

The “Open Mic” Strand

Ecological Field Studies: On-Line Professional Development for Environmental/Ecological Educators

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Abstract

Ecological Field Studies is a joint venture between partners in the Russian Federation and United States to deliver an on-line telecommunication ecology education program for middle and secondary level environmental educators and students in the USA, Russia and other countries. The program is based on 40 environmental study lessons illustrated with videos of students and teachers conducting research in the environment surrounding the Center for Field Studies, northeast of Moscow, Russia. The videos have complimentary supporting teacher background texts in both English and Russian language. Among the lessons are a wide variety of activities in nature that focus on aquatic ecology, botany, forest ecology, soil studies, landscape analysis, ornithology and anthropogenic effects. The ecological field studies program promotes a wide variety of outcomes that correspond to established educational standards in many countries. Intellectual skill development includes questioning, data collection, analysis and drawing

conclusions. Affective outcomes include an appreciation for the processes of science, the use of technology in basic scientific endeavors and a greater value of natural, scientific and cultural systems. The primary goal of this work is connecting teachers, addressing important environmental issues and promoting environmental interest, knowledge and values.

INTRODUCTION

Dr. Michael Brody, Creek Farm Education Associates, Bozeman, Montana, USA and Dr. Aleksander Bogolyubov, Association Ecosystem, Moscow, Russia have collaborated to establish a telecommunication ecology education program for middle and secondary level science teachers and students in the USA, Russia and other countries. This course is for teachers who would like their students to share ecological and cultural information and work together to help create a better environment. The Ecological Field Studies Program is a continuous, asynchronous, computer-based telecommunications link between teachers and students focusing on ecological studies throughout the world.

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The ecological field studies program promotes a wide variety of outcomes which correspond to established educational standards in many countries. The ecological field study activities address content standards in the areas of earth science, life science, biology, ecology and the nature of science. Intellectual skill development includes questioning, data collection, analysis and drawing conclusions. Affective outcomes include an appreciation for the processes of science, the use of technology in basic scientific endeavors and a greater value of natural, scientific and cultural systems.

The ecological field studies program promotes understanding of ecosystems and the protection of the environment through the training of teachers in specific field study techniques, the education of young people in ecology concepts and issues and the sharing of ecological study results between countries. The primary goal of this work is connecting students and teachers, addressing important environmental issues and promoting environmental interest, knowledge and values.

ECOLOGICAL FIELD STUDY COURSES

Ecological field techniques courses for teachers are offered through Montana State University, Department of Education. There are four separate courses, each corresponding to a specific season and each containing ten ecological field technique activities. Each course contains lessons focusing on practical skills that will be applied in further field studies. The lessons focus on five main themes; landscape, botany, zoology, water ecology and environmental monitoring. Some lessons are closely associated with the seasons and others are more universal.

Autumn Ecological Field Techniques

We consider the autumn field studies to be the first in the series. Practical skills emphasize orientation to the study areas and lessons focus on landscape, geology, soil and birds. These activities are the basis of future course work. The first two complex studies of ecosystem status included in this series are air pollution monitoring using lichens and assessment of human impact on an area.

Winter Ecological Field Techniques

The winter field studies include several typical winter investigations that take advantage of seasonal characteristics including low temperatures and snow. These include; mammal behavior based on snow tracks, snow strata study and chickadee territoriality. However, we have included some lessons that are more universal and lab oriented taking into consideration that outside studies can be more difficult in winter conditions. Lessons continue to develop and extend previous skills related to mapping.

Spring Ecological Field Techniques

In spring field studies course there are many activities that are best suited to spring conditions; spring flower ecology, plant flowering, amphibians and vernal pools. We have included rock and mineral studies because samples are more obvious after spring run-off. Environmental monitoring includes success of young trees in a coniferous forest. Practical skills continue to be developed and applied to new studies.

Summer Ecological Field Techniques

The summer field studies involve the most complex studies and rely more extensively on knowledge from previous studies. Many of these activities take advantage of summer conditions such as warmer water temperatures. Practical skills are applied to

complex environmental monitoring lessons focusing on streams, rivers, grasslands and forests.

COURSE STRUCTURE

Each of the ecological field study course is offered on the WebCT electronic course platform. This format allows us to integrate video instruction, text material, asynchronous course discussions and on-line chat. In each course there are extensive video and text materials, many opportunities for participants to interact with colleagues and student work is based on actually conducting field studies with students.

Materials for each ecological field technique course include supplementary teacher and student information. Course materials include:

- 5-6 minute videos of teachers and students at Ecosystem Center for Field Studies completing each of the lessons' tasks,
- teacher background information in English and Russian language text files and
- specially designed forms to assist students with recording data and reporting results.

Interactions in the ecological field study technique courses promote communication between teachers and students from different parts of the world. Course interactions include:

- weekly on-line discussions of teaching methodologies and the results of each ecological study,
- direct email within the course structure,
- on-line chats with other teachers and students involved in the course,

- informal exchange of cultural information as it relates to understanding different approaches to teaching and
- the exchange of electronic data and pictures of students and teachers working in the environment.

Student work in the ecological field technique courses focuses on the completion of the field studies and the exchange of ecological information between course participants. Student work in each course includes:

- the creation of a student home page to share information about you and your students with other participants in the course,
- weekly participation in course discussions,
- completion of a simple report for each ecological study completed,
- a final presentation for the other teachers and their students involved in the course and
- the completion of a simple survey at the beginning, middle and end of each course to provide feedback to the instructors about the course.

CONCLUSION

For the past 5 years we have offered ecological field studies on-line each university semester of the year. We have had approximately 300 teachers from North America, South America, Europe and Asia participate in the courses. We will continue to offer the courses in the years to come. Registration is always available at <http://www.scienceteacher.org/courses.htm>.

In the Spring 2004 we produced the ecological field study materials (40 videos and teacher manuals). Videos and manuals are all in electronic format on 4 compact

disks and are compatible with IBM and Macintosh computer operating system. These materials are currently available on-line at www.creekfarm.net.

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