

Stream Side Science

Developing Outreach Materials with the Audience in Mind

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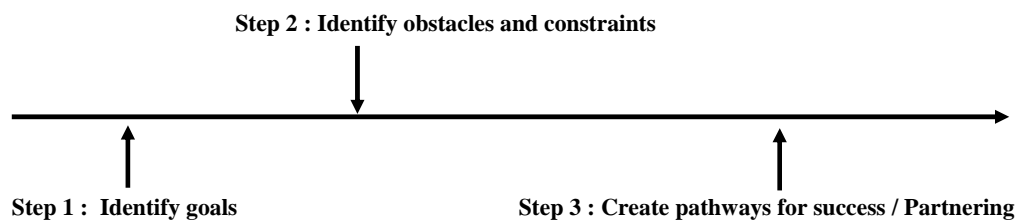
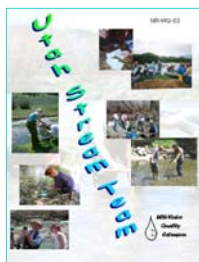


ABSTRACT

In 1999, USU Water Quality Extension developed an in-depth manual to help teachers and other educators teach watershed concepts by designing and implementing their own water quality monitoring programs. The manual was well received by teachers who were already interested in water quality and had the resources to do the activities, but did not spark the interest of other teachers or the Utah State Office of Education. The two main reasons for this were 1) a lack of knowledge about water quality and watersheds, and 2) a need by Utah teachers to restrict their time and resources to materials that are directly linked to the Utah State Core Curriculum for each grade level.

Over the last year, USU Water Quality Extension worked with teachers and the Utah State Office of Education staff to develop a the Stream Side Science curriculum which utilizes the hands-on activities in the Utah Stream Team manual, but is aligned to the Utah State Core for 9th grade Earth Systems Science. These activities now have the full support of the Utah State Office of Education and the Utah Governor's Watershed Initiative, including evaluation of the materials, printing and distributing the materials statewide, and assistance in teacher training.

Existing Monitoring Plan



Classroom Curriculum



Step 1: Identify goals

1. To provide students with hands-on activities and lessons about watershed and water quality science.
2. To provide teachers with materials and trainings to increase their competency and comfort level in using these hands on techniques.
3. To modify existing water quality monitoring materials into a format more usable by teachers.

Step 2: Identify obstacles and constraints

Based on surveys and interviews with teachers, informal educators, and the Science Coordinator for the Utah Office of Education:

- The curriculum had to be correlated to the Utah State Core Curriculum. We chose to target the 9th grade Earth Sciences Core Standards.
- Teachers would need additional training to be comfortable using the resource.
- The lesson plans needed to be written and formatted in a clear and consistent way.

Step 3: Create pathways for success through partnering

We worked directly with the Utah State Office of Education, the Utah Department of Agriculture and Foods, the Utah Division of Wildlife Resources, the Utah Society for Environmental Education, Utah State University and various 9th grade Earth Systems Science Teachers throughout the state.

The draft curriculum went through several levels of review:

1. Educators throughout the state reviewed it for formatting, age appropriateness, and content.
2. The draft was reviewed by the Utah State Office of Education, and partner agencies to check for content and correlation to the core curriculum.
3. The activities were field tested by a subset of teachers in classroom settings.
4. Three teacher trainings were offered, using the draft curriculum and lesson plans where teachers provided comments on the curriculum and the training.



Successes:

The finished Stream Side Science Curriculum was endorsed by the Governors Watershed Initiative for the State of Utah, and will be printed and distributed to each 9th grade Earth Systems Science teacher in the state.

Interest in water quality issues and activities by teachers has also risen. Our first teacher trainings using our draft had more than 4 times the usual teacher workshop attendance, which we attribute to support by the State Office of Education.

We are also seeing an increased interest by county extension staff and other agencies in the use of monitoring techniques for watershed education.

Future goals:

During the fall of 2004, USU Water Quality Extension will begin a formal evaluation of the Stream Side Science Program. Students will undergo pre and post testing to measure a direct knowledge change, and teachers will be surveyed and interviewed to assess the effectiveness of program elements such as the teacher trainings, dissemination of materials, formatting, and access to resources.