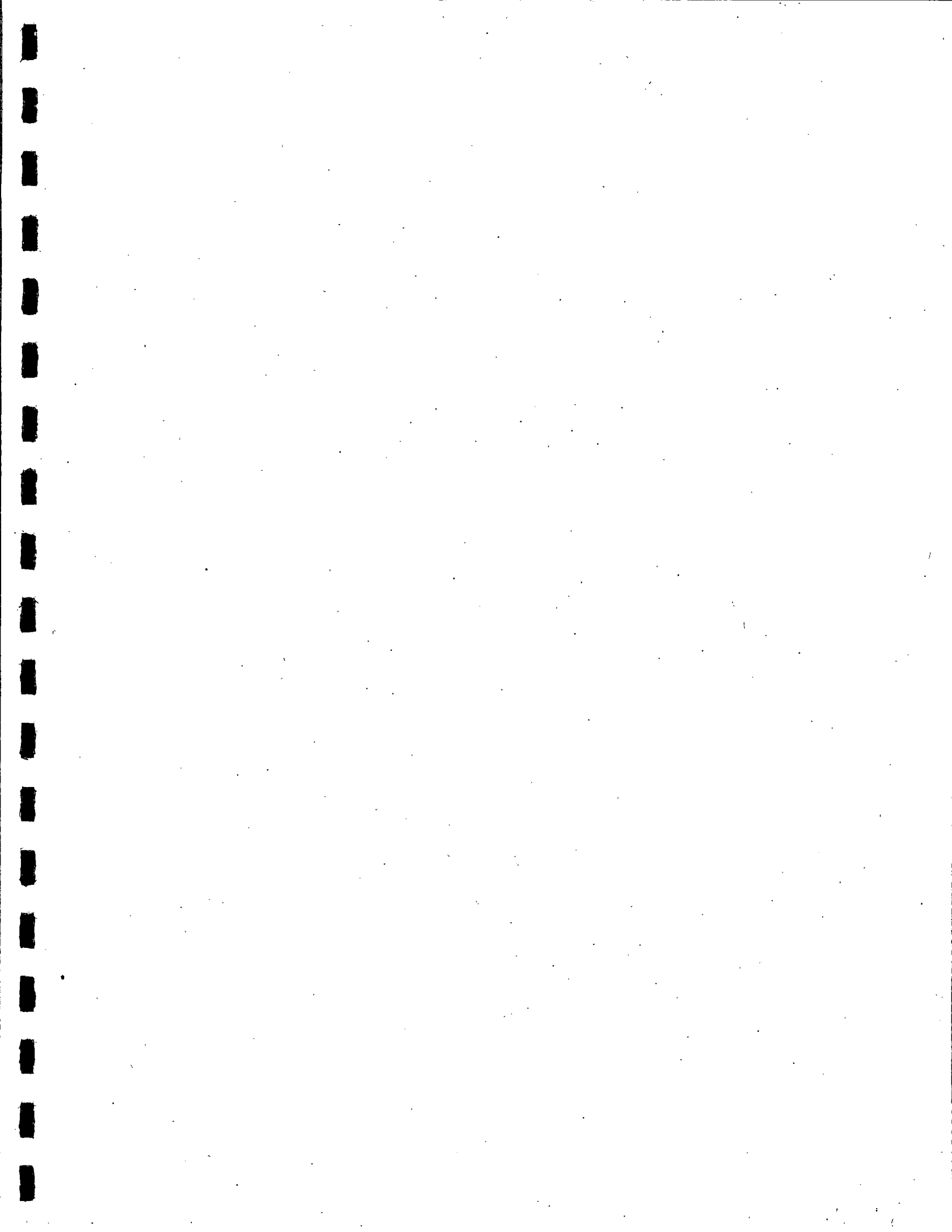
The aim of the *GTS Teacher Handbook* is to explore these global change issues with the aid of the powerful tool of remote sensing. The National Aeronautics and Space Administration describes the role remote sensing will play

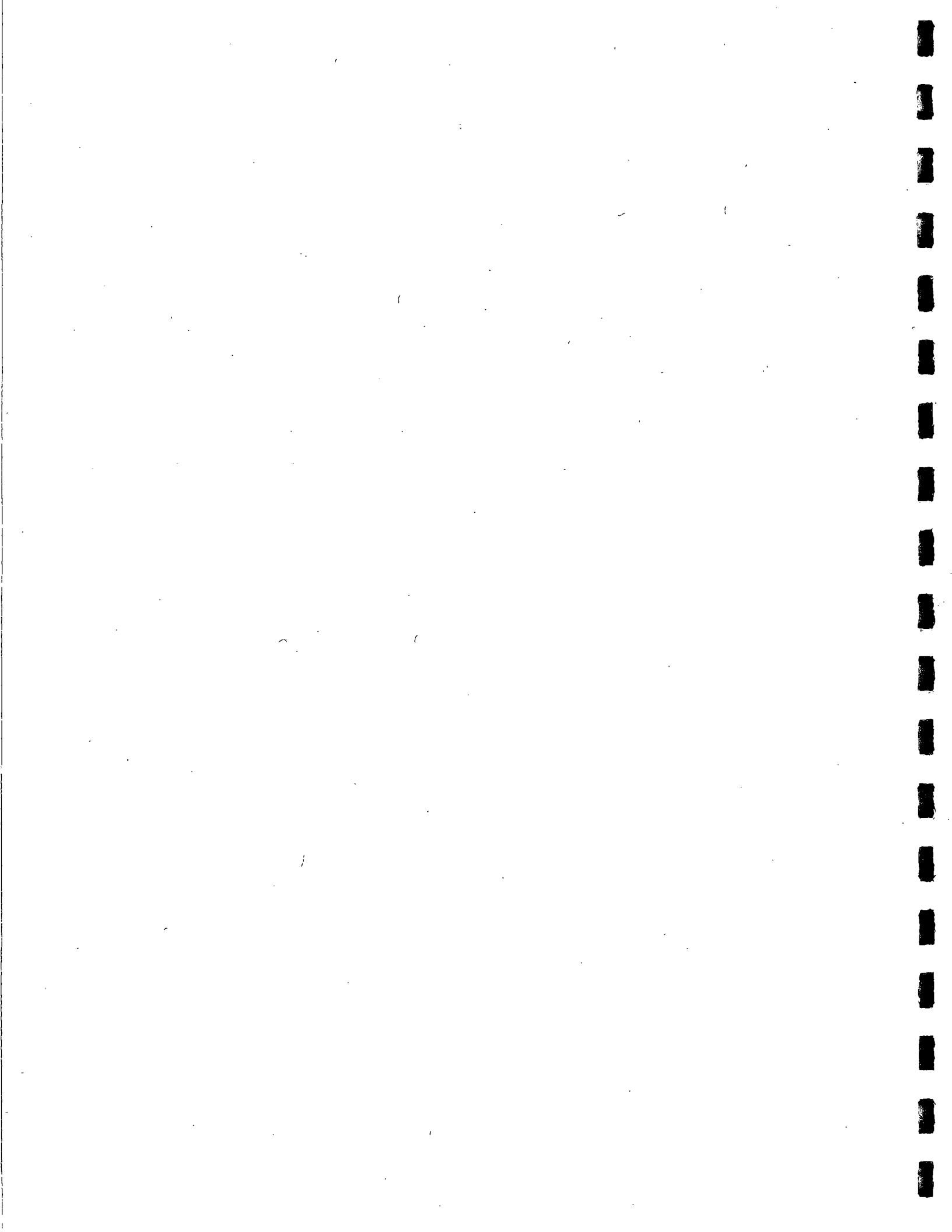
in gaining new knowledge of how Earth systems work as “Mission to Planet Earth.” The range, quantity, and complexity of satellite data require a new commitment to its interpretation and use. The knowledge gained is a critical piece of the puzzle of our dynamic planet and lays the foundation for the development of global environmental policy, such as the international accord for CFC regulation. It can also serve as a guide for making personal decisions that impact one's local environment and, ultimately, the global environment.

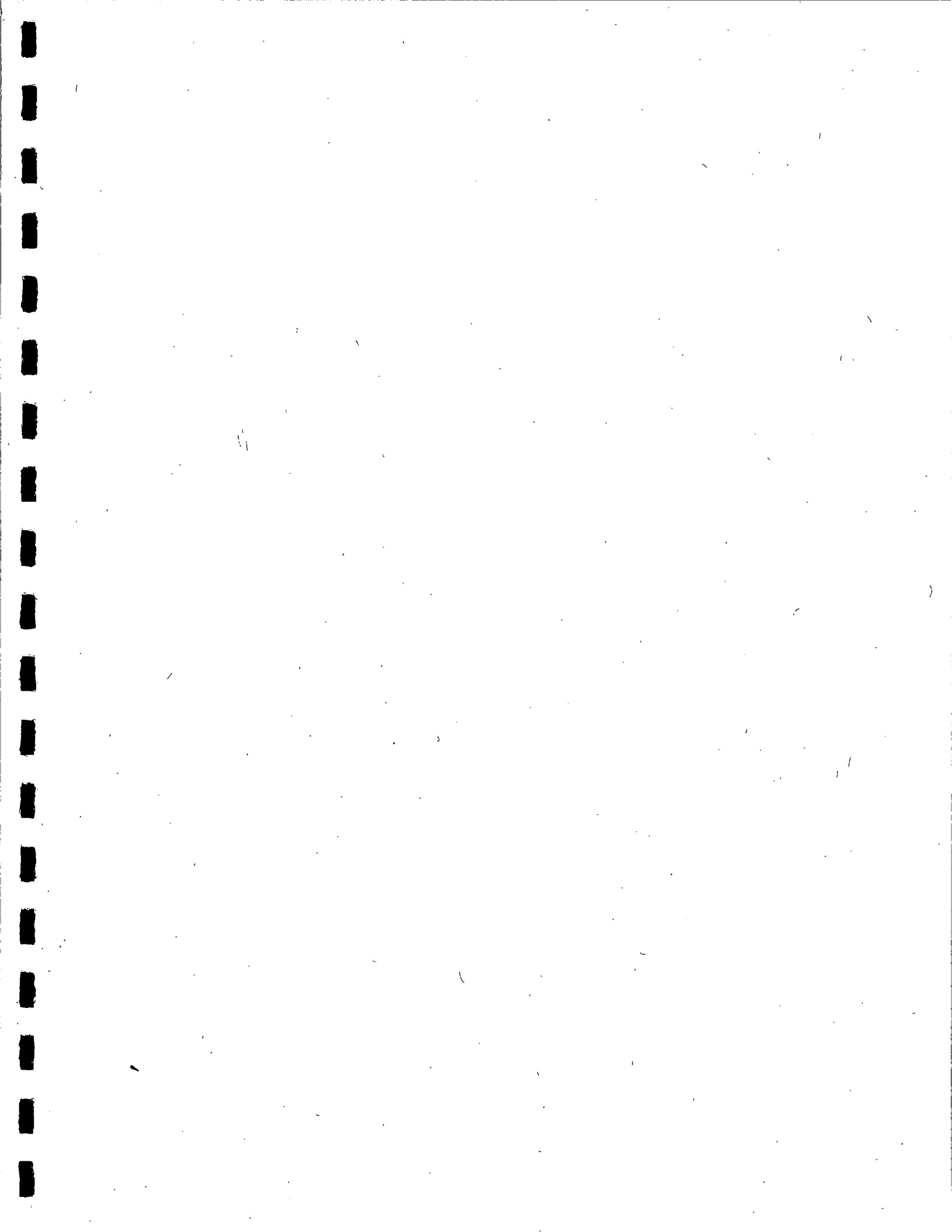
The 20th century is perhaps the last century humanity views the Earth as an *infinite* expanse from which to appropriate the necessary resources for supporting human activity. What we do, from clearing forest cover, to growing rice, to burning fossil fuels, to manufacturing and transporting goods, transforms essential elements of the biosphere. Where are the models to guide us in the 21st century toward a sustainable use of resources? What tools do we have to mitigate our global impacts, to approach whole ecosystems wisely? What is required to approach these questions with even tentative confidence? The challenge of this decade is to assemble the data, the ideas, and the models that transcend the limits of single-disciplinary research and forge new modes of cross-disciplinary research. The educational challenge is to provide approaches that embrace the natural *and* social sciences, and provide the basis for policy and practice that is sensitive to the immediate and long-term needs of our complex, miraculous home planet.

The study of global change is as close as your backyard or school grounds. This Handbook is an invitation to link local environmental conditions to the broader topics of global change.

John Katzenberger
Aspen, Colorado
May 1992



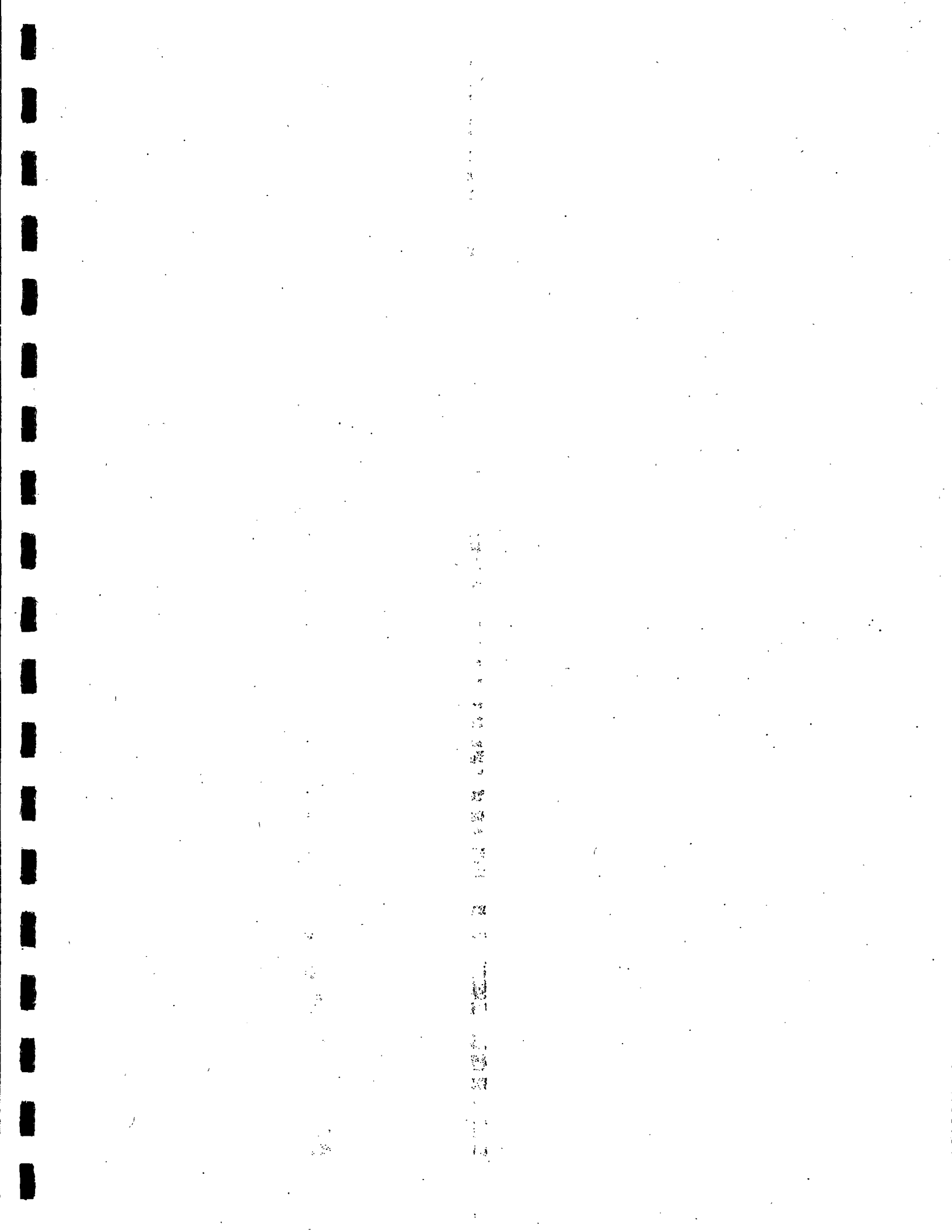




SECTION V

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RÉSUMÉ

EDUCATION

- Masters of Adult Education, St. F.X. University. 1990. Thesis area: Adult Environmental Education (Design and facilitation)
- Bachelor of Fine Arts, Honours, York University, Toronto, 1976.

EMPLOYMENT

- 1987-present: President/owner, environmental education consulting company. What follows is a summary of some of the activities conducted by EcoLogic over the past years. More complete information is available on request.
- Previous Employment: Education co-ordinator St. Mary's River Project; Researcher; (responsible for designing and implementing education programs for woodworkers, industry, government, and the public on Integrated Resource Management).
- Television and Radio News reporter (CBC); Consultant to York University Summer Studies Program.

FACILITATION/MULTI-STAKEHOLDER EXPERIENCE

- Design and facilitation of a national multi-stakeholder, multi-regional meeting for environmental educators (Ottawa).
- Design and facilitation of a National Workshop-ECOmmunity Project Harmony Foundation (Ottawa)
- Design and facilitation of workshop/discussion groups at WILDFOR (Jasper, Alta.); a national multi-stakeholder process for those involved in forestry and wildlife
- Facilitator/Rapporteur; National ENVIROFOR Conference, Toronto (a multi-stakeholder consultation and discussion process for those involved in the forest industry).
- Design and facilitation of the second National EnviroFor on Protected Places in Forest Areas (Edmonton)

- Design and facilitation of provincial (NS, SASK) ENVIROFORS as a follow-up to the National event.
- Participated in the National Round Table workshop on consensus-building
- Five years experience working in a multi-stakeholder project (St. Mary's River Forestry-Wildlife Project). As Education Co-ordinator I designed and facilitated numerous workshops and educational events).

Please note: I was invited to design and facilitate the public consultations on the draft Nova Scotia Sustainable Development Strategy but was unable to accept this contract due to prior commitments.

PUBLIC/CORPORATE EDUCATION

- Numerous in-services for teachers including presentations at the National Social Studies Conference
- Design and facilitation of an award-winning environmental training program for 1200 pulp and paper employees
- Design and facilitation of environmental workshop; Canadian Pulp and Paper Association
- Design and facilitation of a national 2-day forestry education workshop (Toronto)
- Design and facilitation of workshops for Parks Canada on consensus-building and communications skills (NB and NFLD).
- Design and facilitation of an Atlantic Regional Stewardship Workshop (Wildlife Habitat Canada) on Public Participation
- Environmental workshops for youth, seniors, foreign students, hospital staff, community groups, pulp contractors (too numerous to mention)
- Design and facilitation of an Elderhostel Program on Environment and Natural History (now in its 7th year)
- Environmental Education Workshops, International Environmental Management Seminar, Dalhousie Univ.; Coady International Institute
- St. F.X. Univ. Continuing Education courses to seniors, youth, and general public
- Environmental talks and walks to over 2000 school children; leader, Young Naturalist Club
- Consultant: Environmental training program: Montreal
- Numerous lectures on the environment
- Communications/adult education training workshops
- Organizer of local recycling committee (depot and compost centre)

WRITING EXPERIENCE

- Author - Adopt-A-Stream Manual on Community Involvement in Stream Rehabilitation and Clean-up
- Co-author - feasibility study on a National Education program on Toxicology and Pest Management
- Author, 65-page Home Study Manual on Woodlot Ecology for small woodlot owners
- Co-author of 100-page Home Study Manual on Wildlife and Forestry for small woodlot owners
- Co-author, UNESCO report on the feasibility of a Canadian Environmental Education organization
- Wrote and directed training video for woodworkers on better environmental practices
- Script consultant on 2 additional environmental training videos (forestry-wildlife)
- Teacher's study guide for environmental video (U.S. distribution)
- Wrote and presented script in a video produced for a corporate environmental awareness program.
- Numerous papers presented and published at conferences (NS.; PEI.; NB. BC. ONT; Colorado; Texas; Minnesota, Montana)
- Articles on the environment and forestry-wildlife (NS Conservation, newsletters, newspapers)

COMMITTEES

- Chair, National Steering Committee and Interim Coordinator, EECOM (Canadian Network for Environmental Education and Communication)
- Member, Nova Scotia Round Table on Environment and Economy
- Chair, Sub-Committee on Non-Formal Environmental Education (NS Round Table)
- Member, National Round Table on Pulp and Paper
- Provincial Representative, MABNET (Man and the Biosphere Network), UNESCO Canada
- Member, Town of Antigonish Waste Management Committee
- Member, St. Francis Xavier Waste Management Committee

PROFESSIONAL ORGANIZATIONS

- North American Association of Environmental Education
- EECOM : Canadian Network for Environmental Education and Communication
- Canadian Association for Research in Adult Education
- Canadian Association for Adult Education
- Nova Scotia Forestry Association
- Clean Nova Scotia Foundation

AWARDS/RECOGNITION

- Canadian Institute of Forestry - Tree of Life Award for contribution to forest education
- Nova Scotia Environmental Control Council Environmental Award for Business awarded to Stora Forest Industries for the Environmental Awareness Program designed by EcoLogic.
- included in CRIAW/CREF (Canadian Research Institute for the Advancement of Women) Directory of Action Research.
- included in the Directory of Canadian Women Specializing in Global Issues databank.
- The work of EcoLogic has been featured in numerous media articles/presentations including MacLeans magazine, CTV Forestry special, The Brundtland Bulletin, Halifax Chronicle Herald, Charlottetown Patriot, Canadian Ecology Advocates Newsletter, Sustainable Development News, Nexus, Environmental Eye, Halifax Daily News, Nova Scotia Forest Times, numerous community papers and newsletters.

References are available upon request

ABOUT ECOLOGIC

EcoLogic is owned and operated by Anne Camozzi of Antigonish, Nova Scotia. EcoLogic utilizes a wide network of Associates that are chosen for their expertise about a specific skill area.

EcoLogic specializes in the design and facilitation of adult education programs related to the environment and sustainability . The diversity of EcoLogic's work is reflected in the contracts EcoLogic is currently involved in:

- Design and facilitation of three two-day training programs for Parks Canada employees on adult environmental education and consensus-building techniques (Nfld, NB, and NS)
- Design and facilitation a National Dialogue (EnviroFor - a 2 day event) on Protected Places in forest areas for stakeholders with an interest in Canada's forests (Edmonton)
- Re-writing the Nova Scotia Adopt-A-Stream manual with an implementation strategy (Nova Scotia) so that local and community stewardship of water resources will be more widespread
- Part of a team of consultants who conducted a survey to develop a National education strategy for the delivery of environmental educational programs about toxicology (Ottawa-based)
- Keynote-kick-off speaker at a national conference in the United States on sustainable communities (Minneapolis)
- Developing a course on Eco-Tourism for an Atlantic Canada community college (Nfld)
- Conducted a needs assessment to develop a new orientation program for 1000 National Park employees (Calgary)

Additionally, EcoLogic is involved on a volunteer basis in many initiatives. Anne Camozzi chairs EECOM, the Canadian Network for Environmental Education and Communication. Additionally she sits as members of the Nova Scotia Round Table on Environment and Economy, the National Round Table on Pulp and Paper, and is a founding member of Green Routes, the new Nova Scotia network for environmental education. In her capacity on the NS Round Table she will be chairing a provincial sub-committee to develop an environmental education strategy for the province.

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Scott Maritimes Ltd.
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Canadian Forestry Association
N.S. Forestry Association
Sask. Forestry Association
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N. S. Dept. of Natural Resources
Environment Canada
Parks Canada
Federal Dept. of Fisheries and Oceans
N.S. Dept. of Fisheries
NorPen College
St. Mary's Univ.
Dalhousie Univ.
St. Francis Xavier Univ.
Univ. de Montreal
UNESCO - MAB Canada
N.S. Credit Union Central
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Bullfrog Films (US)
North American Association for Environmental Education (US)
National Community Education Association (US)
Pictou Hospital
St. Martha's Hospital
National Social Studies Assoc.
Canadian Institute of Forestry- Nova Scotia section**

numerous individual schools and community groups

HEATHER M. GRIFFIN

Box 3, Nagle's Place
St. John's, Newfoundland
Canada, A1B 2Z2
Phone: (709) 754-5948
Fax: (709) 754-5947

Education Profile

Bachelors Degree, Education
Queen's University, 1984

- Concentrated studies in: Environmental Education; Outdoor and Experiential Education; Junior-Intermediate Divisions; Science and Drama; Curriculum Development.

Bachelors Degree, Arts
Queen's University, 1982

- Majors in English and Philosophy.

Present Employment

Director, Newfoundland and Labrador Programs
Atlantic Centre for the Environment

- Coordinating a field office for a non-profit environmental organization; programs in conservation, leadership development, training, and environmental education.
(May '90 - present)

Recent Projects

Environmental Science Text Book

Co-author of an environmental science student text, teacher's guide, and field guide, entitled Finding the Balance - For Earth's Sake, commissioned by the Dept. of Education for use in high schools in the province. (March '92 - June '93)

Rails to Trails

Chaired a coalition of organizations and agencies exploring the conservation, recreation, and tourism potential for the abandoned Newfoundland railbeds. (June '90 - Jan. '93)

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Environmental Tourism

Developed thematic environmental tours for conservation groups, promoting and employing local outfitters and operators. Also worked with the Economic Recovery Commission for Newfoundland and Labrador, Provincial Department of Tourism, and others, on a strategy for adventure and eco-tourism in the province. (Sept. '90 - Nov. '92)

Television, Music, and Environmental Education

- Contracted by Sesame Street Canada to record six short music videos with marine education themes for preschool children. (Aired January '92 and ongoing)
- Appeared with David Suzuki on a half-hour program entitled "The Newfoundland Fishery". (Aired on CBC Television and PBS, various dates throughout 1992 and 1993)
- Wrote and co-produced an award-winning environment and music children's television special, entitled "No Small Wonder". (Aired on CBC Television April and June '93)
- Feature performer for another environment and music family television special, entitled "Being So Green and Hardly Thirteen". (Aired on CBC Television April '94)
- Public and school musical performances, with Eric West; environmental and cultural themes. (1990 and ongoing)

Present Board and Volunteer Commitments

Interpretation Canada

National Chairperson. Professional association for heritage interpreters in Canada - environmental, cultural, and historical educators.

Newfoundland and Labrador Conservation Corps

Board member. Establishment of an employment and training program for youth, in provincial conservation projects.

Maris Atlantis Foundation

Board member. Development of an aquarium and marine education programs for the province.

Centre for Forest and Environmental Studies

Board member. Centre for human resource development and technology transfer in support of sustainable development.

Protected Areas Association

Board member. Establishing political and broad-based public support for protected areas.

Scientists in the Classroom

Volunteer lecturer for the public school system.

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Previous Employment Experience

Sept. '86 - May '90

Curriculum Consultant,
Youth Services Division
Dept. Culture, Recreation and Youth
Govt. of Newfoundland and Labrador

- Development of curriculum series in environmental education.
- Organization of pilot projects; in-service training; evaluation of curriculum materials.
- Management of sub-contracts for design, illustration, and printing.

Aug. '84 - Sept. '86

Education Coordinator,
Whale Research Group
Memorial University of Newfoundland
St. John's, Newfoundland

- Education research, school presentations, curriculum design, teacher inservicing, in environmental/marine education.

Jan. - Sept. '86

Instructor,
Fishing Industry Job-Entry Program
Industry Training Associates
St. John's, Newfoundland

- Development, instruction, and evaluation of courses in marine ecology, communications, interpersonal skills, learning skills, and problem solving.

July '84

Drama/Music and Nature Study Director,
Camp Oochigeas
Geneva Park, Ontario

June '84

Canoe-athon Planner and Participant,
Downtown Churchworkers Association
Dorset, Ontario to Montreal, Quebec

- A 1,000 km fund-raising canoe trip to enable Toronto inner-city children to attend Moorelands summer camp.

Sept. '83 - April '84
(Part-time)

Museum Guide and Curriculum Aide,
Marine Museum of the Great Lakes
Kingston, Ontario

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- Aug. '83 Nature Study Director,
West Haven Lodge, Pasadena, Newfoundland
- June/July, '83 Instructor,
Ocean Horizons Environmental Education Camp
Atlantic Centre for the Environment,
Newfoundland.
- Jan. - June '83 Resource Specialist,
QLF/Atlantic Centre for the Environment
Ipswich, Massachusetts
- June - Sept. '82 Boating and Tripping Coordinator,
Moorelands Camp, Dorset, Ontario
- October '81 - May '82
(Part-time) Literacy Tutor,
H.E.L.P. Program, Frontier College
Kingston, Ontario
- Summer '80 Sports Director, Villajoyosa, Spain
- Sept. '79 - May '80 Hotel Employee, Bern and Zermatt, Switzerland
- May - Sept. '79 Farm labourer, New Zealand

Selected Publications

Finding the Balance - For Earth's Sake (With D. Minty and D. Murphy.) Student Text, Teacher's Guide, Field Guide. Breakwater Books, Nfld., 1993. (Pilot edition, 1992.)

No Small Wonder. A Teachers Guide to the video production "No Small Wonder", Atlantic Centre for the Environment, 1993.

4-H Nature Detectives: An Introduction To Our Natural Resources.

Members Manual, Leaders Manual, Edukit Guide, Songbook. Government of Newfoundland and Labrador, 1987.

4-H Nature Detectives: Nature's Relationships - Ecology.

Members Manual, Leaders Manual, Songbook. Government of Newfoundland and Labrador, 1988.

A Fisheries Activity Guide. (With J. Atkinson)
Government of Newfoundland and Labrador, 1989.

Splash '89 Proceedings. (Ed., conference papers)
Interpretation Canada, 1990.

-5-

Attitudes of Canadian Students and Teachers Towards the Marine Environment and Marine Education. (With J. Lien)
In Marine Parks and Conservation: Challenge and Promise.
Vol. 1, Ed. by J. Lien and R. Graham, NPPAC, Toronto, 1986.

The Coastal Zone - Life Along the Edge. (With members of the
Whale Research Group of Memorial University)
Parks Canada, Ottawa, Ontario, 1985.

Fisherman's Calendar.
Evening Telegram, and Department of Fisheries and Oceans,
St. John's and Ottawa, 1986, 1987.

Getting Along: Fish, Whales, and Fishermen. (With J. Lien and
members of the Whale Research Group)
Breakwater Books, St. John's, Newfoundland, 1985.

Scholarships and Awards

North American Film and Video Award, Outdoor Writers of
America, for the t.v. production "No Small Wonder", 1993.

Nomination for a national Governor General's Award for
Conservation, by the Govt. of Nfld. and Lab., 1992.

Alumni Service Award, Atlantic Centre for the Environment,
1990.

Margaret Perney Memorial Scholarship, for "Integrity,
honesty, and deep spiritual values", 1980.

Elizabeth L. Grier Memorial Award, for "Sportsmanship,
leadership, and scholarship", 1978.

Other Qualifications

St. John's Ambulance Standard First Aid
Canadian Heart Foundation Basic Rescuer Certificate (CPR)
Wilderness First Aid and Rescue Credit
Tour Leader 1 Theory Award
National Lifeguard Service Certificate
Red Cross Instructors Certificate
Royal Lifesaving Society Instructors Certificate
Ontario Camping Association Level Four Canoeing Award

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References

Mr. Tom Horn
Vice President, Programs
QLF/Atlantic Centre for the Environment
P.O. Box 217
Montpelier, Vermont
U.S.A., 05602
Phone: (802) 229-0707

Mr. Dennis Minty
Director, Information and Education
Wildlife Division
Govt. of Newfoundland and Labrador
P.O. Box 8700
St. John's, Nfld.
A1B 4J6
Phone: (709) 729-6974

Mr. Bill Wilson
Director, Youth Services Division
Dept. Municipal and Provincial Affairs
P.O. Box 8700
St. John's, Nfld.
A1B 4J6
Phone: (709) 576-3591

Dr. Jon Lien
Director, Whale Research Group
230 Mt. Scio Road
St. John's, Nfld.
A1C 5S7
Phone: (709) 737-7642

CURRICULUM VITAE

Charles A. Hopkins
19 Grenadier Heights
Toronto, Ontario
M6S 2W5
Res. (416) 762-7002
Bus. (416) 397-3803

PERSONAL

Marital Status: married, two daughters

ACADEMIC QUALIFICATIONS

- 1984 Ontario Supervisory Officers Certificate
- 1969 Michigan State University - U.S.A.
Faculty of Education
Degree: M.A.
Specialization: Curriculum
- 1967 McMaster University - Canada
Degree: B.A.
Specialization: Social Sciences, Psychology and Sociology
- 1961 Nippising University - Canada
Degree: Ontario Teaching Certificate
Specialization: Grades K-10

PROFESSIONAL EXPERIENCE - ADMINISTRATION

1992 - Superintendent - Curriculum
Present Toronto Board of Education

Responsibilities:

- The design and development of curriculum in the following areas:

Environment and Development Education

◀ The Greening Schools Program (An environmental review of curriculum, buildings, purchasing policies, waste management, energy conservation, etc.)

◀ Environmental education curricula - elementary/secondary

- ◄ Environmental education facilities programs at
- Boyne River Natural Science School
- Toronto Urban Studies Centre

Health Education

- ◄ Wellness Program
- ◄ HIV/AIDS STD programs
- ◄ Sexual Orientation
- ◄ Healthy Environments
- ◄ Nutrition
- ◄ Healthy Relationships
- ◄ Family Planning

Physical Education

- ◄ Full range of programs and facilities
- ◄ Athletic meets and sporting events
- ◄ Fitness programs

Art and Culture

- ◄ Visual Arts
- ◄ Music
- ◄ Drama/Dance
- ◄ Integrated Arts Program
- ◄ Concerts/Performances

- **Staff Responsibility for Major Committees**
- **Special Need Students**

- ◄ The Education of Black Students
- ◄ The Education of Native Students
- ◄ The Education of Gay and Lesbian Youth

- **Chair**

- ◄ Advisory Council on Bias in the Curriculum (responsible for removing all forms of bias, including race, gender, class, sexual orientation, religion, etc.)

- **Staff Support**

- ◄ Race Relations Committee
- ◄ Health and Fitness Committee
- ◄ Environmental Issues Committee
- ◄ Arts Advisory Committee

1991-1992 **Chair on the World Congress for Education and Communication on Environment and Development (ECO-ED)**

This was both a Congress and an ongoing international education project. ECO-ED was sponsored by the United Nations Education Scientific and Cultural Organization (UNESCO), the International Chamber of Commerce (ICC) and the United Nations Environment Program (UNEP). ECO-ED was a multi-sectoral gathering with over four thousand participants from eighty-five countries.

1984-1991 **School Superintendent**
Toronto Board of Education

Responsibilities:

- Regional Superintendent of 14 schools in the inner city of Toronto.
- Responsible for approximately 700 employees.
- Total budget in excess of fifty million Canadian dollars.
- Responsible for program, staffing and facilities.
- Additional city wide responsibilities for computer implementation and environmental issues.
- Responsible for environmental education at Boyne River Natural Science School and Toronto Urban Studies Centre.

1978-1984 **Principal - Toronto Urban Studies Centre**
Toronto Board of Education

Responsibilities:

- Development of original facility - curriculum, staff and operations. This was the first program of its kind in North America.

1973-1984 **Principal - Boyne River Natural Science School**
Toronto Board of Education

This is a large outdoor and environmental study centre housing 140 students from elementary and secondary schools in one-week residential courses.

Responsibilities:

- Involving in developing concept, funding, facility design, staffing and operations from 1973-1984.

1969-1973 **Principal - Toronto Island Natural Science School**
Toronto Board of Education

This was the first residential environmental study centre in Canada. All Grade 6 students attend this school for a one-week residential environmental education program.

PROFESSIONAL EXPERIENCE - TEACHING

- 1986-1988 **Guest Lecturer - Urban Environmental Issues**
Simon Fraser University
- 1981-1988 **Guest Lecturer - Environmental Education**
York University (Undergraduate Level)
- 1981-1984 **Guest Lecturer - Environmental Education**
Ontario Institute for Studies in Education (O.I.S.E.)
- 1978 -
Present **Guest Lecturer - Environmental Education**
Northern Illinois University
Various aspects of environmental education for masters level courses.
- 1961-1968 **Teacher - Toronto Island Natural Science School**

PUBLICATIONS

Ecology, published by Holt Rinehart and Winston - a text used by senior elementary and junior high school students.

Numerous articles in journals and professional newsletters in Canada, the United States and Australia.

Recent Articles include:

UNESCO Courier

ECO Decision

UNESCO Literacy For All

ENVIRONMENTAL EDUCATION RESEARCH - Member of International Advisory Board

Written and photographed several educational film strips on Canadian Arctic and Iceland.

Member of International Editorial Board

ENVIRONMENTAL EDUCATION RESEARCH - UK, USA

AWARDS

- 1992 Certificate of Appreciation from the Prime Minister of Canada for contribution to the Earth Summit in Rio.
- 1986 Council of Outdoor and Environmental Educators of Ontario - contributions to environmental education.
- 1984 North American Association for Environmental Education - first award of this group for outstanding contributions to environmental education.
- 1982 Northern Illinois University - TAFT Outdoor Education Award for outstanding contribution to Outdoor Education.

1977 HRH Queen Elizabeth Silver Jubilee Medal for contributions to environmental education.

RELATED PROFESSIONAL EXPERIENCES

Assisted in the production of environmental television documentaries shown internationally.

- Three programs in *Audubon Wildlife Theatre* series.
- Three programs in *Wildlife Cinema* series.
- A one-hour documentary was produced by the Canadian Broadcasting Corporation featuring my contributions to environmental education through the Boyne River Natural Science School and the Toronto Urban Studies Centre.
- Assisted the European Community Environmental Education Project. Met with teachers and national experts at meetings in Greece and Italy.
- Have provided assistance to the Australian Association for Environmental Education. Was also keynote speaker at their first national conference in Adelaide - 1980.

PROFESSIONAL LEADERSHIP IN EDUCATION

Founding Member
Council of Outdoor Educators of Ontario
Energy Educators of Ontario
UNESCO Canada MAB/Net

- 1991-1992 Member of the 10-member international writing team that produced the education chapter for AGENDA 21 - the action plan of the United Nations Conference on Environment and Development - Rio de Janeiro, June 1992.
- 1992 Member of the Canadian UNCED team.
- 1990 Organizer of the Boyd Symposium On Science Education
- This was a multi-sectoral retreat involving education, business, government and research to discuss the future of science education in Toronto.
- 1994 Organizer of the Boyne Symposium on Arts Education. For five days in March 1994, representatives of the various arts sectors including performers, lecturers, government representatives and educators worked to develop a strategy to improve arts education.
- 1983-1993 Member of the Education Advisory Committee at the Metro Toronto Zoo.
- Advisor to the Global Tomorrow Coalition - A United States environment organization comprised of industry, government and non-government organizations.
- Member of the Santa Fe Council for Environmental Excellence - a multi-sectoral environmental education group involving 50 major United States corporations.

Major Conference Organizing Team

- 1992 World Congress for Education and Communication on Environment and Development (ECO-ED) - Toronto, Ontario
- 1987 North American Association for Environmental Education (NAEE) - Québec City, Québec
- 1984 North American Association for Environmental Education (NAEE) - Lake Louise, Alberta
- 1982 Man Environmental Impact Conference II - Hamilton. A major environmental education conference (5,000 delegates). Host of international pre conference (52 countries).
- 1976 Man Environmental Impact Conference (4,200 delegates).

International Speaker on Environmental Education

- 1979-1989 Presented papers in the following countries: United States, Australia, New Zealand, Finland, Holland, Great Britain, Ireland and the Soviet Union.
- Environmental education workshop participant - Germany, United States, Wales, Northern Ireland, China, Italy and Greece.
- 1990 Led a study tour to Australia on "Sustainable Development Education" comprised of North American senior business persons, educators and Australian hosts.

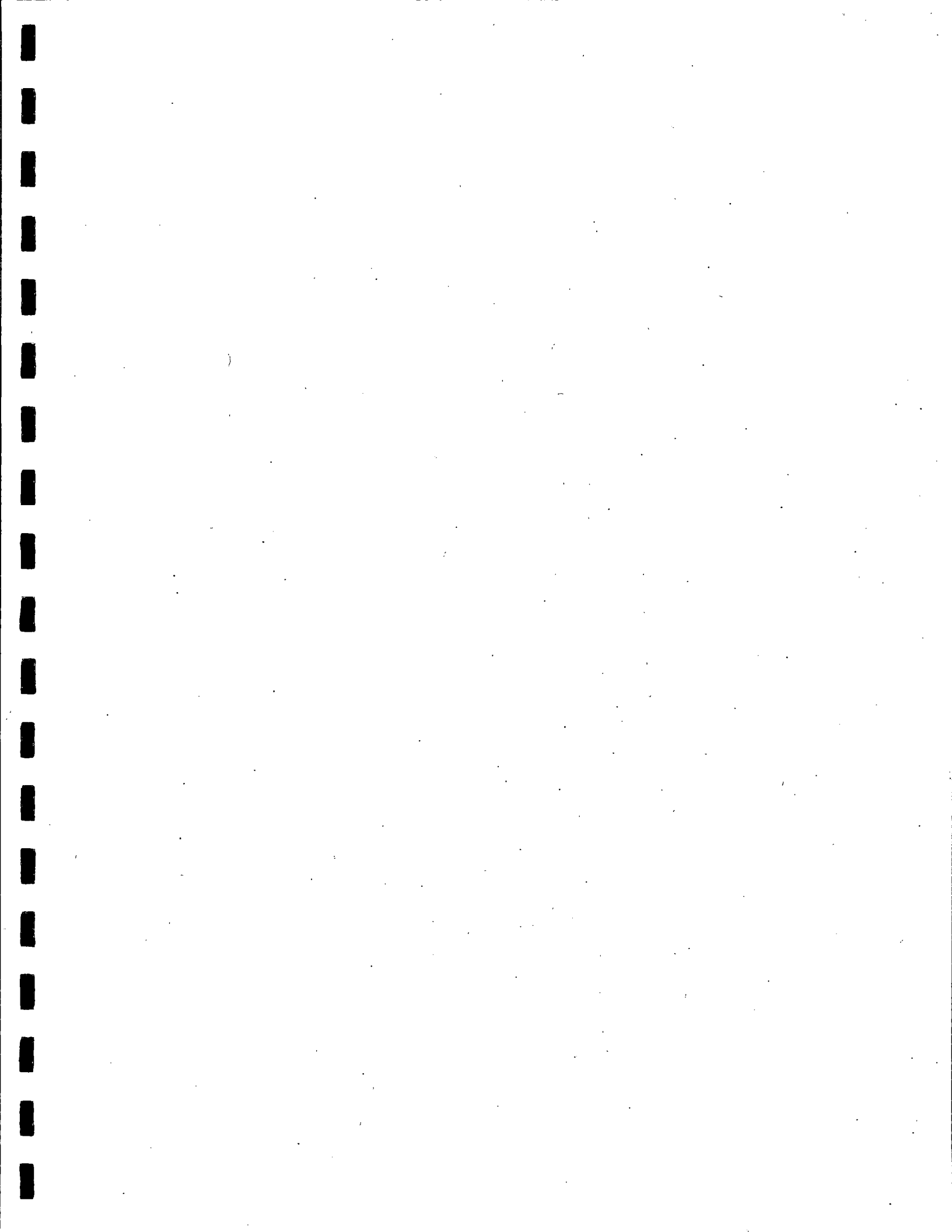
ADVISORY BOARD/DIRECTORSHIPS

- 1983 - Present UNESCO Canada MAB
- Chair of MAB/NET - a national environmental education and training network, linking various regions of Canada electronically via telecommunications.
- 1989-Present Knowledge of the Environment For Youth (K.E.Y.) Foundation
- Member of Advisory Council of the Knowledge of the Environment For Youth (K.E.Y.). K.E.Y. is a Canadian multi-sectoral environmental education foundation currently focusing on chemical literacy.
- 1992 - Present Canadian Network for Environmental Education and Communication (EECOM)
- Advisory board member.
- 1989-1993 Earth Angels
- Member of advisory board. Earth Angels is a cooperative environmental education program for elementary students. This program has been designed by educators and funded by industry.

- 1987-1990 **North American Association for Environmental Education (N.A.A.E.E.)**
North American Association for Environmental Education. Chair International Committee.
- 1987-1991 **Second Harvest**
A local Toronto food bank for homeless and needy urban dwellers.
- 1982-1989 **The Society, Environment, Energy Development Studies (S.E.E.D.S.) Foundation**
The Society, Environment, Energy Development Studies Foundation is comprised of environmentalists, business representatives largely from energy and chemical industries and educators jointly producing environmental teaching materials.
- 1982-1986 **Canadian Outward Bound Wilderness School**
Chair of Program - Special Programs
Outreach to Native People
Outreach to Business and Industry
- 1980-1985 **Association of Experiential Education (A.E.E.)**
This North American Organization uses the environmental to achieve character growth featuring physical education and outdoor pursuits as an entry to environmental relationships.

REFERENCES

To be supplied upon request.



Curriculum Vitae

Preparation Date 27 June 1994

Name Budd L. Hall

Rank Professor

Address Department of Adult Education
The Ontario Institute for Studies in Education
252 Bloor Street West
Toronto, Ontario, Canada
M5S 1V6

Telephone (416) 923-6641, Extension 2410

Degrees Ph.D., Comparative-International Education, University of California,
Los Angeles, 1974.

M.A., Education, Michigan State University, East Lansing, Michigan,
1968.

B.A., Political Science, Michigan State University, 1965.

Status Tenured

Employment

1994 to date Professor, Department of Adult Education, The Ontario Institute for
Studies in Education

1991 to 1994 Associate Professor, Department of Adult Education, The Ontario
Institute for Studies in Adult Education

1979 to 1991 Secretary-General, The International Council for Adult Education

1989 to date Associate Professor (Extra Mural), Environmental Studies, York
University

1978 to 1991 Associate Faculty Member and Extra-mural Instructor, Department of
Adult Education, The Ontario Institute for Studies Education

1975 to 1979 Director of Research, International Council for Adult Education

1975 to 1976 Secretary (Principal Organizer), International Conference on Adult
Education and Development

- 1974 to 1975 Visiting Fellow, Institute of Development Studies, University of Sussex, United Kingdom
- 1970 to 1974 Head, Department of Research, Institute of Adult Education, University of Dar es Salaam, Tanzania
- 1969 to 1970 Assistant Professor, San Fernando Valley State College
- 1969 to 1970 Associate, Graduate School of Education, University of California at Los Angeles
- 1968 to 1969 Teaching Assistant, University of California at Los Angeles (graduate level).
- 1965 to 1967 Teacher, Head of History Department, Government Secondary School, Katsina, Nigeria

Honours/Awards

Listed in: *Who's Who in Canada, Who's Who in the Commonwealth, Who's Who in International Organizations, Who's Who in Education (1990-1993)*

- 1992-93 President, Canadian Association for the Study of Adult Education/ l'Association canadienne pour l'étude de l'éducation des adultes
- 1991 Bradwin Address, Frontier College
- 1988 Honourary Governor, Frontier College
- 1974 to 1975 Visiting Fellowship, Institute of Development Studies, University of Sussex
- 1974 Life Membership, Tanzanian Association of Adult Education
- 1970 to 1972 Three awards, Fullbright-Hayes Professorial Fellowship
- 1968 to 1969 Graduate Associateship, UCLA
- 1969 President Graduate Students Association, UCLA
President Comparative Education Association, UCLA
- 1964 African Exchange Fellowship, Nigeria

Professional Activities

Within OISE

- 1993 to date Member, Executive Committee, OISE Faculty Association

1993 to date	Poetry Editor, <i>OISE News</i>
1992 to date	Faculty Representative, Council of Ontario Universities
1992 to date	Co-Director, Centre for Community and Global Transformation Learning
1991 to date	Chairperson, Admissions Committee, Department of Adult Education
1991 to date	Member, Critical Global and Community Focus, Department of Adult Education
1991	Member, Indigenous Education Network
1981	Selection Committee for Director of International Programmes
<i>Outside OISE</i>	
1993 to date	Editorial Board, <i>Adult Basic Education</i> (USA)
1992 to date	Editorial Board, <i>International Journal of Computers in Adult Education and Training</i> (UK)
1992 to date	Reviewer, Book Manuscripts, Jossey-Bass Publishers (USA)
1992 to date	Editorial Board, <i>CASAE/ACÉÉA Journal</i> (Canada)
1991 to date	International Advisory Committee, Paulo Freire Institute (Sao Paulo, Brazil, Los Angeles, California)
1991 to date	Senior Associate, Centre for Integration and Education, Toronto
1990 to date	Member, Board of Directors, Center for Community Education and Action, Inc., Northampton, MA
1989 to date	Member, Advisory Council, Institute of Development Research, Boston
1992-1993	Evaluation Specialist, Prison for Women Project, Ontario Ministry of Education
1991-1992	Director, Evaluation of the Public Education Process of the Ontario Government's Fair Tax Commission
1991-1992	Advisor, Participatory Research Workshop, Haiti, IDRC
1991	Resource Editor, Adult Education Section, International Encyclopedia of Education

1990-1992 Trustee, Nelson Mandela Fund of Canada, Toronto

1989 to 1991 Executive Coordinator, International Task Force on Literacy

1990 Steering Committee, World Conference on Education for All

1988 Founder, International Task Force on Literacy

1983-1986 Governor, Board of Governors, Frontier College

1982-1985 Member, Board of Directors, Rural Learning Association

1977-1986 Member, Board of Directors, World Literacy of Canada

1985 Organizer, World Assembly of Adult Education, Buenos Aires, Argentina

1982 Organizer, World Assembly of Adult Education, Paris, France

1977-1981 Member, Board of Directors, Economic Development Bureau, New Haven, Connecticut

1980 Planning Committee, Commonwealth Conference on Non-Formal Education

1978 Editor, Special Issue of *Ideas and Action Bulletin* (FAO) on Participatory Research, December 1978.

Editor, Special Issue of *Convergence* on Adult Education and Political Action, XI (1) 1978.

1977 Founder, International Participatory Research Network

1976 Organizer, World Assembly of Adult Education, Dar es Salaam

1975 Editor, Special Issue of *Convergence* on Participatory Research, VIII (2) Fall 1975.

1975 Editor, Special Issue of *Literacy Discussion* on Tanzanian Adult Education, Spring, 1975.

1970-1974 Founding Treasurer, Tanzanian National Adult Education Association

Graduate Thesis Committees (outside OISE): Completed

Faculty of Environmental Studies
York University (M.A.)

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University of Dar es Salaam, Tanzania			
	Supervisions	(M.A.)	5
	Memberships	(Ph.D.)	2
McGill University, External Examiner		Ph.D.	1
University of Alberta, External Examiner		Ph.D.	1
University of Calgary, External Examiner		Ph.D.	1

Graduate Supervisions (at OISE)	Masters	Doctorate
Completed	0	0
In Progress:	0	1

Committee Memberships		
Completed	6	12
In Progress	3	12

Graduate Courses (at OISE)

Department of Adult Education

1993 - 1994	Political Economy of Adult Education Adult Education in Cross-Cultural Perspectives Participatory Research in the Community and Workplace
1992 - 1993	Special Topics in Adult Education: Participatory Research in the Community and the Workplace Political Economy of Adult Education Outline of Adult Education
1991 - 1992	Adult Education in Cross-Cultural Contexts Political Economy of Adult Education Outline of Adult Education
1990 - 1991	Adult Education in Cross-Cultural Contexts Political Economy of Adult Education ¹
1989 - 1990	Political Economy of Adult Education
1988 - 1989	Political Economy of Adult Education
1987 - 1988	Political Economy of Adult Education Special Topics in Adult Education: Peace Education
1986 - 1987	Political Economy of Adult Education Special Topics in Adult Education: Peace Education
1979 - 1986	Political Economy of Adult Education (One course each academic year)

Department of Sociology

1981	School and Community (Course 1929)
1980	School and Community (Course 1929)

¹ Extra Mural Instructor from 1979 to Spring Term 1991.

Graduate Courses (outside OISE)

Department of Adult Education, University of British Columbia

1993 International Dimensions of Adult Education

Faculty of Environmental Studies, York University (Extra Mural)

1990 Research and Intervention in Organizations: Participatory Research

1989 Research and Intervention in Organizations: Participatory Research

Institute of Development Studies, University of Sussex (Lecturer)

1974 - 1975 M.A. Course on Development Studies

University of Dar es Salaam, Tanzania (Associate Professor and Senior Research Fellow,
Master's Programme in Adult Education)

1970 - 1974 Research Methods in Adult Education

University of California, Los Angeles (Graduate Teaching Associate)

1968 - 1970 Cultural Foundations of Education
Philosophy of Education
Comparative African Educational Systems
Comparative Educational Systems

Research Funding

Granting Council

1993-1994 Popular Education and Environmental Action. IDRC, \$146,000.

1985-1990 Supporting International Networks in Adult Education. CIDA, \$1.5 million

1982-1984 Human Resource Development Through Adult Education. CIDA, \$1.5 million

1980 A Comparative International Analysis of the Political Economy of Adult
Education. IDRC, \$16,500

1979 A Historical Study of Mass Campaigns in the Context of Development.
UNESCO, \$19,000

1977 A Study on the Structures of Adult Education in Developing Countries.
UNESCO, \$6,000

Private Foundation

- 1988 Developing a Resource Base for the international adult education movement.
W.K. Kellogg Foundation, \$1.8 million
- 1978 A Learning Network in Participatory Research. Ford Foundation, \$24,500
- 1976 The Development of Participatory Research. Hazen Foundation, \$20,000

Publications: Life Time Summary

Books Published	8
Books in Progress	2
Chapters in Books	11
Papers in Refereed Journals	28
Papers in Refereed Conference Proceedings	14
Technical Reports	5
Manuals/Monographs	18
Abstracts and/or Papers Read	638

Publications

Books

Transformative Learning in Community and Global Perspective, Kumarian Press (in progress).

Adult Education and Democracy. San Francisco: Jossey-Bass (in progress).

Voices of Change: Participatory Research in the U.S. and Canada (edited with Ted Jackson, Mary Brydon-Miller and Peter Park). Westport, Conn. and Toronto: Greenwood and OISE Press, 1993, 203 pp.

Creating Knowledge: A Monopoly? (edited with A. Gillette and R. Tandon), New Delhi, Manipur Press, 1982, 218 pp.

The World of Literacy (co-authored with J.R. Kidd, M. Gayfer, V. Shrivastava) Ottawa: International Development Research Centre, 1979, 128 pp.

Adult Learning: A Design for Action (edited with J.R. Kidd). Oxford: Pergamon Press, 1979, 337 pp.

Mtu Ni Afya: Tanzania's Health Campaign, Washington, D.C.: Clearinghouse on Development Communications, 1978, 74 pp.

Adult Education and Development in Tanzania (edited) Dar es Salaam: National Adult Education Association of Tanzania, 1975, 152 pp.

Adult Education and the Development of Socialism in Tanzania, Nairobi: East African Publishing House, 1975. 144 pp.

Adult Education and National Development: Proceedings of the 1971 African Adult Education Association Conference. (edited with Khatun Remtulla). Nairobi: East African Literature Bureau, 1973, 128 pp.

Chapters in Books

"Participatory Research" in Torsten Husen and Neville Postlethwaite (eds.) *International Encyclopedia of Education*, 2nd ed., Oxford: Pergamon Press, 1994, pp. 4330-4336.

"Adult Education and the Political Economy of Global Change", *The Political Economy of Adult Education*. DeKalb, Illinois: N.I.U. Press (forthcoming), 1993, 20 pp.

"Building a Global Learning Network: History of the International Council for Adult Education" in Beverly Cassaras (ed.) *Adult Education in World Perspective*. Miami: Kreiger Publishers (forthcoming), 1993, 22 pp.

"Participatory Research: An Introduction" in Budd Hall, Peter Park, Ted Jackson and Mary Brydon-Miller (eds.) *Knowledge and Social Change*. Toronto: OISE Press/Greenwood Press, 1993, pp. 13-22.

"Overview on International Adult Education" in Chester Klevens (ed.) *Materials and Methods in Adult and Continuing Education*. Los Angeles: Klevens Publishing, 1987, pp. 64-67.

"Investigacion Participativa, Conocimiento Popular y Poder: Una reflexion personal", in *La Investation Participativa en America Latina*. Patzcuaro, Mexico: CREFAL, 1983, pp. 15-34.

"Evaluation - How well Have We Done?" in Budd Hall (ed.) *Handbook on Adult Education in Tanzania*, Dar es Salaam: Tanzania Publishing House, 1972 (also translated into Kiswahili), pp. 91-115.

"La Creación del Conocimiento: La Ruptura del Monopolio, Métodos de Investigación, Participación y Desarrollo" in Orlando Fals Borda (ed.) *Simposio de Cartagena*. Bogota: Punta de Lanz, 1978, pp. 395-427.

"The Tanzanian National Radio Study Campaigns" (with Tony Dodds), *Radio for Education and Development*. Stanford, California: Stanford University Press, 1978, pp. 396-427.

"Practical Issues in the Democratization of Research", *Human Inquiry, Reason and Rowan* (eds.) London: John Wiley & Sons, 1980, pp. 447-457.

"Knowledge as a Commodity: The Inequities of Knowledge Creation", *Universities and the International Distribution of Knowledge*, Irving Spitzberg, Jr. (ed). New York: Praeger, 1980, 25-41.

Papers in Refereed Journals

"Perspectives on Globalization and the International Practice of Adult Education" in *International Journal of Lifelong Education (UK)* 13 (6) November 1994, 19 pp. (forthcoming).

"Recentring Adult Education Research: Whose World Is First?" in *Studies in Continuing Education (Australia)* 15 (2), 1993, pp. 149-161.

"From Margins to Center: Historical and Theoretical Perspectives on Participatory Research" in *American Sociologist*, 23 (4), Winter 1992, pp. 15-28.

"Learning and Global Civil Society: Challenges and Experiences in Electronic Networking" in *International Journal of Computers in Adult Education and Training*, 3 (3), 1993, pp. 5-24.

"Rich and Vibrant Colours: 25 Years of Adult Education" in *Convergence* (25th Anniversary Issue), September 1992, pp. 13-25.

"New Perspectives in Literacy: The Role of Non-governmental Organizations" in *Prospects* XIX (4) 1989, pp. 573-378.

"The Role of NGOs in the Field of Adult Education" in *Convergence* XIX (4), 1986, 20 pp.

"Trends in Adult Education Since 1972" (with Arthur Stock) in *Prospects*, XV (1) 1985, pp. 13-27.

"Recommendations of the International Council for Adult Education" in *Graduate Studies Journal* 2 1984, pp. 97-111.

"Research, Commitment and Action: The Role of Participatory Research" in *International Review of Education* 30 (3) 1984, pp. 289-299.

"Participatory Research, Popular Knowledge and Power: A Personal Reflection" in *Convergence* 14 (3) 1981, pp. 6-19.

"Knowledge as a Commodity and Participatory Research" in *Prospects* XI (4) 1979, pp. 393-408.

"Continuity in Adult Education and Political Struggle", in *Convergence* II (2), pp. 8-16.

"Notes on the Development of the Concept of Participatory Research in an International Context" in *International Journal of University Adult Education* XVII (1) April 1978, pp. 11-18

"Alles wat de wetenschap doet in de volwassenen-educatie is politiek van aard" in *Vorming* (Dutch journal of training in adult education), May 1978, pp. 32-45.

"Participatory Research: Expanding the Base of Analysis" in *Focus/International Development Review* 4 1977, pp. 18-24.

"Development Campaigns in Rural Tanzania", in *Indian Journal of Adult Education* XXXVII (4-5), April/May, 1976.

"Notes on Literacy Research: The State of the Art", in *Convergence*, 8 (4) 1975, pp. 4-21.

"Participatory Research: An Approach for Change", in *Convergence*, 8 (2) 1975, pp. 24-31.

"Tanzania Mass Education Campaign" in *Education in Eastern Africa*, November 1974, pp. 45-55.

"The United Republic of Tanzania: A National Priority to Adult Education" in *Prospects* IV (4) Winter 1974 (also in French), pp. 550-554.

"Who Participates in University Adult Education?" in *Rural Africana* 25, Fall 1974, pp. 45-55.

"Mtu Ni Afya: Tanzania's Mass Health Education Campaign", in *Convergence* 7 (1), 1974, pp. 91-98.

"Conscientization by Radio in Tanzania" in *I.D.S. Bulletin*, March 1975, pp. 40-45.

"The 'Man is Health' Mass Study Campaign", in *Literacy Discussion* 6 (1), 1974, pp. 95-108.

"Revolution in Rural Education: Health Education in Tanzania" in *Community Development Journal*, April 1974, pp. 18-25.

"Provision for the Poorly Educated Rural Areas", in *Adult Education (UK)* 46 (4), pp. 254-259.

"Mass Adult Education in Tanzania" in *Ufahamu*, Journal of the African Activist Association, Spring 1972, pp. 18-24.

Papers in Refereed Conference Proceedings

"Re-centring Adult Education Research: Whose World is First?" *CASAE/ACÉÉA Proceedings*, May 1994, pp. 190-195

with Follen, S., Fairbank, P., Belanger, B., Ryan, F. "Looking Back into the Future: Prison for Women and Prior Learning Assessment", *CASAE/ACÉÉA Proceedings*, May 1994, pp. 172-177.

"Tax, Lies and Videotape: Popular Education and The Ontario Fair Tax Commission", *CASAE/ACÉÉA Proceedings*, June 1993, pp. 191-196.

"Higher Education, the Politics of Knowledge and the Challenge of Popular Education and Social Movements", *Proceedings*, Comparative and International Education Society (CIES), Jamaica, March 1993, 23 pp.

"Global Networks, Global Civil Society?: Lessons from International Non-Governmental Organizations", *Proceedings*, Comparative and International Education Society (CIES), Jamaica, March 1993, 25 pp.

"Epistemology and Voice: Poetry, Transformation and Adult Education", *Proceedings*, Adult Education Research Conference, Saskatoon, Saskatchewan, May 15-17, 1992, pp. 294-299.

"The Meaning of the Global Context for Transformative Research", *Proceedings*, Adult Education Research Conference, May 15-17, 1992, Saskatoon, Saskatchewan, pp. 288-290.

"Participatory Research" Panel at the Adult Education Research Conference, Ann Arbor, Michigan, 1979, *Proceedings*, AERC, pp. 222-3.

"Practical Issues in the Democratization of Research in Non-Formal Education in the Commonwealth". Lead Paper for the 1979 Commonwealth Education Conference on Non-Formal Education, New Delhi, India, 1979. Published in *Proceedings*, edited by Paul Fordham, pp. 135-142.

"African Studies, The Formation of Knowledge and Political Commitment". Keynote address, 8th Conference of the Canadian Association of African Studies and the 10th International Conference of the Institute for International Cooperation. May 1978, Ottawa, Canada. Appears in *Proceedings*, CAAS, pp. 8-20.

"Non-formal Education, Re-distribution of Wealth and Production", for AAEA Conference, Kiushasa, Zaire, September 1975, 19 pp.

"Mtu ni Afya: Tanzanian Health Education Campaign". East African University Social Science Conference. December 1973, Dar es Salaam. Appears in *Proceedings*, pp. 200-225.

"Who Participates in African University Adult Education". East African University Social Science Conference. December 1972, Nairobi. *Proceedings*, pp. 30-45.

"Evaluation of Adult Education in Tanzania. A Status Report". Presented at the East African Social Science Conference, Dar es Salaam, 1970. *Proceedings*, pp. 20-30.

Manuals/Monographs

with Sullivan, E., *Transformative Learning: Contexts and Practices*. Transformative Learning Centre, May 1994, 25 pp.

"Higher Education, the Politics of Knowledge and the Challenge of Popular Education and Social Movements", *Proceedings*, Comparative and International Education Society (CIES), Jamaica, March 1993, 23 pp.

"Global Networks, Global Civil Society?: Lessons from International Non-Governmental Organizations", *Proceedings*, Comparative and International Education Society (CIES), Jamaica, March 1993, 25 pp.

"Epistemology and Voice: Poetry, Transformation and Adult Education", *Proceedings*, Adult Education Research Conference, Saskatoon, Saskatchewan, May 15-17, 1992, pp. 294-299.

"The Meaning of the Global Context for Transformative Research", *Proceedings*, Adult Education Research Conference, May 15-17, 1992, Saskatoon, Saskatchewan, pp. 288-290.

"Participatory Research" Panel at the Adult Education Research Conference, Ann Arbor, Michigan, 1979, *Proceedings*, AERC, pp. 222-3.

"Practical Issues in the Democratization of Research in Non-Formal Education in the Commonwealth". Lead Paper for the 1979 Commonwealth Education Conference on Non-Formal Education, New Delhi, India, 1979. Published in *Proceedings*, edited by Paul Fordham, pp. 135-142.

"African Studies, The Formation of Knowledge and Political Commitment". Keynote address, 8th Conference of the Canadian Association of African Studies and the 10th International Conference of the Institute for International Cooperation. May 1978, Ottawa, Canada. Appears in *Proceedings*, CAAS, pp. 8-20.

"Non-formal Education, Re-distribution of Wealth and Production", for AAEA Conference, Kiushasa, Zaire, September 1975, 19 pp.

"Mtu ni Afya: Tanzanian Health Education Campaign". East African University Social Science Conference. December 1973, Dar es Salaam. Appears in *Proceedings*, pp. 200-225.

"Who Participates in African University Adult Education". East African University Social Science Conference. December 1972, Nairobi. *Proceedings*, pp. 30-45.

"Evaluation of Adult Education in Tanzania. A Status Report". Presented at the East African Social Science Conference, Dar es Salaam, 1970. *Proceedings*, pp. 20-30.

Manuals/Monographs

with Sullivan, E., *Transformative Learning: Contexts and Practices*. Transformative Learning Centre, May 1994, 25 pp.

- The Right to Learn.* Toronto, Board of Education, October 1985, 120 pp.
- The Education of Adults: Recent Changes and Present Prospects.* The Hague: Centre for the Study of Education in Developing Countries, 1981, 54 pp.
- Creating Knowledge: Breaking the Monopoly?* Working Paper No. 1, Participatory Research Project. Toronto: International Council for Adult Education, 1977, 27 pp.
- An Outline of the Educational System in Tanzania* (with Jeanne Moulton). Report C.O. Division of Educational Policy and Planning, Paris: Unesco, 1977, 32 pp.
- Non-Formal Education, Re-distribution of Wealth and Production.* Occasional Paper of the ICAE. Toronto: International Council for Adult Education, 1976, 20 pp.
- The Structure of Adult Education and Rural Development in Tanzania.* Discussion Paper 67, Brighton: Institute for Development Studies, University of Sussex, 1975, 35 pp.
- Participation and Education in Tanzania.* Discussion Paper 86. Brighton: Institute for Development Studies, University of Sussex, 1975, 25 pp.
- Report on the Evaluation of Mtu ni Afya.* Dar es Salaam: Institute of Adult Education 1974, 110 pp.
- The Integration of Adult Education in Tanzania* with P.J. Mhaiki, Third International Conference on Adult Education. Tokyo, 1972. Published as monograph, 1973, 112 pp.
- Who Participates in University Adult Education?* Dar es Salaam: Institute for Adult Education, Working Paper No. 5, February 1973, 19 pp.
- Voices for Development: Tanzania's Mass Education Campaigns.* Uppsala: Scandinavian Institute for African Studies, 1973, 80 pp.
- Studies in Adult Education* (with Y. Kassam). Dar es Salaam, Institute for Adult Education, February 1972, 45 pp.
- The 1971 Literacy Campaign Study* (with Mhaiki, Malya and Maganga). Dar es Salaam: Institute of Adult Education, April, 1972, 80 pp.
- Wakati wa Furaha: An Evaluation of a Radio Study Group Campaign.* Dar es Salaam: Institute for Adult Education, 1973, 59 pp.
- Adult Education Now: Readership Survey.* Dar es Salaam: Institute of Adult Education, March 1971, 25 pp.

Adult Education in the Districts: A Survey of District Education Officers for Adult Education (with G.O. Haule). Studies in Adult Education No. 1, Dar es Salaam: Institute of Adult Education, 1971.

The Junior College in International Perspective. Los Angeles: Clearinghouse on Junior College Information, 1970, 39 pp.

Technical Reports

"Learning Lessons: Global Networking and International Non-Governmental Organizations". Report of a Study for CIDA, August 1992.

Through Dialogue We Give Meaning to Our Work (Notes on the Impact of the ITB-FES Relationship from the Point of View of Counterpart Faculties). North York: Faculty of Environmental Studies, 1992.

"The Structure of Adult Education in Tanzania". International Seminar on Comparative Structures of Adult Education in Developing Countries, February 1975, Kikuyu, Kenya. Appears in *Final Report*, Unesco, 1976.

"University Adult Education: A Time for Broadening Participation?" Third Conference of the African Adult Education Association. Dar es Salaam, April 1971. *Report*, pp. 45-57.

Study on the Need for University Trained Personnel in the Field of Adult Education. Dar es Salaam: Institute for Adult Education, February 1971, 13 pp.

Selected Invited Addresses

Keynote Address, National Conference on Integration and Community, The Centre for Integration and Education, Toronto, May 1, 1992.

Bradwin Address, "Implications for Literacy in a Global Context", Frontier College, October 19, 1991.

Keynote Address, Adult Education in Global Perspectives, University of the District of Columbia, Washington, D.C., September 13, 1991.

Keynote Address, National Conference on Global Education, Toronto, October 1990.

Keynote Address, International Conference on NGOs and International Literacy Year, Nagoya, Japan, June 1990.

Recent Abstracts and/or Papers Read (Selected List)

(Over 600 talks, seminars, addresses in 57 countries over 25 years)

"International NGOs, Networking and Global Civil Society", ARNOVA Conference, Toronto, October 1993.

"Transformative Learning in Community and Global Perspectives", University of British Columbia, June 16, 1993.

"African Studies in Canada: Problems and Prospects", Comparative and International Education Society of Canada, Ottawa, June 12, 1993.

"Peace Education", at CASAE, Ottawa, June 10, 1993.

"Re-Centering Adult Education Research", at Critical Pedagogy Workshop, Ottawa, June 9, 1993.

"Global Networks, Global Civil Society?: Lessons from International Non-Governmental Organizations", Comparative and International Education Society, Kingston, Jamaica, March 1993.

"Higher Education, the Politics of Knowledge and the Challenge of Popular Education and Social Movements", Comparative and International Education Society, Kingston, Jamaica, March 1993.

"The Politics of Literacy", IDRC Summer Institute, OISE, July 1992.

"Popular Education and the Academy", Canadian Association for the Study of Adult Education, Saskatoon, May 15-17, 1992.

"Popular Education and the Global Crisis", 70th Birthday Conference of Paulo Freire, New School, New York City, N.Y., December 6, 1991.

"International Approaches to Adult Education and Democracy", CIDEDEC, OISE, Toronto, November 1991.

"Pour la coopération internationale et la solidarité" in *Crise et Education Permanentes?* Montreal, Université, Avril, 1983.

Other recent presentations to such institutions as:

- McMaster University
- Centro El Canelo de Nos, Santiago, Chile
- Guelph University
- Trent University
- University of Northern Illinois
- Rutgers University
- Teachers College, Columbia University
- American Association for Adult and Continuing Education
- Peuple et Culture, France
- Unesco
- Unicef
- University of Toronto (Sociology)
- Simon Rodriguez University, Venezuela
- University of Ottawa
- University of Ljubljana, Yugoslavia
- University of British Columbia
- University of Dar es Salaam, Tanzania
- University of California, Berkeley

- University of Zimbabwe, Harare
- National Coordination, Literacy Crusade, Nicaragua
- All Union Society of Knowledge, Moscow, U.S.S.R.
- University of Technology, Australia
- University of Osaka, Japan

- Participatory Research in Asia, New Delhi
- York University
- University of the Western Cape, South Africa
- University of Calgary

Poetry (Publication and Performance)

"Towers of History" (performance), Toronto City Hall, September 30, 1993.

"Waiting" in *Minus Tides*, Summer 1993, p. 25.

"Laundromat Prince", in *The Coming of Dawn*. Owings Mills, Maryland: National Library and Poetry, 1993 (also in *OISE News*).

"Towers of History" (performance), IDRC Summer Institute, Toronto, OISE, July 1993.

"Invited Readings", Ottawa, Learned's Conference, June 16, 1993.

"Hearts and Wings and Bells", in *Alumni Newsletter*, Faculty of Environmental Studies, York University, Winter, 1993.

"Hearts and Wings and Bells" (performance) dian Marino Memorial Service, 1993.

"River of Life" (performance), Myles Horton Memorial Service, Highlander, New Market, Tennessee, May 1990.

"Maitreya" for the Madan Handa Memorial Service, 1990.

CURRICULUM VITAE**ROBERT JAMES LINDSAY (BOB) JICKLING****WORK ADDRESS:** Yukon College, Box 2799, Whitehorse, Yukon, Y1A 5K4
WORK TELEPHONE: (403) 668-8778 **FAX:** (403) 668-8828**PERMANENT ADDRESS:** 12 Haycs Place, Whitehorse, Yukon, Y1A 5R2
PERMANENT TELEPHONE: (403) 668-2807**DATE OF BIRTH:** November 17, 1950
MARITAL STATUS: Married, two children
NATIONALITY: Canadian**UNIVERSITY EDUCATION****PH.D.**

Simon Fraser University, Faculty of Education. Degree requirements completed July, 1991.

Area of Concentration: Curriculum Theory and Implementation.Area of Interest: Curriculum theory and educational philosophy and their role in curriculum development. Curriculum in the Northern Canadian context, specifically the Yukon. Environmental studies and implications for education and curriculum.Supervisor: Dr. Marvin Wideen. Second committee member: Dr. Robin Barrow**PROFESSIONAL**

University of British Columbia, Faculty of Education. Completed: Teacher professional training. First class standing. 1979-1980.

Areas of concentration: General Science, Biology and Physical Education.References: Dr. Peter Moody, Dr. Anne Anthony**M.P.E.**

University of British Columbia, School of Physical Education and Recreation. 1972-1976.

Thesis: "The Effects of Arousal Induced by Physical Exertion Upon Mental Performance".Supervisor: Dr. Gary D. Sinclair**B.P.E.**

University of British Columbia, School of Physical Education and Recreation. 1968-1972.

Areas of concentration: Human motor performance, general science, biology.

AWARDS AND DISTINCTIONS

- Yukon Coach of the Year, 1993 (Coaching cross-country skiing.)
 University of British Columbia Sports Hall of Fame, 1993 (1970-71 Varsity Rugby Team)
 Simon Fraser University Graduate Fellowship (2)
 Simon Fraser University President's Ph.D. Research Stipend
 Northern Scientific Training Program Grant
 Ted Parnell Memorial Scholarship (Yukon Conservation Society)

PUBLICATIONS AND PRESENTATIONS

- Jickling, Bob. Teaching about sustainable development: Problems and possibilities. Canadian Journal of Education. (In Press.)
- Jickling, Bob. Ecological literacy, "great books", and some thoughts on environmental education research. Proceedings of the 22nd Annual Conference of the North American Association for Environmental Education. Troy, Ohio: North American Association for Environmental Education. (In Press.)
- Jickling, Bob. (1993). Research in environmental education: Some thoughts on the need for conceptual analysis. Australian Journal of Environmental Education. 9, 85-94.
- Jickling, Bob. (1993). Environmental education and sustainable development: An uneasy alliance. Green Teacher. 35, 17.
- Jickling, Bob. (1993). Thinking beyond paradigms in environmental education research. In R. Mrazek (Ed.), Alternative paradigms in environmental education research (pp. 307-309). N.A.A.E.E.: Troy, Ohio. Also in (1992) Environmental Communicator. March/April, 4-5.
- Jickling, Bob. (1992). Wilderness, knowing, and the Tatshenshini River. The Northern Review. 8/9(Summer), 173-185.
- Jickling, Bob. (1992). Analysis in environmental education research. Presented at Eco-Ed: A World Congress for Education and Communication on Environment and Development. Toronto: October 16-21, 1992.
- Jickling, Bob. (1992). Why I don't want my children to be educated for sustainable development. Journal of Environmental Education. 23(4), 5-8.
- Jickling, Bob. (1991). Environmental education, problem solving, and some humility please. The Trumpeter. 8(3), 153-155. (1990). An earlier version of this paper appeared in D. A. Simmons, C. Knapp, & C. Young (Eds.) Setting the EE agenda for the '90s (pp. 216-222). Troy, Ohio: North American Association for Environmental Education.

- Jickling, Bob. (1991). Environmental education and environmental advocacy: The need for a proper distinction. To see ourselves/to save ourselves: Ecology and culture in Canada. (pp. 169-176). Association for Canadian Studies: Montreal. An earlier version of this paper appeared in the (1989) Proceedings of the Seventeenth Annual Conference of the North American Association for Environmental Education. (pp. 143-146). Troy, Ohio: North American Association for Environmental Education.
- Jickling, Bob. (1988). Paradigms in curriculum development: Critical comments on the work of Tanner and Tanner. Interchange. 19(2), 41-49.
- Jickling, Bob. (1988). A tough nut: A rejoinder to Robin Barrow and Daniel and Laurel Tanner. Interchange. 19(2), 64-67.
- Jickling, Bob. (1988). A note on the Yukon Training Strategy. The Northern Review. 1(summer), 134-135.
- Jickling, R. (1986). The Task Force on Northern Conservation: Participatory and educational considerations. Proceedings of the Fourteenth Annual Conference of the North American Association for Environmental Education. (pp. 250-257). Troy, Ohio: North American Association for Environmental Education.
- Jickling, R. (1977). The effects of a course at the Canadian Outward Bound School at Keremeos, British Columbia. Journal for the Canadian Association for Health, Physical Education and Recreation. 44(1), 30-37.
- Jickling, R. J. L. & Sinclair, G. D. (1976). The effects of arousal induced by physical exertion upon mental performance. In G. J. K. Alderson, & D. W. Cocup (Ed.), British Proceedings of Sports Psychology: IXth B S S P Conference 1976. (pp. 33-45). University of Exeter, England.

EDITED WORK

- Jickling, Bob (Guest Editor). (1993). Theme: Teaching about sustainability. Green Teacher, 35.

PANEL PARTICIPATION

Respecting our environment: What do we need to learn, and how can we learn it? Hosted by Yukon Department of Renewable Resources. Whitehorse, Yukon. February 1989.

How can teacher education be emphasized to a greater degree in NABEE? Fourteenth Annual Conference of the North American Association for Environmental Education. Washington D.C. September 1985.

RECENT PROJECTS

Consultant for British Columbia Ministry of Education. (1994). Review of Environmental Education: Toward Sustainable Societies Conceptual Framework.

Co-coordinator and host. (1993). Northern Forum on Northern Protected Areas and Wilderness. at Yukon College.

Coordinator of student research project. (1993). Environmental Audit of Yukon College.

Coordinator of student research project. (1993). Some Canadian Perceptions of Environmental Ethics. (Paper presented at the Northern Forum on Northern Protected Areas and Wilderness.)

PROFESSIONAL ORGANIZATIONS

Canadian Society for the Study of Education

North American Association For Environmental Education

TEACHING EXPERIENCE

Permanent Instructor. Yukon College. August 1990 to date.

Instructor. University of British Columbia, Educ. 380--Outdoor Education. Course taught in Yukon, for Yukon College. 1986, 1987, 1988, and 1989.

Instructor. Yukon College, P.E. 222--Introduction to Northern Outdoor Pursuits. 1989-90.

Instructor. Yukon College, Yukon Outdoor Leadership: Wilderness Canoeing. 1989.

Sessional Instructor. Simon Fraser University, Educ. 452/462--Summer Institute in Environmental Education. 1985 and 1986.

Co-Instructor. Yukon Campus: Physical Education 325; Curriculum and Instruction in Physical Education. 1981.

Teacher. Yukon Department of Education. Teacher of math, science, physical education and outdoor/environmental education, grades 4-9. Carcross and Whitehorse, Yukon. 1980-1986.

OTHER PROFESSIONAL EXPERIENCE

Participant. National Round Table on the Environment and the Economy consultations on post-secondary environmental education. 1994.

Steering committee member. Canadian Network for Environmental Education & Communication (EECOM). 1992 to date.

Member. Wildlife Viewing Technical Committee (Yukon). 1992 to date.

Workshop leader. (1984). Project: Thinking Globally--Acting Locally.
For Jack Hulland School. Whitehorse, Yukon.

Workshop leader. (1981). Project: Outdoor Education. For Stikine Teachers'
Association Conference. Whitehorse, Yukon.

Guest lecturer--Yukon Teacher Education Program, Topic: Outdoor Education. 1980.

Consultant. (1980). Project: Designed and implemented a wilderness program for local
youth. For Bella Bella Indian Band.

Guest Speaker. (1978, 1979, 1980). Topic: Outdoor Education. U.B.C. Recreation and
Education students. Vancouver, B.C.

Guest Speaker. (1978, 1979). Topic: Outdoor Education. Vancouver Community
College recreation students. Vancouver, B.C.

WILDERNESS GUIDE/INSTRUCTOR EXPERIENCE

OUTWARD BOUND COURSE/PROGRAM DIRECTOR

The Canadian Outward Bound Mountain School, based in Keremeos B.C., provides wilderness adventure courses for a broad cross-section of the public. A part of this programming has included expedition courses to other regions within Canada, including the Yukon.

A course/program director is responsible for course design, program implementation, and instructor supervision. In this capacity I have served Outward Bound on the following occasions:

- Director and Instructor, Canoe Instructor's Course. 1987
- Director, Yukon Expedition Courses. Summer 1982.
- Director, Yukon Expedition Courses. Summer 1979.
- Course Director, Keremeos School-Based Courses. Summer 1978.

OUTWARD BOUND INSTRUCTOR

I have had a long association with Outward Bound in Canada as well as overseas. Employment has been permanent, year-round, and seasonal at different times:

- Keremeos, B.C., Seasonal. 1985 & 1987.
- Keremeos, B.C., Permanent. 1978-1979.
- Lesotho, Africa, Permanent. 1977-1978.
- Eskdale, England, Seasonal. 1976.
- Keremeos, B.C., Permanent. 1974-1975.

CONSULTANT

Bella Bella Indian Band. Designed and implemented a wilderness program for local youth. July 1980.

INSTRUCTOR, CANOEING

- Yukon College. 1989-1994.
- City of Whitehorse, whitewater canoeing courses. 1981-1994.
- Instructor, Yukon College, Yukon Outdoor Leadership: Wilderness Canoeing. 1989.
- Instructors' Course, Keremeos, B.C. 1987.
- School Programs, Yukon. 1981-1986.
- As Outward Bound Instructor, 1974-1979, and 1982.

INSTRUCTOR, SKIING

- Assistant Coach, Yukon Cross Country Ski Team. 1994
- Coach, Yukon Ski Division "Talent Squad." 1993-94.
- Yukon College. 1989-1994.
- Coach, Whitehorse Cross Country Ski Club Junior Racing Program. 1989 - 92.
- School Programs, Yukon. 1981-1986.
- Instructed and assessed Canadian Ski Association Tour Leader 1 courses. December 1982 and December 1984.
- Assessor, Canadian Ski Association Tour Leader 1 course. April, 1982.
- Benno Jaeger Ski School (Vancouver), part-time, 1979-1980.

Canadian Outward Bound Mountain School, 1978-1979, and 1974-1975.
Chief Ski Instructor at a private ski lodge, Rjukan, Norway. 1976-1977.

GUIDE

In addition to the wilderness guiding inherent in the above activities, I have been involved in private sector activities on a part time basis in the Yukon. 1980-1986.

Leadership and guiding in the North includes descents of the following rivers: Bonnet Plume, Snake, Peel, South McMillan, Ross, Teslin, Big Salmon, Kathleen, Takhini, Wheaton, Hyland, Nisutlin, Dezadeash, Nahanni, Wolf, Firth, and Noatak.

Founding member of Yukon Association of Wilderness Guides.

COURSES AND CERTIFICATION

St. John's Ambulance, Standard First Aid with C.P.R. 1993.
Cross Country Canada, Coach - Level I. 1992
St. John's Ambulance, Cardio-Pulmonary Resuscitation. 1990.
St. John's Ambulance, Standard First Aid, Re-certification. 1988.
Yukon College Wilderness First Aid/CPR. 1988.
Canadian Association of Nordic Ski Instructors', Refresher. 1988.
Canadian Recreational Canoeing Instructor. Movingwater. 1984.
Canadian Recreational Canoeing Instructor. Flatwater. 1983
British Columbia Recreational Canoeing Instructor. Flatwater. 1983.
National Jackrabbit (Junior Skiing) Workshop. 1983.
Canadian Ski Association Tour Leader Level III (Advanced). 1982.
Canadian Association of Nordic Ski Instructors' Level I. 1978.
Cross-country requirements, Norwegian Ski Instructor. 1977.
British Cross-country Ski Instructor Class III. 1977.
British Cross-country Ski Instructor Class II. 1976.
Norwegian "Barneskiinstruktur". 1976.
Winter Mountain Leadership Course (Scotland). 1976.

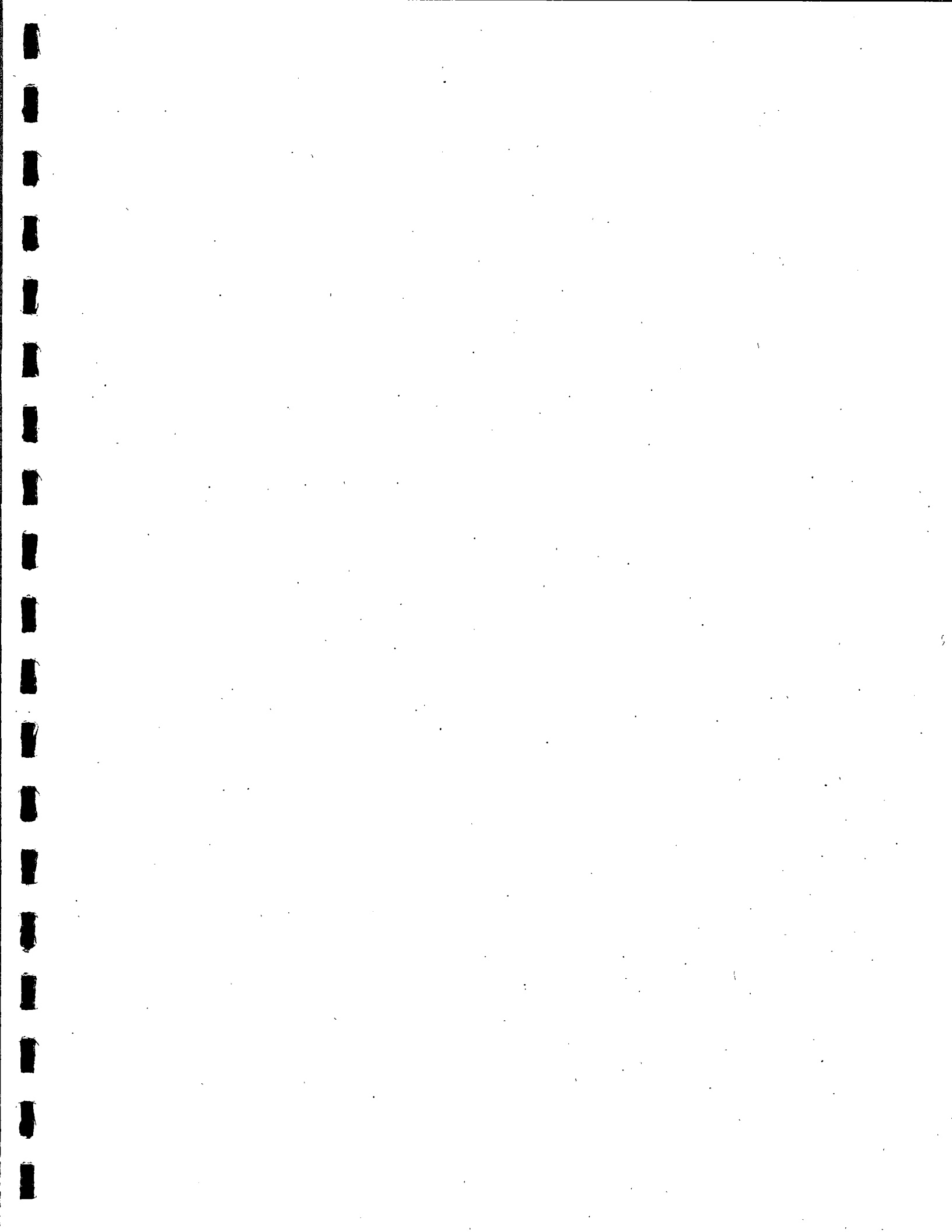
REFERENCES

Dr. Robin Barrow
Director of Graduate Programs
Faculty of Education
Simon Fraser University
Burnaby, B. C.
V5A 1S6
(604) 291-4787

Dr. Marvin Wideen
Director of Professional Development
Faculty of Education
Simon Fraser University
Burnaby, B. C.
V5A 1S6
(604) 291-4148

Prof. Allan Derbyshire
Department of Leisure Services and Recreation
Mt. Royal College
4825 Richard Rd. S.W.
Calgary, Alberta
T3E 6K6
(403) 240-6502

Prof. Aron Senkpiel
Dean of Academic Studies
Yukon College
Box 2799
Whitehorse, Yukon
Y1A 5K4
668-8771



MILTON McCLAREN

Composite Curriculum Vita. March 1993.

DATE OF BIRTH: September 3, 1940 **Age:** 53

PLACE OF BIRTH: Vancouver, British Columbia, Canada
CITIZENSHIP: Canadian

I. DEGREES:

Bachelor of Education (Secondary) 1963 University of British Columbia

Ph. D. 1967 University of British Columbia

II: APPOINTMENT & CAREER PROGRESS:

Teaching Experience: (Outside Simon Fraser University).

K-12.

Secondary School: Science, Biology, English, Social Studies.

Elementary School:

 Grades 3-4, and 7. General Assignment.

Regional College: General Biology.

University of B.C. General Botany.

At Simon Fraser University:

Assistant Professor: May 1, 1967

Associate Professor: 1980 - Present

Director, Division of Continuing Education: 1971-1974

Director, Professional Development Program: 1976-1979

Acting Director, Learning Resources Centre, Faculty of Education, S.F.U. 1983-1986.

Resident Faculty, SFU Kelowna Tele-Learning Centre, 1988-1993.

Coordinator, Field Relations and Teacher In-Service Education: 1993-94.

Director, Field Relations and Teacher In-Service Education: 1994-present.

I also hold an appointment as an Associate of the Department of Biological Sciences of the Faculty of Science at S.F.U.

III. AREAS OF RESEARCH AND SCHOLARSHIP:

Science Education
Environmental Education
Adult & Teacher Education
(With special reference to inquiry, problem solving, thinking, and decision making.)
Curriculum Development and School Organization.
Educational Technology and Social Change.
Science, Society, Technology Interactions.

IV. PUBLICATIONS, ARTICLES, REPORTS:

McClaren, Milton. 1967. "Meiosis in Coprinus atramentarius." Canadian J. of Botany, 45: 215-219.

McClaren, Milton. 1968. "The Technology Trap". The B.C. Teacher. October.

McClaren, Milton & Sinclair, A. 1968. "Project C.O.L.E.: Practised What It Preached." The B.C. Teacher. November.

Borden, J.H.; McClaren, M. & Horta, M.A. 1969. "Fecal Filaments Produced by Fungus Infesting Larvae of Platydemus oregonense (Coleoptera: Tenebrionidae). Ann. Entomological Society of America. 62(2): 444-446.

McClaren, Milton & Herrin, Brian D. 1969. "The Use of Fungi in the Teaching of Ecological Succession." The Science Teacher. 36 (5): 50-52.

McClaren, Milton. 1969. "Educational Technology: An Assessment" published in Selected Papers from the Proceedings of the 6th Conference of B.C. School Principals, Vancouver: The University of British Columbia, 44-99: 1969.

McClaren, Milton. 1969. "The University - A Turning Point." S.F.U. Information Office. 1969.

McClaren, Milton. 1970. "Chemical Dedikaryotization of Coprinus myceliocephalus." Canadian J. of Botany. 48 (4): 787-790.

McClaren, M. CV Composite. 1994.

3

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McClaren, Milton & Harling, John. 1970. "The Occurrence of Endogone macrocarpa in Stomachs of Peromyscus maniculatus." Syesis 3: 154-159.

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Ground Truth Studies Teachers Handbook. (1992). Aspen, CO: The Aspen Global Change Institute/ Johnson Press. (As a member of the development team and as a member of the education advisory committee and Executive Committee of the AGCI.)

Water Stewardship. 1994. This is the draft version of the Water Stewardship Curriculum Guide for the Ministry of Environment, Lands, and Parks of B.C.'s Water Stewardship Project. I was the senior author of the guide, with Fulton, K., McMahon, C.M., Kool, R., and Kristjanson, E.K. The guide will be field tested in the pilot schools in the spring of 1994 and the final edited version will be released to the MOELP in August, 1994, for publication as a provincial curriculum.

Learning for Living and Environmental Education: Connections and Synthesis. A Briefing Paper prepared for the Curriculum Branch, Ministry of Education of B.C., March, 1994.
McClaren, M.

V. INVITED PAPERS & ADDRESSES:

1968. February "Low Cost Applications of Educational Technology."
Canadian Vocational Association Symposium on Educational Technology. B.C. Institute of
Technology.

1968. June "Educational Technology - An Assessment." British Columbia Principal's Conference.
University of British Columbia.

1969. May "Education - Some Possible Directions." Canadian Vocational Association Annual
Symposium Plenary Session. B.C.I.T.

1969. June "The Application of Educational Technology to Extension Education." Canadian
Congress of Corrections. Vancouver.

1969. October "Resource Planning in Flexible School Organization." B.C. Conference on Modular
Scheduling in Secondary Schools.

1970. April "Educational Technology and the Teacher in the '70's." B.C. School Superintendents'
Association Annual Conference Address.

1970. March "Outdoor Education in the '70's." British Columbia Symposium on Outdoor
Education. Campbell River, B.C.

1971. May "All That is Necessary..." Keynote Address: B.C. Wildlife Federation.

1971. October "Biology Instruction in the Junior Colleges." National Science Teachers
Association. (Biology Section). Seattle.

1971. November "The Audio-Tutorial Approach: 6 Years Experience." The National Science
Teachers Association. Vancouver.

1972. February "Environmental Education: The Problems of this Decade." South Alberta
Teachers Association. Calgary, Alberta.

1972. May "The Forces Shaping Continuing Education." B.C. Association of Adult and
Continuing Education. Conference Summary Address. Victoria.

1972. June "Environmental Education and Contemporary Children." Western Canadian
Leadership Conference of Boy's Club of Canada.

1972. November. "Outdoor Education in British Columbia - A Status Report." International Science Education Symposium. (U.N.E.S.C.O.) Vancouver (U.B.C.)

1972. November "Curriculum Design in Environmental Education." International Science Education Symposium. U.N.E.S.C.O.) Vancouver (U.B.C.)

1973. May "Continuing Education in British Columbia: Opportunities & Challenges." Association of Continuing And Adult Education Administrators. Victoria.

1973. May "Decision-Making and the Future." Canadian Man & Resources Program Western Regional Conference. Kamloops.

1974. January "A Conceptual Model for Environmental Education." Outdoor Recreation Management Symposium. Capilano College.

1974. April "The Future Directions of Outdoor Recreation in B.C." Provincial Conference on Outdoor Recreation. (Conference Chairman's Address." Manning Park

1975. October "Issues in Curriculum Development in Environmental Education." Keynote Address: National Environmental Education Conference. Regina, Sask.

1976. May "The School and Its Community." Keynote Address to: Annual Conference, Association of Continuing & Adult Education Administrators. Victoria.

1976. May "The Citizen's Role in Environmental Protection." Keynote Address: Annual Conference of B.C. Wildlife Federation. Penticton, B.C.

1976. February "Adult Education, Lifelong Learning, and the Outdoor Recreation Instruction." B.C. Outdoor Recreation Inter-Agency Conference. U.B.C., Vancouver.

1977. February "Making Connections - The Primary Task for Environmental Educators." Conference Keynote Address: Council of Environmental & Outdoor Educators. Alberta Teachers Association. Edmonton, Alberta.

1977. May "The Disadvantaged Adult Learner." Conference Address - B.C. Association of Adult Education Administrators & Alberta Adult Educators Association. Banff, Alberta.

1977. October "Barriers to Adult Education - Challenges to Community Colleges." Address to Professional Development Seminar of Faculty of King Edward Centre of Vancouver City College.

1978. March. "Communications & Conservation." Annual General Meeting - Wildlife Society of America. Vancouver, B.C.

1978. March. "Matching Strategies & Objectives in Environmental Education." Conference Address to Council of Environmental Educators of Alberta. Calgary.

1978. November. "The Question of Scale & Personal Competence in Community Education." University of Alberta Conference on School & Community. Banff.

1979. February "Environmental Education & Social Change. Conference Address: Council of Environmental Educators of Alberta. Red Deer, Alberta.

1980. April "Continuing Education for Adult Educators." Annual Conference of Association of Adult & Continuing Education Administrators. Kelowna.

1980. May Inaugural Address to Organization Conference Concerning the Establishment of a Provincial Specialists Association in Outdoor & Environmental Education. Simon Fraser University. (Conference Chairperson.)

1981. February. "Promoting Thinking Skill in Adolescents.: Professional Seminar to Teachers in Vancouver Archdiocese.

1981. March. "Environmental Education in the '80's. Conference Keynote Session. First Annual Conference of Environmental and Outdoor Educators Specialists Association.

1981. March. "Educating the Disadvantaged Adult Learner - A Holistic Approach." Seminar to Adult Basic Education Instructors, Okanagan Regional College. Kelowna.

1981. November. "Modern Science and Contemporary Ethics." As Chairperson, Values & Ethics Section. S.C.I.T.E.C. Toronto.

1981. December. "The Second Science Learning Assessment Program for B.C. Schools." Chairperson of Session. National Science Teachers Association N.W. Regional Conference. Vancouver, B.C.

1983. May. "Post Secondary Education and the Attainment of Environmental Literacy." Conference Keynote Paper presented at the Symposium on Post Secondary Environmental and Outdoor Education in Alberta, Lethbridge, University of Lethbridge, sponsored by Alberta Environment.

1983. May. "The Holistoscope -- A Curriculum Development Tool for Environmental Educators." Conference Keynote Address: Annual Meeting of the Environmental and Outdoor Education Association of B.C. Kamloops, B.C.

1983. July. "Thinking Ecologically." Paper presented at the Shell Merit Fellowship Summer

Institute, sponsored by the Society for Energy, Education, and Development and the University of Calgary, Calgary, Alberta.

1983. November . "The University - High School Interface." Paper presented to the Annual Meeting of the Canadian Council of University Biology Department Chairmen. Halifax, Nova Scotia.

1984. January. "Post Industrial Schooling." Paper presented to the Professional Development Seminar, School District #36. Surrey, B.C.

1984. January. "In Search of (Educational) Excellence." Paper presented to open In-Service '84, a lecture/ seminar series to explore and advance in-service teacher education. Simon Fraser University, Burnaby, B.C.

1984. February. "Mediating the Topic of Nuclear Arms with Adolescents." A paper presented at Mediations on the Unthinkable, a Symposium on Children, the Media, and Nuclear War. Simon Fraser University, Burnaby, B.C. 1984. February "Education in the Information Age." Paper presented at Vancouver Island in the Computer Age, a symposium convened by Malaspina Regional College, Nanaimo, B.C.

1984. March. "The Search for Excellence in Education." Paper presented to a Seminar for School District Administrators, S.D. #23. Kelowna, B.C.

1984. April. "The Influence of New Technologies in Computing and Communication on Education in the '80's." Paper presented to the District Professional Development Conference, Delta School District, B.C.

1984. April. "Developing Inquiry Skills in School Science." Workshop/Seminar for School District #46. (Sunshine Coast), Sechelt, B.C.

1984. April. "Thinking about thinking about thinking..." Paper presented to the Focus on Thinking symposium on the Teaching of Thinking, Fairmont Hot Springs, B.C.

1984. May. "Education in an Information Age." Paper presented at the Professional Development Conference of School District #36, Surrey, B.C.

1984. May. "The Future of Environmental Education in B.C." Conference Summary Presentation. Annual Conference of the B.C. Association of Outdoor and Environmental Educators, Brackendale, B.C.

1984. June "Communicating Environmental Themes." Symposium on Environmental Education and Information and the Mass Media, sponsored by Alberta Environment, Red Deer, Alberta.

1984. June "The Concept of Educational Excellence." Paper presented to the staff of Vanier Secondary School on the theme of school improvement, Courtenay School District, Courtenay, B.C.

1984. July "Energy: The Environmental Education Factor." Paper presented to the Shell Merit Fellowship Program's Summer Institute, sponsored by the Society for Energy, Education, and Development, and the University of Calgary, Calgary, Alberta.

1984. August . "Value, Quantity, Quality, and Number --Four 'Fuzzy' Sets in the Teaching of Mathematics." Keynote address to the Summer Workshop of the British Columbia Mathematics Teachers Association, Richmond, B.C.

1984. October. "Mediating the Unthinkable: Discussing the Problem of Nuclear Arms with Students." Paper presented to the International Conference of the North American Association for Environmental Education, Lake Louise, Alberta.

1984. October. "Conflicting Visions of Education -- A Challenge for School Improvement." Paper presented to the Professional Development Seminar of the B.C. School Trustees Association, Campbell River, B.C.

1984. October. "Technology, Employment, Education, and the Social Imperatives." Paper presented at New Technology: Challenge and Change in the Prairie Labour Market. Canadian Plains Research Centre, Regina, Sask. 1984. November. "A Decision-making and Problem Solving Approach to the Discussion of Nuclear Arms with Adolescents." Paper presented to the Educators for Peace Conference, University of British Columbia, Vancouver, B.C.

1984. November. "The Possible Missions of Public Schools." Paper presented to the Annual Meeting of Instructors from projects, .T.E.A.C.H., P.R.I.D.E., and T.T.L.C., sponsored by the B.C. Teachers' Federation, Vancouver, B.C.

1985, February. The School District's Search for Excellence. Keynote Address: "When Teaching is Right " B.C. School Trustees' Association Annual Provincial Conference, Vancouver, B.C.

1985, February. "Technology & the Future of Work and Schooling." The Micro-scope Conference: Computers in the Future. Cloverdale, B.C.

1985. February. "Effective Teaching." Conference Keynote Address. Surrey School District Spring Conference. Surrey, B.C.

1985. March. "Let's Really Talk About Schools." Keynote Address. Central Okanagan Teachers' Association, Vernon, B.C.

1985. March "Should Schools Be Meeting the Needs of Youth in a Changing Society?" Keynote

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Address. Vancouver School District, Vancouver, B.C.

1985. March. "Schooling for Life in a Post-Industrial Society." B.C. Teachers' Federation Provincial Microtechnology Contacts Conference, North Vancouver, B.C.

1985. March. "Science Education: Where is it going in the '80's?" School District #75 (Mission). Science Awareness Day, Mission, B.C.

1985. April "The Pursuit of Excellence in Times of Change." Chilliwack District Administrators, Chilliwack, B.C.

1985. May. "Education in a Post-Industrial Society." Conference Keynote Address. Nanaimo District Teachers Association, Nanaimo, B.C.

1985. July. "Energy Education and Environmental Education - Conflicting or Compatible Goals?" Shell Merit Fellowship Summer Institute in Energy Education. University of Calgary, Calgary, Alberta.

1985. July. "New Responsibilities for Teacher Education in an Information Age." 32nd World Assembly of the International Council on Education for Teaching. Richmond, B.C.

1985. August. "Envisioning the Future." Theme Presentation, Summer Institute for Trustees and School Administrators, Paradise Valley Conference Centre, Brackendale, B.C.

1985. October. "Creating a Climate for Excellence in Public Education." Conference Keynote Address and Sessional Workshop., Yukon, Alaska and Stikine Teachers' Associations. Joint Fall Conference, Whitehorse, Y. T.

1985. October. "Creativity and Future Options." School District #45. Challenge Program. Theme Presentation. West Vancouver, B.C.

1985. October. "Mentorship as a Powerful Agency for Learning." School District #7, District Conference, Nelson, B.C.

1985. October. "Environmental Education and Native Peoples." Alberta Indian Educators Association. Annual Conference. Jasper, Alberta.

1985. October. "Teaching Empowerment Through Critical Thinking." B.C.T.F., Peace Education Conference, U.B.C.

1985. November. "The Summer Institute in Science, Society & Technology - A New Opportunity for Teacher Continuing Education." Science Spectrum, U.B.C.

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1985.November. "A Computer Database for Resource Materials in Science, Society, and Technology." Science Spectrum, U.B.C.

1985. November. "A Personal Power Approach to Thinking About the Problem of Nuclear Arms." B.C. Youth Peace Conference, Paradise Valley, B.C.

1985. November "The Problems of Conservation Education. Soil Conservation Working Group. "Working Better Together", Ottawa, Ontario. (At the invitation of the Hon. T. Macmillan, Minister of the Environment.)

1985.December "The Role of the School Trustee in Turbulent Times." Presented as conference summary as General Chairman, New Trustees Seminar Part 1, B.C. School Trustees Assoc., Vancouver, B.C.

1986. January Phi Delta Kappan Society (Vancouver Island Region.Parksville, B.C. "The Future of Public Education in a Post Industrial Society."

1986. February Bulkley Valley Teachers' Association Annual Conference, Smithers, B.C. "Education and the School of the Future."

1986. March Coquitlam District Teacher Association Annual Conference, Coquitlam, B.C. "Striving for Excellence - Its Educational Implications."

1986. April Parent Teachers' Association of B.C. Spring Conference. Coquitlam, B.C. "The Role of the Schools in Preparing Students for the World of Tomorrow."

1986. April The Liberal Party of British Columbia. Policy Development Symposium 11. "Schools in Search of a Coherent Policy." Kelowna, B.C.

1986.April Alberta Teachers Association: Environmental & Outdoor Education Council. Tenth Anniversary Conference. Keynote Address: "Environmental Education - A Ten Year Retrospective." Banff, Alberta.

1986.May World Congress on Education & Technology. Chairman, Plenary Session on "The Impact of Technology on Skills & Educational Requirements." Vancouver, B.C.

1986.July Shell Merit Fellowship Summer Institute in Energy Education. Fellowship Colloquium Address. "Environmental Education and Energy Education in the 80's and Beyond." University of Calgary, Calgary, Alberta.

1986. August Ministry of Education, Curriculum Branch & University of British Columbia, Department of Mathematics & Science Education. Summer Institute for Science & Technology

11.

- (1) Developing Critical Thinking through STS11.
- (2) Evaluating Science Learning - Beyond the Multiple Choice Test."

1986. October. Ministry of Post Secondary Education. Business Development Centre Manager's Conference. "The Educational Challenge of Fostering Entrepreneurship." Vancouver.

1986. October. Interpretation Canada Conference. "Reflections on Curriculum Development for Interpretive Programs." Parksville, B.C.

1986. October. Pacific Instructional Media Association 1986 Conference. Keynote Address: "The Transition to the 21st Century". Victoria, B.C.

1986. October. Countdown '86: Annual Conference of the B.C. Association of Principals and Vice-Principals. Conference Colloquium (with Low, Ken and Norman, Peter): "Preparing Navigators for the Ships of the Future". Vancouver.

1986. October. Visions 86. Annual General Conference of the Provincial Intermediate Teachers' Association. Keynote Address: "The Educational Development of Tomorrow's Citizens: The Role of Elementary School." Nanaimo, B.C.

1986. November. Pacific Management Development Institute. 2nd Annual Conference. "The Role of the Colleges in the Transition to an Information Economy." Richmond, B.C.

1986. November. B.C. Council for Exceptional Children. 15th Annual Conference. Keynote Address. "The Potential Role of New Instructional Technologies in the Education of Exceptional Children." Vancouver, B.C.

1986. November. Phi Delta Kappan Leadership Institute. "Developing A Critical Thinking Skills Curriculum." Keynote Address and Conference Colloquium. Nanaimo, B.C.

1986. November. Society for the Promotion and Advancement of Career Education. "The Challenge of Career Education in a Time of Transition in the Nature of Work." Vancouver, B.C.

1986. December. B.C. School Trustees Association. New Trustees Seminar 1: "The Educational Uses of Computers."

1986. February. 5th Annual Residential Outdoor/Environmental Education Conference. "Building Connections: The Relationship Between Outdoor Education and Environmental Education." Conference Summary Address. Paradise Valley Outdoor School. Brackendale, B.C. (These conferences include educators from Alaska, B.C., Alberta, Washington, Oregon, Utah, Idaho, and Montana.)

1987. February. Adult Special Needs Conference, Richmond B.C. "Educational Technology and the Special Needs Student: Prospects for Future Development." Conference Keynote Address.

1987. April. Regional Conference: Provincial Intermediate Teachers' Association. Terrace, B.C. "Developing Student Thinking: Survival Skills for the 21st Century." Conference Opening Address.

1987. June. B.C. Association of Continuing Education Administrators Annual Conference. Victoria, B.C. "Innovations in Education - Empowerment or Mystification." Conference Keynote Address.

1987. June. 17th National Conference on Instructional Technology. Saskatoon, Sask. AMTEC. "Technological Futures and Public Education." (Association for Media and Technology in Education in Canada.)

1987. July. Shell Merit Fellowship Program. Fellowship Lecture, University of Calgary. "Environmental Education - A Conceptual Framework for Curriculum "

1987. October. North American Association for Environmental Education. Quebec, P.Q. Symposium on Curriculum Implementation. Invited Paper. "The Problem of Curricular Infusion in Environmental Education." (Subsequently published as a NAEE Monograph.)

1987. October. 5th Annual North Island Learning Assistance Conference. "Food for Thought." Courtenay, B.C. "Educational Technologies and Personal Competence."

1987. November. Preparing for Community Living. Training Conference, Ministry of Social Services & Housing. B.C. Vancouver, B.C. Conference Keynote Address. "Redefining the Concept of Community in a Post-Industrial Era."

1987. December. New Trustees Academy, Part 1. Vancouver: B.C. School Trustees Association. Opening Address. "Trusteeship: Myths and Realities in the Role of Trusteeship During a Time of Social Change."

1988. January. "Youth, Schools and the World of Work." B.C. School Trustees Association, Canada-wide conference Vancouver, B.C. "Preparing Navigators for the Ships of the Future. Conference keynote address. (subsequently published.)

1988. February. Education, A Celebration. West Kootenay Regional Conference. "The Curriculum and the Metacurriculum." Conference Keynote Address.

1988. March. Annual Spring Conference. Association of B.C. School Superintendents. Beyond

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Tomorrow. Vancouver, B.C. "Learners, Curriculum and Technology Tomorrow."
Conference Opening Address.

1988.April.BCSTA Spring Conference. Student Health and Learning. Vancouver, B.C.
(McClaren, Milton & Sinclair, Gerri) "Educational Technology and Personal Competence."
Conference Symposium Address.

1988.May.Sharing: An Exchange of Views Presented to the Royal Commission on Education.
B.C. Council for Leadership in Educational Administration. Vancouver, B.C. "The Royal
Commission and Beyond." Conference Symposium Paper.

1988.May. Environment '88 Conference. Think Globally - Act Locally. Vancouver, University of
B.C. "Environmental Education in B.C. - A Retrospective."

1988.June. B.C. College Administrators Association. Foundations for Education. Harrison Hot
Springs, B.C. "The Challenges to Colleges in a Post Industrial Era."

1988. July.Shell Merit Fellowship Program Lecture. University of Calgary. "Curricular
Perspectives of Environmental Education."

1988.July. Windows on the World. Provincial Conference on Global Education, Faculty of
Education, Simon Fraser University. Conference Address. "Global Issues - The Environment."
(Subsequently broadcast on the Knowledge Network.)

1988.August.Provincial Computer Coordinators Conference. Simon Fraser University. "What
We Must Put First." Conference Plenary Address.

1988.September. Council of Outdoor Educators of Ontario. In Quest of New Horizons in Outdoor
Education. Bark Lake Centre, Ontario."Environmental Education in a Post Industrial Era."
Conference Plenary Address.

1988. October. Project Wild Coordinators Conference (Canada) Canadian Wildlife Federation.
Clear Lake, Manitoba."Future Directions for Environmental Education in Canada."

1988. October.B.C. Primary Teachers Conference. Vancouver, B.C.
Annual Fall Conference. "Reconsidering the Powers of Childhood." Conference Opening
Address.

1988.November.Today's Kids - Our Future. Burnaby Parents Association Conference.
Burnaby, B.C. "Preparing the Navigators for the Ships of the Future."

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1988. November. Association for Community Education in B.C.
Community Education in the '90's. Responding to a Changing Society. University of British
Columbia. "Reinventing the Concept of Community in an Information Age."

1989. January. Revelstoke School District Conference. Revelstoke, B.C. Twenty First Century
Basics.

1989. January. Metropolitan School Superintendents' Conference. Burnaby, B.C. "Creating a
curriculum for the Twenty-First Century."

1989, January. Association for Supervision and Curriculum Development. British Columbia
Chapter. "Designing the School of the Future."

1989, February. Surrey School District Conference. Developing Environmental Literacy.

1989, February. Technological Changes, Educational Media, and Educational Television. A
Symposium hosted by SFU and KCTS Television. "The Undelivered Potential of Educational
Television." Vancouver, SFU Harbourside Campus.

1989, February. Sunshine Coast School District. Professional Development Seminar. "Creating
the Secondary School of Tomorrow."
Gibsons, B.C.

1989, February. Nanaimo School District Professional Conference. "Rethinking Schooling."
Nanaimo, B.C.

1989, February. North York Board of Education. Regional Environmental Education Conference,
Mono Cliffs Environmental Study Centre, Orangeville, Ontario. "Environmental Education in
the Public School Program."

1989, March. Ministry of Social Services and Housing. Staff Development Conference. North
Vancouver, B.C. "Human Competence and Professional Support."

1989, March. Principals' Institute for Special Education. Richmond, B.C. "The Management of
Diversity."

1989, March. South Vancouver Island Regional Teachers' Convention. Victoria, B.C. Designing
the Schools of Tomorrow.

1989, April. Regional Professional Conference--East Kootenay Region. Kimberley, B.C.
"Creating an Environment for Educational Change."

1989, April. Staff Development Conference, Alberta Fish and Wildlife Department, Lethbridge, Alberta. "Interpreting Wildlife Resources to the Public."

1989, April. Focus on Thinking Foundation. Fairmont Hot Springs, B.C., "Moving from Examination to Demonstration: A Central Challenge for the Development of a Thoughtful Climate in Education." 1989, April. B.C. School Trustees Association. Trustees Seminar. Vancouver, B.C. "Technological Literacy for Every Student."

1989, April. B.C. Librarians Conference. Penticton, B.C. "The Library of Tomorrow."

1989, May. Faculty Development Conference, Capilano College. Harrison Hot Springs, B.C. "The Role of the Community College in an Information Age."

1989, May. Seminar for Park Staff, Riding Mountain National Park and Biosphere Reserve, Riding Mountain, Manitoba. "Developing Environmental Literacy."

1989, May. B.C. Council for Leadership in Educational Administration. Articulation and Coordination Issues for B.C. Schools and Colleges. "Metaphors for Articulation."

1989, July. North American Association of Moose Biologists. St. Johns, Newfoundland. Keynote Address to Annual Conference. "Environmental Literacy and Wildlife Management."

1989, July. Society for Energy, Education, and Development. Shell Merit Fellowship Lecture. Calgary, Alberta. "Environmental Education and Environmental Literacy."

1989, August. Keynote Lecture to Okanagan College Summer Teachers' Institute. Kelowna, B.C. "Cooperation and Education."

1989, September. Keynote Address to the Rural Schools Conference, Williams Lake, B.C. "The Educated Citizen and the Year 2000."

1989, October. Address to Vancouver Island Zonal Trustees Conference, Cowichan, B.C. "The Management of Change."

1989, October. Keynote Address to B.C. Primary Teachers Annual Conference, Vancouver Trade and Convention Centre. "Tools for Thought."

1989, October. Federation of Public School Boards of Ontario. Toronto, Ontario. "Environmental Education Policies and Environmental Literacy."

1989, October. Canadian School Superintendents Academy. Winnipeg, Manitoba. Three Day Seminar on the Management of Change.

1989, October. Countdown '89. B.C. Principals and Vice Principals Association Fall Conference. Kamloops, B.C. Keynote Address: "The Year 2000 in Perspective."

1989, November. Calgary Separate School Board Leadership Development Seminar. Two Days. Kananaskis, Alberta. "The Management of Change."

1989, December. Address to Primary Lead Schools Institute. Vancouver, B.C. "Finding Your Way in a Time of Change."

1990, February. Secondary Schools Conference, Fort Myers, Florida. Keynote Address. "Developing a Secondary Education for the 21st Century."

1990, February. Ottawa/Carleton Board of Education. Environmental Conference, Ottawa, Ontario. "From Awareness to Action--the Challenge of Environmental Education."

1990, February. Home Economics Teachers' Association of B.C. Keynote Address to Annual Conference. "Bridging the Gulf Between Headedness and Handedness."

1990, March. Epoch 2000 Student Environmental Conference, Regina, Sask. "Effective Environmental Citizenship."

1990, March. Toronto Board of Education. Science Education Symposium. "Developing an Effective Science Education for All Students."

1990, March. Vernon Parents' Conference. Vernon, B.C. "Developing Environmental Literacy."

1990, April. East York Board of Education. Environmental Education Conference, Toronto, Ontario. Keynote Address. "Environmental Education and Global Citizenship."

1990, April. Dorset Environmental Studies Centre, Haliburton County, Ontario. Leadership Seminar, Environmental Education Association. "The Elements of Environmental Literacy."

1990, April. B.C. Wildlife Federation. Keynote Address to Annual Conference. Prince George, B.C. "From Confrontation to Cooperation in the Environment of B.C."

1990, April. Leadership Seminar. Bulkley Valley School District Administrators. Prince Rupert, B.C. "The Management of Change."

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1990, May. Great Lakes Association for Cooperation in Education. Keynote Address to Annual Conference, Scarborough, Ontario. "Learning to Cooperate and Cooperating to Learn."

1990, May. Technology Educators Association. Keynote Address to Annual Conference. Surrey, B.C. "Closing the Gap Between Headedness and Handedness in Schooling."

1990, May. Conference Chairman, New Beginnings Conference, U.B.C. Conference Keynote Address, "The Best Possible Three Percent."

1990, May. B.C. Global Education Project Conference, Vancouver, B.C. Keynote Address, "Global Citizenship and the New B.C. Curriculum."

1990, June. B.C. Council for Leadership in Educational Administration. Vancouver, B.C. "Policy Development and Environmental Education."

1990, June. Education Forum, The New Democratic Party of B.C. New Westminster, B.C. Conference Opening Keynote: "The Year 2000 and Beyond."

1990, July. Staff Development Workshop, Insurance Corporation of B.C. Vernon, B.C. "The Year 2000, and Human Competence--from Failure to Success."

1990, July. Shell Merit Fellowship, Gold Institute. University of Calgary, Calgary, Alberta. "Environmental Education Defined."

1990, August. Aspen Institute for Global Change. Aspen, Colorado. Seminar to Educators Summit. "Environmental Education and Central Themes in Environmental Research."

1990, September. Canadian Society for Information Processing. Regional Seminar. Kelowna, B.C. "Developing Technological Literacy--Goals for Public Schools."

1990, October. Think '90 Conference., Ontario Institute for Studies in Education and the Ontario Council for Leadership in Education. Toronto, Ontario. Keynote Address. "New Views of Learning, Teaching, and Thinking."

1990, October. World '90 Conference. Pre-Conference Seminar on Environmental Education. St. Benedict's Centre, Manitoba. "Environmental Education and Environmental Literacy."

1990, October. Learning Assistance Teachers' Association. Regional Conference. Keynote Address. Kelowna, B.C. "The Educated Citizen and New Views of Teaching and Learning."

1990, October. LEADS, Saskatchewan. Leadership Seminar. Two days. Prince Albert, Saskatchewan. "Reinventing the Public School."

1990, October. Western Canadian Association For Educational Administration. Calgary, Alberta. "Discovering the New in the Old." Conference Keynote Address.

1990, November. Trent Valley Environmental Education Consortium. Curriculum Development Symposium, Trent University, Peterborough, Ontario.

1990, November. Brandon School Division. Leadership Development Seminar. Brandon, Manitoba. (Two Days.) "Designing the Schools of the Future."

1990, November. Prairie Forum on Rural Education. Brandon, Manitoba. Conference Keynote Address. "Personal Competence and Human Communities."

1990, November. Vocational Education Society of B.C. Annual Conference. Vancouver, B.C. Keynote Address. "The Year 2000 and the Purposes of Change in the B.C. School Program."

1990, December. B.C. School Trustees Association. New Trustees Seminar I. Conference Keynote Address, "The Meaning of the New Curriculum in B.C." and a simulation exercise for Board decision making, "Decision making in a time of Change."

World Citizenship and the Year 2000 Programme. January, 1992. BC Association of French Immersion Administrators.

The Intermediate Programme and the Year 2000. Qualicum School District Professional Day. February, 1992.

Partnerships in Education. Conference on Collaboration in Education. Maple Ridge, B.C., February, 1992.

Learning Styles and Computers in Education. Salmon Arm School District Professional Day, Enderby, B.C. Feb. 1992.

The Challenge of Leadership in Curriculum Implementation. BC Principals and Vice Principals Association. Vancouver, B.C. 1992.

Phi Delta Kappan Society (Greater Vancouver Chapter). Pitfalls and promises in the implementation of educational change in B.C. University of B.C., March, 1992.

The Challenge of the Year 2000. Armstrong School District. March, 1992.

How Children Learn: What do we know and does it make any difference? Salmon Arm District Parents Conference, Salmon Arm, B.C. March, 1992.

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The Environment as a Global Educational Issue. Kamloops District Professional Conference. Kamloops, B.C. March, 1992.

The Community in the Year 2000. Keynote Presentation to the Revelstoke City Planning Forum, Revelstoke, March, 1992.

Vocational Education for the 21st Century. Pre Conference Workshop, Manitoba School Trustees Association. Winnipeg, March, 1992.

Reinventing the Secondary School. Keynote Presentation. B.C. Stay in School Conference. Fort St. John, B.C. March, 1992.

Scientific Literacy. Keynote Presentation. Newfoundland Science Teachers Association. St. John's Newfoundland. April, 1992.

The Intermediate Programme and the Structure of the Middle School. (Keynote Address). North Western Middle Schools Conference. North Vancouver, B.C. April, 1992.

Developing Environmental Literacy. Keynote Address. Chilliwack School District Professional Conference. April, 1992.

The Administrative Challenges of Implementing the Year 2000. Keynote Address. Spring Conference, BC Principals and VP's Association. Quesnel, B.C. April 1992.

The Secondary School and the Year 2000. Staff Development Workshop. Port Alberni Senior Secondary School. Port Alberni, B.C. May, 1992.

The Year 2000 and the Graduation Programme. KLO Secondary School Parents Advisory Council. Kelowna, B.C. May, 1992.

Planning Ahead. Presentation to the Honours Society of Courtenay School District, Courtenay, B.C., May, 1992.

The Unfulfilled Promise of Education Technologies. Keynote Address. Annual Conference, Association of Media and Technology in Education. Vancouver, B.C.

Environmental Education: The Educational Challenge. Presentation to the Summer Fellowship Programme: Society, Energy, Education and Development Summer Institute, University of Calgary, Calgary, Alberta. July, 1992.

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Computers, Education, and Human Competence. Presentation to the 1992 National Institute. University of B.C., August, 1992.

Restructuring Schools. Summer Leadership Institute. St. John New Brunswick, September, 1992. Implementing Educational Change. Workshop. Henry Grube Resource Centre Staff, Kamloops, B.C. Sept. 1992.

The Challenge of the Intermediate Programme. Leadership Workshop. Sooke School District Consultants and Helping Teachers. Sept. 1992.

Work, Learning, and Training. Keynote Address to Annual Conference of Human Resources Development Officers, Canadian Association of Pulp and Paper Manufacturers. Vancouver, B.C., 1992.

Environmental Education and Global Citizenship. Keynote Address and Leadership Workshop: Transcona Springfield School Division, Winnipeg, Manitoba. Sept, 1992.

Implementing the Year 2000. Leadership Workshop: Martin Education Centre Staff, Kelowna SD. October, 1992.

The Year 2000 and Beyond. District Staff Development In-Service Workshop. Nechako School District, Vanderhoof, B.C. October, 1992.

Computer Telecommunications and Environmental Education. World Congress on Communications, Education, and the Environment. Toronto, October. 1992.

Implementing Change in Education. Leadership Development Workshop and Keynote Address. Coordinators Council of Newfoundland. Gander, Newfoundland. November, 1992.

The Place of the Arts in a Common Curriculum. Music Educators of B.C. Annual Conference, Vancouver, B.C., Feb. 1993.

Education Change in B.C. Education Day Address. Oliver, B.C., March, 1993.

Women and Leadership. Address to the Leadership Institute, Victoria, B.C. April, 1993.

Language Learning, Cultural Diversity, and Education Change. B.C. French Coordinators Conference. Richmond, B.C. April, 1993.

Technological Literacy and Education for the 21st Century. Science Council of B.C. Penticton, B.C. May, 1993.

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Early Childhood Summer Institute. Learning and Educational Change. Regis University Summer Institute Programme, Denver, CO., June, 1993.

The Uneasy Course of Educational Change. Address to the Secondary School Assessment Project, Langley, B.C., September, 1993.

The Role of the Educational Administrator in the Management of Change. North Vancouver School District, Administrators Retreat. Victoria, B.C. October, 1993.

Computers, Competence and Education. Keynote Address to the Nova Scotia Conference of Technology Educators, Halifax, N S, October, 1993.

Environmental Education and Environmental Literacy. Invited Seminar. Environmental Studies Programme, Huxley College, University of Western Washington, Bellingham, WA. November, 1993.

Educational Change and the Schools of the 21st Century. Keynote Address to the Manitoba Association of School Trustees, Brandon, MAN., December, 1993.

VI. GRANTS, AWARDS & HONOURS:

1963. **Maxwell A. Cameron Medal in Education.** British Columbia Teachers Federation.

1984-90 Member, Canadian Committee for the Man and the Biosphere Programme of UNESCO.
1984-90. Member, U.S. Steering Committee, Project Wild.

1987. Association for Media and Educational Technology in Canada. **Distinguished Service Award.**

1989. Canadian Wildlife Federation. **Certificate of Merit.**

1989. **Project Wild. Excellent Service Award.**

1989. World Wildlife Fund. **Guardian of the Rainforest Award.**

1990. I was nominated as Scholar in Residence at the Aspen Global Change Institute. The Institute is a centre for the study of issues in the human forcing of global change. It convenes leading scientists and educators for intensive colloquia on various global change themes. In 1991 I will chair one three week segment of the Institute.

1990. Member, Board of Advisors, Aspen Global Change Institute.

1990. I was appointed to the Board of Directors of the Educational Technology Centre of B.C. by the Deputy Minister of Education.

1993. Appointed to the Provincial Advisory Committee on Educational Technology.

1993. May. Recipient of the **Ministers Environmental Award**, Minister of the Environment of B.C. Awarded for Work in Environmental Education.

1994. **March. Award of Recognition.** B.C. School Superintendents' Association.

1992. Water Stewardship Project. \$50 000.00 For Development of a Provincial Water Stewardship Curriculum. Ministry of Environment, Lands, and Parks of B.C. (With Fulton, K., McMahon, C., and Kristjanson, E.K.)

1993. Water Stewardship Project. Contribution Agreement. Water Stewardship Project. Ministry of Environment Lands and Parks of B.C. \$13 000.

1994. Water Stewardship Project. Contribution Agreement. Phase II. Ministry of Environment,

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Lands and Parks of B.C. \$30 000.

1994. Century 21 Fund. Ministry of Environment, Lands, and Parks. Phase II of the B.C. Water Stewardship Project. \$35 000.

1993. Common Heritage Foundation. Ottawa. Establishment of an Environmental Education Computer Network Demonstration Project. (With Kristjanson, E.K.) \$ 7 500.

1993. Royal Society of Canada. Global Change Project. For development of a teachers guide for Global Change and Canadians. (With Kristjanson, E.K.) \$2500.

1994. Provincial On-Line Mentorship Project. (With Mort, Janet, and Kristjanson, E.K.) B.C. School Superintendents' Association. \$ 8000.

VII. COURSES TAUGHT:

(a) AT SIMON FRASER UNIVERSITY

Biosciences102-4: Introduction to Biology
Biosciences101-4: Introduction to Biology
Biosciences 003-3: Biology of the Population Explosion
Biosciences 326-3: Non-Vascular Plants
Biosciences 310-3: Plants & Animals of B.C.
Biosciences 859-3: Fungal Physiology
Biosciences 473-3: The Biology of Fungi

Professional Foundations 451: Educational Technology
Education 476: Designs for Learning: Natural Sciences.
Education 452: Environmental Education
Education 462: Fieldwork & Case Studies in Environmental Education
Education 810: Directed Readings: Science Education
Education 810: Directed Readings: Environmental Education.
Education 822: Analysis of Educational Practice
Education 807: Special Topics: Trends & Developments in Environmental Education Curricula.

Education 402: Study Group
 Elementary Science Curriculum
 Secondary Science Curriculum
Education 401/402: SITE sponsor: PDP (Kelowna)
 1983-Present
Education 857-5: Themes & Issues in Environmental Education
Education 816: Developing Educational Programs.
Education 361: Trends and Developments in Educational Practice.

(b) AT CAPILANO COLLEGE

Biology 101
Outdoor Recreation Management & Environmental Education
 (with B. White)

(c) Others:

Common Fleshy Fungi of the Vancouver Area. A Course taught for the Parks Department of the GREATER VANCOUVER REGIONAL DISTRICT, October 1983 and October 1984.

I have been the leader for two Canadian Association of School Administrators Leadership Institutes, in Winnipeg, Manitoba, 1991, and Prince Edward Island, 1992. These are three day intensive short courses offered by CASA to Senior Administrators from across Canada. A distinguished Canadian or American educator is invited to lead the session and present the content.

In 1993 I was a part of the instructional team at the Regis University Early Childhood Summer Institute, in Denver CO.

VIII. GRADUATE STUDENT SUPERVISION

Projects & Theses Completed.

CHURCHLAND, Leslie M.
FLEGAL, Timothy G.
HART, E. Paul
KAUSHANSKY, Mel
HAMMOND, Bill

WONG, Edmond K.
SHEARMAN, Gareth
JACKSON, Ed. W. T.
HERRIN, Brian D.
SNIVELEY, Gloria
BLAIR-WHITEHEAD, D.G.
THOMAS, Patricia
S TANIFORTH, S.
TALARICO, Dariele

GUILD, Brenda
BURTON, Alex
MERKEL, Ray
KENNEDY, Elizabeth.

WHITNEY, Emily K.
REID, Marion
HOLLY, Jack
REID, Barrie
DALE, Terry
TAYLOR, Richard G.
WHITE, Terry
MOSS, Norman
ROUTLEY, Delroy
BALFOUR, Sharon
KENNEDY, Elizabeth
LOGELIN, Robert J.
LAFONTAINE, Roger
SOMMERS, Brenda
FULTON, Kim

Ph.D. Biological Sciences
Ph.D. Biological Sciences
Ph.D. Education
Ph.D. Education
Ph.D. Education (In progress).

M.Sc.(Education)
M.Sc.(Education)
M.Sc.(Education)
M.Sc.(Education)
M.Sc.(Education)
M.Sc.(Education)
M.Sc.(Education)
M.Sc.(Education)
M.Sc.(Education)

M.A.(Education)
M.A.(Education)
M.A.(Education)
M.A.(Education)

M. Ed.
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M. Ed.
M. Ed.

AXWORTHY, Evelyn	M. Ed.
LEFKOS, Patti	M. Ed.
HANCOCK, Mary	M. Ed.
HETT, Marcey	M. Ed.
HODGINS, Barry	M. Ed.
MOODIE, Penelope	M. Ed.
ROBBINS, P.	M. Ed.
HAMMILL, Roger	M. Ed.
CLAYTON, Georgette	M. Ed.
KOVACHS, Susan	M. Ed.
HAMBURY-WILKINS, J.	M. Ed.
RADCHENKO, M.	M. Ed.
METCALFE, Ron J.	M. Ed.
SHANNON, C.	M. Ed.
LUCAS, Jeannette	M. Ed.
NARINE, Swaresh	M. Ed.
KRISTJANSON, E.K.	M. Ed.
McMAHON, C.M.	M. Ed.
FROESE, E.	M. Ed.
PATSCH, Alinda M.	M. Ed.
McLEOD, D'Arcy.	M. Ed.
McKAY, Angus	M. AQ.

IX. UNIVERSITY SERVICE

1968.	Chairman, Learning Resources Committee, Faculty of Education
1968.	Member. Interim Council of Joint Faculty.
1968-69.	Member. Presidential Search Committee.
1968-69.	President. SFU Faculty Association.
1969.	Chairman. Faculty Salary Negotiation Committee.
1969-71.	Member. University Audio-visual Committee.
1969-72.	Member. High School Liaison Committee.
1969-70.	Member. University Committee on Computer-Assisted Instruction.
1969.	Chairman. Faculty of Education Graduate Studies Committee.
1969-70.	Member. Academic Vice-President Search Committee.
1969.	Member. Senate Graduate Studies Committee.
1970-71.	Past-President (Executive Member) S.F.U. Faculty Association.
1971.	Member. Departmental Undergraduate Curriculum Committee. Biosciences Department.
1971.	Member. Undergraduate Programs Committee, Faculty of Education.
1972-73.	Member. University Tenure Committee.

- 1972-74. Chairman. Tri-University Committee on Continuing Education.
1973. Member. Senate Committee on Non-Credit Instruction.
1974. Member. Search Committee for Dean of Continuing Education.
1975. Member. Faculty Tenure Committee, Faculty of Education.
1975. Member. Undergraduate Programs Committee, Faculty of Education.
1976-79. Member. Executive Committee, Faculty of Education.
1976-77. Member. Faculty of Education Tenure Committee.
1976-79. Member. Faculty Appointments Committee.
1976-79. Chairman. Professional Programs Committee.
1976. Member. University Senate.
1976-79. Chairman. Associate Selection Committee, Faculty of Education.
1977-78. Member. University Senate.
1978. Member. Admissions Committee, Faculty of Education.
1978-79. Member. Faculty of Education Tenure Committee.
1980-82. Member. Faculty of Education Tenure Committee.
1980-83. Education Faculty Representative to Academic Advice Centre.
1981-83. Member. Graduate Programs Committee, Faculty of Education.
1981-1984. Member. Learning Resources Committee, Faculty of Education.
1982. Chairman. Discovery Fair Project (S.F.U.)
1983-85. Acting Director. Learning Resources Centre.
1983-86. Chairman. Animal Care Committee (S.F.U.)
1987-88. Member, Faculty of Education Tenure Committee.
1989-91. Member, Labour Studies Committee, Division of Continuing Studies, SFU.
1990. Member. Academic Vice President's Committee on Environmental Studies.
1990. Member. Steering Committee. Southern Interior Telecommunications Project.
1993. Coordinator, Field Relations and Teacher In-Service Education, Faculty of Education.
1994. Director, Field Relations and Teacher In-Service Education.
1994. Chair, Field Relations and Teacher In-Service Education Committee.
1994. Member, Executive Committee, Faculty of Education.

Other University Assignments.

In 1989 I was seconded from the Faculty of Education to the Eastern Indonesian University Development Project (EIUDP), a joint SFU-C.I.D.A.-Government of Indonesia project. My assignment was to conduct a curriculum development seminar for project staff in Bali, to give a seminar on Curriculum Development and Educational Technology to the staff of the Curriculum Development Centre of the Bandung Institute, and to participate in an Assessment Workshop on Science Education at the Universitas Cenderawasih in Jayapura. On completion of this assignment I wrote a report on the possible future development of the Fellowship and exchange program which was submitted to the project administrators in Canada and Jakarta.

XI. COMMUNITY SERVICE & SCHOLARLY ACTIVITIES OUTSIDE S.F.U.

1968. Judge. Canada Wide Science Fair.
1969. Judge-in-Charge. Canada Wide Science Fair.
1970-71. "The Effluent Society" a multi-media film/lecture presentation which toured B.C. secondary schools. I was one of three faculty involved in this project.
1971-72. Member. Environmental Education Task Force. B.C. Teachers Federation.
1971-72. Member. B.C. Committee on Outdoor Education.
1971-72. Member. New Learning Media Committee. Association of Universities & Colleges of Canada.
1972-72. Member. Learning Improvement Commission. Association of Universities & Colleges of Canada.
1972-73. Member. Financial Advisory Committee. School District #45, West Vancouver.
1973-74. Chairman. Financial Advisory Committee. School District #45, West Vancouver.
1973. Co-Chairman. B.C. Conference on the Human Environment. (U.N.E.S.C.O. - sponsored)
1973-74. Member. Environmental Education Group. Canadian Man & Resources Program, Council of Resource Ministers of Canada.
1974. Canadian Interlocutory to the Hearings of the U.S. Federal Power Commission Re. The Raising of the Ross Dam.
1975-76. Member. Board of Governors, Vancouver Public Aquarium.
1976-79. Chairman. Education Committee, Board of Governors, Vancouver Public Aquarium.
1976. Member. Curriculum Advisory Board. Environmental Management Program. Banff School of Management, Banff Centre.
1976. Member. U.N.E.S.C.O. Steering Committee for Environmental Education - N.W. Region.
1977-78. Member. Elementary School Evaluation Committee. School District #45, West Vancouver.
1978. Chairman. Section on "Future of Community" at National School & Community Conference, University of Alberta.

- 1978-79. Member. Review Panel. Provincial Learning Assessment Program (Science) Ministry of Education.
- 1978-79. Member. Evaluation Panel. Provincial Learning Assessment Program (Science) Ministry of Education.
1978. Member. Advisory Group for Leadership Seminar in Environmental Education. Ministry of Education, B.C.
- 1978-79. Member. Leisure Trends Commission. Recreation Society of B.C.
1979. Member. Publications Committee. Vancouver Public Aquarium.
1979. Commissioned to report to Association of Continuing & Adult Educators regarding the Faris Commission Report on the Finance & Organization of Adult Education in B.C.
1980. Member. Steering Committee to Organize a Specialists Organization in Environmental Education.
1981. Member. Advisory Panel & Review Panel: Provincial Learning Assessment Program in Science. Ministry of Education.
- 1982-90. Member. Forest Education Council of British Columbia.
1983. Advisor to Alberta Ministry of Environment regarding credit courses in post-secondary education in Alberta re Environmental Education.
- 1984- 89. Member. Man and Biosphere Program Committee of the Canadian Commission for UNESCO.
- 1986-1991. Member. U.S. Steering Committee for Project WILD.
- 1984-1993. Member. Man and the Biosphere Program--Network Subcommittee.
- 1990-93. Member. Southern Interior Telecommunications Project: Steering Committee.
- 1990-93. Member. Board of Directors, Educational Technology Centre of B.C.
- 1990-present. Member. Board of Directors. Aspen Global Change Institute.
- 1990- present. Member. Curriculum Committee, Aspen Global Change Institute. NASA/AGCI "Ground Truth Project."
- 1993-94. Member, Provincial Advisory Committee on Education Technology.

XII. PROGRAM DEVELOPMENT

1. From 1971-74, as first Director of the Division of Continuing Studies. I was responsible for the initial development of the majority of our "extended day" and "extended year" credit course operations, including: evening credit courses, summer session and off-campus credit courses. Policies for the division were developed under my direction for both credit and initial non-credit operations. The first feasibility study for the SFU downtown centre, now SFU Harbourside, was conducted under my directorship.

2. In 1971, I developed the first formal offering of an S.F.U. course off-campus and outside the lower mainland. This was the original Summer Institute in Environmental Education, in Kamloops, B.C. Since 1971 the Summer Institute in Environmental Education has been offered continuously in locations off-campus. It has enrolled more than 1,000 students and was the first

S.F.U. Summer Institute. It was also the first formal credit environmental education program addressed to in-service and pre-service teachers in Canada.

3. As a member of the Faculty of Education I proposed the Minor in Environmental Education as part of our B.Ed. To this date, that remains a unique special emphasis within B. Ed. programs at Canadian universities, and a number of students from other faculties (Arts, Science & Interdisciplinary Studies) have also completed this minor as part of their programs.

4. As a member of the Department of Biological Sciences I was responsible with Dr. John Borden, Dr. Louis Druehl, and Dr. R. Brooke, for developing the independent study semester concept, a means of providing outstanding undergraduates with a means of undertaking a semester of directed research under a faculty member's supervision. Many of the department's distinguished undergraduates have completed this option.

5. As a member of the Faculty of Education I was instrumental in establishing our first Learning Resources Centre, including space and equipment and in recruiting its first Supervisor/Director, Mr. Edmond Wong. Today's Centre for Educational Technology in the M.P.X. is the direct descendent of this first L.R.C.

6. I supervised the first "cluster" of M.Ed. students to complete their M.Ed. programs with an emphasis in environmental education. This program, which enrolled 17 students, was offered in Vernon, but attracted students from Kelowna, Kamloops, and the North Okanagan. It has aroused considerable interest from prospective students throughout western Canada. In 1982, a second group of students from the south central interior began this program. The majority of the first group have now completed M. Ed. degrees and the first of the second group completed in 1984-3.

7. Since 1971 I have been active both locally and provincially to develop educational programs and policies in support of Environmental Education from K-N. I was a member of the original B.C.T.F. Task Force in Environmental Education and I have worked with local teachers to establish a Province-wide organization in Environmental Education. To this end, S.F.U. sponsored in 1980 an "organizational conference" which resulted one year later in the establishment of a Provincial specialists organization in Environmental Education. I have also been an active member of the Alberta EE Council since 1976 and have attended many of their conferences as an invited speaker. In 1982-84 I actively advised Alberta Environment on policy and program development in Environmental Education and Information. In 1988-9, I developed a policy development handbook for the Education Committees of the B.C. School Trustees Association and for the Ontario Federation of Public School Boards.

8. From the beginning of my work with SFU I have been active in the field of "Educational Technology". In particular, I have been interested in the use of media to individualize instruction. I worked extensively in the audio tutorial lab system in Biology from 1967-71. I have also

developed self-instructional and mastery learning approaches for Biosciences 310. I worked in the early stages of CAI at SFU, and two of my graduate students explored the implementation of CAI approaches to the teaching of high school chemistry. More recently I have been active in the use of microcomputers in education. As Director of the LRC I oversaw the operation of the educational computing lab. I also supervise (with Dr. A.J. Dawson) a number of M.Ed. students who are working in the Computers in Education option. In the fall of 1984 I began an implementation project dealing with the use of computers in a rural, elementary community school. This project continued in 1985 and involved two SFU graduate students. Since 1987 I have been responsible for the SFU Kelowna Tele-Learning Centre. The TLC is a centre for research, development, and teacher education in the uses of computer telecommunications in education. It is now a key element of the Southern Interior Telecommunications Project, a project funded by the Educational Technology Centre of B.C., SFU, and the 11 participating school districts. It networks schools in the 11 districts and makes a variety of on-line educational services available to them. I am a member of the Steering Committee for the SITP, a member of the board of directors of the ETC, and was involved in developing the proposals for the TLC in Kelowna and for the SITP in conjunction with Ev. Surgenor, Superintendent of Revelstoke School District, and David Porter of the ETC.

9. I have a strong interest in Adult Education. I have worked as a faculty advisor in the Academic Advice Centre because of my interest in the problems of the adult learner, especially the adult re-entering education after a time away. I am interested in, and have published in the field of "Life long learning" and in retraining. My professional work has strongly emphasized Continuing Education for teachers, but I have also worked with other employment groups such as bankers, accountants, and skilled trades. In 1985 I wrote a counter-proposal to the Ministry of Education "Discussion Paper" on schools with a life-long learning perspective. I believe that universities have an essential role to play in life long learning and in the extension of higher educational opportunities to those who are often denied access to such learning. As Director of the Division of Continuing Education at SFU I worked to develop an off-campus degree completion program which SFU offered in conjunction with Okanagan College. This program anticipated the current Access program in B.C. colleges by more than a decade.

10. I have written and worked in the area of "Cognitive Process Instruction", or of "Teaching for Thinking" as it is often popularly called. I am interested in decision-making, problem-solving, and creativity, especially as these "skills" or attributes shape our attitudes toward self, others, and the environment. My work with teachers organizations, trustees, and administrators always attempts to address questions concerning the nature of education, the nature of schooling, and the relationship of both to what is often termed "real life." Since the Royal Commission and the publication of the Year 2000 I have been actively engaged in helping school districts assess the implications of these documents for school operation. I worked with New Westminister School District on the development of its 21st Century Basics and Graduates

2001 project. I have also been involved in the Bold Visions Think Tanks convened by the Ministry of Education to enable a sharing of views among major stakeholder groups in B.C. K-12 education. In 1991 I will chair the second Bold Visions symposium. I also work extensively with school administrators on the topic of educational change. In 1989 I led the three day CASA Superintendents' Academy in Winnipeg on this topic and in 1991 I will repeat this task for CASA in the Maritime Region.

In 1989 I submitted a proposal to write one of the Ministry of Education discussion papers on the new curriculum principles. These principles included Thinking, Attitudes, Self-Concept, Knowledge, and Understanding. I selected the topic of understanding. My proposal was selected by the review committee and I subsequently wrote the paper on this principle which appears in the ministry handbook, edited by Ron Marx.

11. In the fall of 1984 I was appointed to the planning committee for the 1985 First International Conference of the North American Association for Environmental Education at Banff. As the only Canadian member of this committee, I urged the association to add a French language section to the proceedings so that Francophone environmental educators can participate. This was accepted, in a precedent-setting move. In 1987 NAEF held its conference in Quebec City.

12. As a former president of the SFU Faculty Association, I was often called upon to address lay groups in the community regarding the role of the university. I think this is an essential function for academics and that if members of the community are not informed regarding the university's missions then the university will suffer in the long run.

13. In 1992-94 I formed a team of university and school-based curriculum development specialists to develop a provincial curriculum in Water Stewardship. This project is using a model of Action Research involving a network of 24 participating schools and a group of technical and scientific experts to develop the curriculum. The Ministry of Environment, Lands, and Parks of B.C. has now funded the project. Funding will continue in 1994.

13. In 1994 I became the first Director of Field Relations and Teacher In-Service Education of the Faculty of Education at S.F.U. In this capacity I will be responsible for developing the Faculty's relations with stakeholder organisations, school districts, the Ministry of Education, and with developing greater access to our programmes for In-Service professional teachers.

XIII. TEACHER IN-SERVICE EDUCATION ACTIVITIES

I have been involved with teacher continuing education since coming to S.F.U. in 1967. It was seen at that time as an important part of a Faculty member's responsibility. Although individual workshops, seminars, and symposia are too numerous to mention or list, I have conducted such programs in the following school districts and agencies.

School District In-Service Work:

Vancouver	North Vancouver	West Vancouver
Sechelt	Coquitlam	Surrey
Abbotsford	Chilliwack	Richmond
Victoria	Nanaimo	Parksville
Campbell River	Courtenay	Golden
Vernon	Kelowna	Penticton
Cranbrook	Prince George	Hazelton
Kamloops	Grand Prairie (Alta)	Calgary (Alta)
Edmonton (Alta)	Toronto	East York
North York	Peterborough	Haliburton County
Carleton	Ottawa	Calgary Separate
Edmonton Separate	Bulkley Valley	Regina

Agencies and Organizations for which I have conducted Seminars or Presented Major Invited Papers at Symposia or Conferences.

B.C. School Trustees Association
B.C. Teachers' Federation.
B.C. Principals and Vice Principals Association.
B.C. Superintendents Association.
The B.C. Ministry of Education.
The Association of Adult and Continuing Education Administrators.
The Ontario Federation of Public School Boards.
The B.C. Council for Leadership in Educational Administration.
The Ontario Institute for Studies in Education
The Ontario Council for Leadership in Educational Administration.
The Western Canadian Association for Educational Administration.
The Canadian Association for Educational Administration.
Association for Community Education.
The B.C. Global Education Project.
The B.C. Intermediate Teachers Association.

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The B.C. Primary Teachers Association.
The Environmental Educators of B.C.
The Vocational Education Society.
The Technology Educators Association.
The Home Economics Association.
The Association for Supervision and Curriculum Development.
The Special Education Association.
The Rural Schools Association.
The Association for Media and Technology in Education in Canada.
The B.C. Wildlife Federation.
The Outdoor Recreation Council of B.C.
The Learning Assistants Teachers Association.
The Peace Educators Association.
The Great Lakes Association for Cooperation in Education.
The Focus on Thinking Foundation.
The Aspen Global Change Institute.
Interpretation Canada.

Professional Societies & Affiliations.

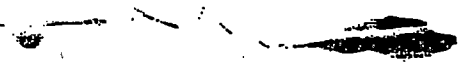
B.C. Science Teachers Association
B.C. Environmental Education Association (Honorary Life Member).
Alberta Council for Environmental Education
The North American Association for Environmental Education
Association for Supervision and Curriculum Development.
B.C. Primary Teachers Association.
The B.C. Science Teachers Association.
The Smithsonian Institution (Associates Program).



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Through support for research, Canada's **International Development Research Centre (IDRC)** assists scientists in developing countries to identify long-term, workable solutions to pressing development problems. Support is given directly to scientists working in universities, private enterprise, government, and nonprofit organizations.

Priority is given to research aimed at achieving equitable and sustainable development worldwide. Projects are designed to maximize the use of local materials and to strengthen human and institutional capacity.

Led by the dedication and innovative approach of Third World scientists — often in collaboration with Canadian partners — IDRC-supported research is using science and technology to respond to a wide range of complex issues in the developing world.

IDRC is directed by an international Board of Governors and is funded by the Government of Canada. At the United Nations Conference on Environment and Development (UNCED), IDRC's mandate was broadened to emphasize sustainable development issues. IDRC's international network and expertise will be used to help the world move toward implementation of UNCED's Agenda 21 program of action.

Le Centre de recherches pour le développement international (CRDI) soutient des travaux et des activités de recherche dans les pays en développement de manière à assurer un développement durable et équitable à l'échelle mondiale.

Les recherches sont menées par des scientifiques affiliés à des institutions, à des entreprises, à des gouvernements ou à des organismes de développement. Des partenaires canadiens y contribuent régulièrement.

Les projets soutenus financièrement ou techniquement par le CRDI privilégient le recours aux ressources locales et s'appuient sur le génie, l'intelligence et le sens de l'innovation des chercheurs des pays en développement.

Le CRDI contribue au renforcement des connaissances et des capacités de recherche des pays en développement pour lutter contre la pauvreté et pour améliorer les conditions de vie et l'environnement des populations affectées.

Le CRDI est dirigé par un Conseil des gouverneurs international. Ses fonds proviennent du gouvernement du Canada. La Conférence des Nations unies sur l'environnement et le développement (CNUED) a choisi le CRDI pour participer à la mise en oeuvre du développement durable à l'échelle planétaire. Le CRDI verra à concrétiser le programme Action 21 élaboré lors du Sommet de la Terre.

Con el fin de asegurar un desarrollo sostenible y equitativo a escala mundial, el **Centro Internacional de Investigaciones para el Desarrollo (CIID)** financia trabajos y actividades de investigación en los países en desarrollo. Las investigaciones están a cargo de científicos que trabajan en instituciones, empresas, gobiernos u organismos dedicados al desarrollo. Estos científicos reciben regularmente la colaboración de sus colegas canadienses.

Los proyectos apoyados financiera o técnicamente por el CIID favorecen el uso de recursos locales y se apoyan en el talento, la inteligencia y el sentido de innovación de los investigadores de los países en desarrollo.

El CIID contribuye al fortalecimiento de los conocimientos y a la capacidad investigativa de los países en desarrollo para luchar contra la pobreza y mejorar las condiciones de vida y el medio ambiente de las poblaciones afectadas.

Un Consejo de Gobernadores Internacional tiene a su cargo la dirección del CIID, cuyos fondos provienen del Gobierno de Canadá. La Conferencia de Naciones Unidas sobre el Medio Ambiente y el Desarrollo (CNUED) ha seleccionado al CIID para participar en la realización del desarrollo sostenible a escala mundial. El CIID se encargará de hacer realidad el programa Agenda 21, elaborado durante la Cumbre de la Tierra.

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