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Watershed Access Lab: Educators Resource Center for Environmental Studies

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Watershed Access Lab:
Educators Resource
Center for
Environmental Studies



Kim McCoy
Laboratory Coordinator

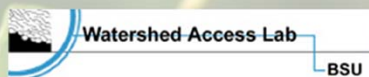
In the Beginning: Spring, 1997

- Our Beginnings: Three year grant from Raytheon Co.
- Our Mission: Teacher Professional Development
 - Use Watershed Education / Stewardship to apply math, science, and technology
 - Remove the equipment barrier for watershed educators
- Our Focus: Watershed Studies
 - Use land use, stream discharge, water quality, aquatic communities and G.I.S. to study watersheds
- Our Supporters: Grants and funding
 - Eisenhower and Improving Teacher Quality grants from the Board of Higher Education, NSF and in kind support from Bridgewater State University

The Watershed Access Lab originated in the Spring of 1997 through a generous grant from the Raytheon Corporation. The goal of the lab was to use watershed education and stewardship to apply math, science and technology. In order to promote those studies, we first had to remove the equipment barrier that teachers faced to perform meaningful, hands on watershed studies. Our focus was to use land use, stream discharge, water quality, aquatic communities and GIS to study watersheds and their health. Throughout the years, the WAL has been supported by grants from the Board of Higher Education and NSF, projects from local watershed groups, and Bridgewater State University

Watershed Access Lab: What is it?

- Open Access Lab for watershed educators in schools and communities
- Support Team for teachers conducting watershed studies with their students
- Lending Lab for equipment and material to support watershed educators
- Resource Center for water related environmental studies



The Watershed Access Lab is an open access lab for educators in schools and community organizations. We are a support team for teachers and students conducting watershed studies. We provide lending lab equipment and materials in order to remove the equipment barrier faced by local teachers and community groups trying to perform meaningful watershed studies. More recently, the WAL has expanding their offerings to include workshops, trainings and professional development for teachers and students in environmental studies both locally and globally. Thus becoming a resource center for educators promoting environmental studies.

WAL: What we offer?



- Graduate level courses:
 - NSCI 521 Watersheds: Stream Ecology, Water Quality and Land Use
- Seminar:
 - One day seminar where teachers and students showcase their watershed projects
- Professional Development Workshops
 - Project WET
 - WOW: The Wonders of Wetlands
 - Project WILD/Aquatic WILD
 - Growing Up WILD
 - PLT - Environmental Experience for Early Childhood
- Conferences
 - Project WET USA National Conference:
May 23-25, 2012
Bridgewater State University

NSCI 521 is an interdisciplinary course that promotes watershed assessment as a tool in environmental education and watershed stewardship. Educators are trained in the techniques and tools necessary to conduct watershed studies with their students in their own communities. These projects culminate in a seminar presentation hosted by BSU where students showcase their results to other school groups as well as representatives from state agencies, school administration, and community members.

Our professional development workshops are aimed to provide local teachers with simple tools and activities to use in their schools to promote hands on environmental education. Our most recent addition, the Project WET USA National Conference. Our site was chosen to co-host this year's event where educators from around the nation will get together and learn more about Water Education in the 21st Century.

Project WET National Conference



WATER EDUCATION
DEVELOPING 21ST CENTURY SOLUTIONS

Topics include:

- Science, Technology, Engineering & Math (STEM) in Water Education
- Pedagogy & Water Education
- Action Education(tm) & Water Education
- Technology & Other Water Education Topics

Topics include:

Science, Technology, Engineering & Math (STEM) in Water Education

This strand will focus on increasing student success in science, technology, engineering, and mathematics and increase educators' capacity to include STEM subjects in their curricula. Of particular interest are proposals that address integration of water-related topics and the implementation of STEM education in a manner that reflects the interdependence of the four STEM subjects, as well as proposals that focus on partnerships involving school districts, community colleges, four-year institutions, and business and industry to provide a comprehensive community-based approach to STEM and water education.

Pedagogy & Water Education

The Pedagogy and Water Education Strand provides the opportunity to examine best practices for integrating water-related environmental education into the PreK-16 educational system at the local, state and federal levels and improving environmental literacy across the nation.

Action Education(tm) & Water Education

What are the most successful methods for addressing the most important water challenges of the day with water education and action education? This strand includes a wide array of topics and strategies such as: Watersheds, Pharmaceuticals and personal care products in water, Risk (drought and floods), Weather and climate change, Ground water, Water and energy, Storm water and Water conservation.

Technology & Other Water Education Topics

Converging web, mobile, and social technologies have generated a level of communication and interaction never before possible. The Technology in Water Education strand seeks to explore the transformational potential that these innovations hold for education and training, as well as share current research and best practices related to these developments.

NSCI 521: Watersheds: Stream Ecology, Water Quality and Land Use

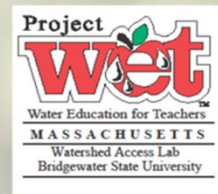
- Interdisciplinary course involving watershed assessment
- Student/Teacher community projects emphasize hands on training
- Seminar presentations to showcase results of community projects



NSCI 521 is an interdisciplinary course that promotes watershed assessment as a tool in environmental education and watershed stewardship. Educators are trained in the techniques and tools necessary to conduct watershed studies with their students in their own communities. The projects emphasize hands on training techniques in water quality assessment using modern computerized monitoring devices, macro-invertebrates as bio-indicators, and Arcview GIS to determine river health. Following their studies, students are asked to present their projects at a one-day seminar at BSU to showcase their results and knowledge. This seminar is opened to not only the other participants, but also to parents, school administration, community leadership, local environmental groups, and the communities at large.

Project WET Workshops

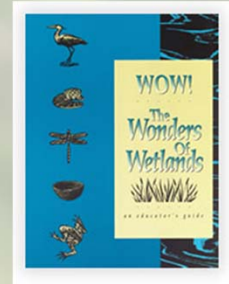
- 1 day workshops promoting water education
- Global participation
- Programs include: WET, Discover a Watershed, Healthy Water, Healthy People, Conserve Water
- WET Guide contains 91 water-related activities



The mission of Project WET is to reach children, parents, educators and communities of the world with water education. They have many globally recognized programs including not only WET, but also Discover a Wetland, Healthy Water, Healthy People, and Conserve Water. The Project WET guide contains 91 hands-on, investigative, easy to use, multidisciplinary water-related activities for students in grades K to 12. Activities fulfill objectives and educational standards in the sciences, as well as other disciplines, from fine arts to health. More than 40 countries, in addition to the United States, are using the **Project WET Curriculum and Activity Guide** activities and over 80 countries have inquired about sponsoring Project WET programs

WOW! Wonders of Wetlands Workshop

- 1-day professional development workshops
- Background information on wetlands
- Multidisciplinary
- Instructional guide for educators K-12
- 50+ hands-on activities
- NSTA recommended and correlated to national standards



The workshop will introduce participants to the three parameters of wetlands (vegetation, soils, hydrology), wetland functions and values as well as management options all through fun and engaging activities. WOW! incorporates wetlands into reading, math, social studies, art or physical education lessons. The Wonders of Wetlands guide is an instructional guide for K-12 educators that provides a resourceful and creative collection of wetland activities, information, and ideas. WOW! includes: over 50 hands-on multidisciplinary activities in lesson plan format, extensive background information on wetlands, ideas for student action projects, and a wetlands resource guide. According to the NSTA reviewers, the activities follow the inquiry model in very real-life settings. Students and teachers alike will learn content, develop process skills, and acquire an appreciation for the value of the wetlands. As students develop an awareness of the unique ecological contribution of these environments, they also gain experience in taking action to conserve wetland areas.

Project WILD Workshops

- 1-day workshops for K-12 educators
- National acclaimed program for conservation and environmental education
- Programs include: WILD, Aquatic WILD, and Science and Civics: Sustaining Wildlife
- Hands-on activities for classroom or outdoor use



Project WILD links students and wildlife through its mission to provide wildlife-based conservation and environmental education that fosters responsible actions toward wildlife and related natural resources. *Project WILD K-12 Curriculum and Activity Guide* focuses on wildlife and habitat. The *Project WILD Aquatic K-12 Curriculum and Activity Guide* emphasizes aquatic wildlife and aquatic ecosystems. Project WILD's new high school curriculum, *Science and Civics: Sustaining Wildlife*, is designed to serve as a guide for involving students in environmental action projects aimed at benefitting the local wildlife found in a community. Each activity contains all the information needed to conduct that activity including objectives, method, background information, a list of materials needed, procedures, evaluation suggestions, recommended grade levels, subject areas, duration, group size, setting, and key terms. A glossary is provided, as well as a cross-reference by topics and skills.

Growing Up WILD Workshop

- 1-day professional development workshop for early childhood providers
- Guide containing hands-on wildlife-based educational activities geared toward early childhood learners
- Correlated to the National Association for the Education of Young Children (NAEYC) Standards and the Head Start Domains.



MassWildlife
Massachusetts Division of Fisheries & Wildlife

Wayne F. MacCallum, Director

Growing Up WILD is a national recognized early childhood initiative that builds literacy skills and environmental appreciation among early learners through participation in engaging wildlife-based educational activities. *Growing Up WILD* features new activities designed to stimulate young children in new and exciting ways while connecting them to nature and many of its wonders. Through a wide range of activities and experiences, *Growing Up WILD* provides an early foundation for developing positive impressions about the natural world and lifelong social and academic skills.

Project Learning Tree

- 1-day professional development workshop for early childhood providers
- Guide containing hands-on forest/tree-based educational activities geared toward early childhood learners
- Correlated to the National Association for the Education of Young Children (NAEYC) Standards and the Head Start Domains

PLT uses the forest as a "window" on the world to increase students' understanding of our environment; stimulate students' critical and creative thinking; develop students' ability to make informed decisions on environmental issues; and instill in students the commitment to take responsible action on behalf of the environment.

WAL Benefit:

Community service using applied science for educators and students

- 90 teachers and 2100 middle school/ high school students have participated in NSCI 521
- Applied math, science, and technology to promote



As of the Spring of 2012, 90 teachers and well over 2000 middle school/ high school students have participated in NSCI 521. Community watershed projects use applied math, science, and technology to promote stewardship in the students, their parents, and their communities.

WAL Benefit:
Fun, interactive, multidisciplinary
activities to cement scientific
concepts

- 225 teachers have received training in hands-on environmental education
- According to a Chinese Proverb:

I hear and I forget
I see and I remember
I do and I understand



Since Spring, 2009, over 225 teachers have received training in hands-on environmental education through our professional development workshops, which translates to over 5000 students.

According to a Chinese Proverb:

I hear and I forget
I see and I remember
I do and I understand

Students explore, learn, and understand scientific concepts through hands-on activities

WAL Benefit:

Promote conservation education to the young people that will one day be the environmental stewards of the future

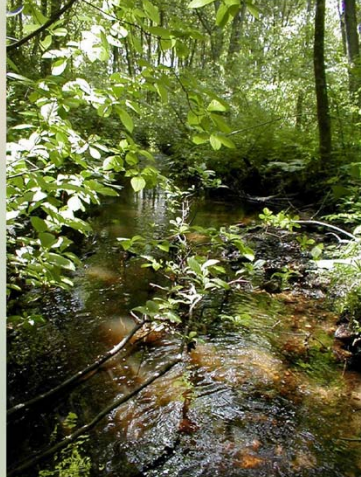
- Develop awareness, knowledge, skills and commitment
- Responsible citizens for the future



Through environmental education, we are developing awareness, knowledge, skills and commitment. This results in informed decisions, responsible behaviors, and constructive actions concerning the environment. Education addresses the need for human beings to develop as responsible citizens of our planet. It is based on the premise that young people and educators have a vital interest in learning about and preserving our natural world.

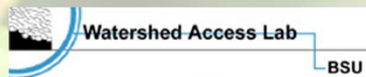
Impact of WAL Participation

- New perspectives on careers in STEM disciplines
 - State and Federal Agencies
 - Local Government: Board of Health/Conservation Commission
 - Areas of future educational studies and college preparation
- New perspectives on the importance of the environment and its preservation and conservation
 - STEWARDSHIP



Our Future in the WAL

- New lab space in the Center for Science and Mathematics
- Professional development opportunities within the school districts (on site at their school)
- Undergraduate level courses for education majors in environmental education
- One day hands-on modules for student use here at BSU and as part of lending labs (similar to Citylab program)
- Summer program for students (elementary and middle school)



THANK YOU

Thank you all for participating in this year 2012
Watershed Access Lab Seminar

We look forward to seeing you all next year with
more exciting results

