Teacher Enrichment Adventure in Watershed Education and Training (TEAWET)

Gevirtz Research Center
Gevirtz Graduate School of Education
University of California, Santa Barbara

Gevirtz Research Center
Graduate School of Education
University of California, Santa Barbara
partnerships creating excellence in public education

TEAWET Fellows at Matilija Dam in Ventura County

ORGANIZATION:

Gevirtz Research Center
Gevirtz Graduate School of Education
UC Santa Barbara

TITLE:

Teacher Enrichment Adventure in Watershed Education and Training (TEAWET)

PRIORITY AREA:

Professional Development for Teachers

PARTNERS:

- Santa Barbara School Districts
- Gevirtz Graduate School of Education, Teacher Education Program
- South Coast Science Project
- Santa Barbara Botanic Garden
- UC Santa Barbara Marine Science Institute Education Team
- Santa Barbara Museum of Natural History (Ty Warner Sea Center)

TARGET AUDIENCE:

20 Teachers from 5th through 8th grade were recruited from Ventura and Santa Barbara Counties, including both Science and Multiple Subjects Teachers.

En route from the Shearwater vessel to Santa Cruz Island

Water quality testing at the Ty Warner Sea Center, near Stearns Wharf in Santa Barbara

Funding for TEAWET is provided by the National Oceanic and Atmospheric Administration, California Bay Watershed Education and Training Program.

GOALS FOR TEACHERS:

➤ Enhance knowledge of the watershed and the elements and importance of a meaningful watershed experience
➤ Provide direct, field-located experience of inquiry-based activities focused on the Santa Barbara Channel watershed
➤ Increase understanding of how to use watershed education as a thematic context for interdisciplinary studies
➤ Promote integration of watershed studies into the ongoing curricula, selection of existing curriculum materials to meet individual needs, and connection to resources

OBJECTIVES:

➤ Teachers will increase their understanding of the process, importance and application of inquiry as a tool for watershed education in the field and classroom.
➤ Teachers will increase their knowledge of the watershed.
➤ Teachers will increase the implementation of meaningful watershed experiences in the classroom.

Examining stream invertebrates at Mission Creek

PROJECT OVERVIEW:

TEAWET is a program of professional development designed to increase the ability of classroom teachers to engage students in meaningful watershed education in the classroom. Participating teachers, known as TEAWET Fellows, discover new ways to apply inquiry to our local environment, bring investigative science into the classroom, and use the watershed as a context for interdisciplinary thematic teaching. In 2006-2007 the project featured:
➤ 9 Friday/Saturday sessions
➤ Field-based investigation of the watershed at sites including UCSB, the Santa Barbara Botanic Garden, Lake Casitas, the Watershed Resource Center at Arroyo Burro Beach, the Ty Warner Sea Center of the Santa Barbara Museum of Natural History at Stearns Wharf, Matilija Dam, Arroyo Hondo Preserve, the Santa Barbara Channel (aboard the vessel *Shearwater)*, and Santa Cruz Island
➤ Sessions facilitated by scientists, educators and other professionals
➤ UCSB Extension Course enrollment with 8 continuing education units available
➤ Stipends provided to participants (TEAWET Fellows) for participation and materials

Coastal botany is revealed at historic El Chorro Ranch, located midway between the Gaviota Coast and the Lompoc Valley and preserved with support from the California Rangeland Trust.

EVALUATION PLAN:

The TEAWET evaluation utilized both quantitative and qualitative methodology. The evaluation examined:
• Changes in participants' knowledge and skills relating to watershed education
• Attitudes about engaging in inquiry-based watershed education
• Practices applied in participating teachers' classrooms

Data Collection:
• Online pre- and post-surveys
• Focus group interviews with participants
• Field observations

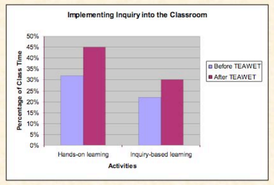
FINDINGS:
Five areas were significantly impacted by the TEAWET program:

Knowledge of Watershed Education:
• Teachers deepened their knowledge of watershed education and implemented the activities learned in their classrooms (e.g., scientific method, watershed lessons), as illustrated by their comments:

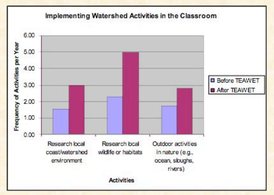
"I like the connection you made for us with the watershed education resources"

"Being in this program helped me use those lessons and connect them better in math and language arts"

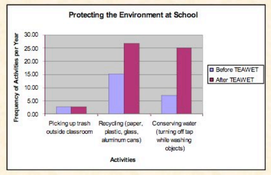
Implementing Inquiry into the Classroom:



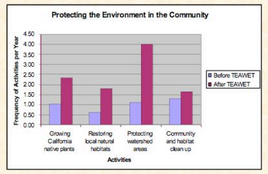
Implementing Watershed in the Classroom:



Protecting the Environment at School:



Protecting the Environment in the Community:



PRODUCTS:

➤ TEAWET Blog: www.teawet.blogspot.com
➤ Watershed Lesson Plans produced and classroom-tested by TEAWET Fellows
➤TEAWET Lesson Plans for professional development training sessions
➤ Evaluation instruments
➤ Teacher PowerPoint presentations
➤ Conference presentation by TEAWET Fellows at the 2008 California Islands Symposium

RESULTS/LESSONS LEARNED:

Unique results:
Teachers often mistake inquiry with hands-on learning, and find it difficult to engage students in genuine inquiry. TEAWET Fellows experienced inquiry for themselves and came to understand the importance of letting students discover information through questioning and experimentation.

Highlights of evaluation results:
➤Some teachers learned about watershed education for the first time through participation in TEAWET.
➤Teachers with prior knowledge on watershed developed a greater depth of understanding on the topics.
➤Through their participation in TEAWET, teachers became more comfortable and confident in integrating watershed education into their existing curriculum and finding connections to state content standards in science and other subject areas.
➤ Before TEAWET, most teachers spent only 10-25% of their overall class time on inquiry. After participating in TEAWET, 80% of teachers said they spent 25-50% of their class time on inquiry.
➤ 60% of teachers incorporated 4 or more watershed-focused lessons into their curriculum during the TEAWET year compared to only 31% prior to participation in TEAWET.

Changes made to evaluation plan:
The post-survey will now be completed prior to the final training session to ensure that more teachers have the opportunity to complete the survey.

Changes to project:
• More time will be allowed for teachers to collaborate with TEAWET Fellows from different districts and disciplines.
• TEAWET Mentorships have been established to allow teachers with more experience in watershed education to mentor and coach teachers without this background and to model activities for beginning TEAWET Fellows - particularly in the area of inquiry.
• Final watershed lesson plan presentations will now be scheduled earlier in the school year to avoid overwhelming TEAWET Fellows during preparations for the end of the school year.

TEAWET Fellows collect riparian specimens at the Santa Barbara Botanic Garden