

# **Supporting Teachers Through Accessible Citizen Science Literacy Teaching Resources**

A Proposal Submitted to

The Montana State University- Bozeman Teaching Learning Committee

Submitted by:

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**Project Context** - Elementary teachers provide the foundation for our democracy through the instruction of citizen scientific literacy skills. The citizens of our communities, state, nation and world are increasingly called upon to make complex personal and societal decisions such as: what foods to consume, the benefits/risks of various medical procedures, how deep to drill a well in the local aquifer, and the implications of increases in global temperatures. The responsibility and need for high quality citizen scientific literacy instruction has never been greater, while at the same time the resources available to teachers have decreased. The passage of the “*No Child Left Behind*” national education legislation increased the burdens on teachers by intensifying expectations for student performance on mandated high stakes tests that do not take into account local community factors. The high stakes consequences for underachieving schools include negative publicity and severe funding reductions. One of the many challenges for prospective and practicing teachers is access to resources based on the most recent research and theory in science instruction.

Montana State University has a rich and successful history of grant-supported and degree granting programs that support teachers. The National Teachers Enhancement Network developed on-line courses that support elementary teachers through increased content knowledge. The Masters of Science in Science Education provides a degree program for practicing teachers to improve their science instruction. The Bozeman Public Schools along with MSU supported teachers with projects including the Keystone Grant that provided kit-based science teaching equipment and professional development.

Approximately 180 students each year graduate from the elementary education program in the Department of Education of Montana State University. These prospective teachers will eventually be licensed to teach K-8<sup>th</sup> grades and will be responsible for teaching multiple subjects, including science. One required course in their State of Montana approved program is Teaching Elementary Science (EDEL 325). After receiving instruction for 12 years in public schools and 3 years at the university in basic science content, prospective elementary teachers enroll in ELED 325 to explore the foundations of high quality science teaching based on theory and research as reported in recent documents from the National Research Council (NRC), the American Association for the Advancement of Science (AAAS), the National Science Teachers Association (NSTA) and the Montana Department of Education. In EDEL 325, students learn these science teaching strategies through creating learning products such as

science lesson plans, science investigations, and in-depth interviews with elementary school students to understand how young people comprehend science concepts. These student projects cumulatively amount to a valuable toolbox of teaching resources.

The underlying question that guides this project is: how can the student products created in EDEL 325 be made accessible to these prospective teachers as they move into the teaching profession as well as provide a service to a local school districts such as the Bozeman School District<sup>1</sup>?

**Project Goals** – The goal of this project is to apply service learning principles to create a web-based resource that includes a searchable database of learning products created in EDEL 325, along with matrices of national and state standards and benchmark materials. This web-based database will be accessible to Montana State students, local elementary teachers, and a wider audience of elementary teachers across the state and nation. Through this instructional innovation, EDEL 325 students will learn web-design for classroom applications and their assignments will increasingly be targeted to local school district needs.

**Methods/Procedures/Activities** - The first stages of this project have already been realized. Initial materials have been assembled, including documents from NRC, AAAS, NSTA, and as an example of local standards, the curricula guidelines for Bozeman Public Schools. A pilot project was completed last spring to create a simple website format, file naming system, and links from student learning products to the skeleton website.

This project proposes to purchase computer software to enable the creation and maintenance of the website. A program assistant will be contracted to organize the hundreds of student learning products and a web designer will be contracted to advance the existing pilot project into a professional and accessible product that will represent Montana State University well in the community.

**Anticipated Outcomes** – The final website will contain a searchable database of resources that links national and state standards for science literacy to usable teacher resource materials.

**Assessment Plan** – The website will be evaluated for usefulness by monitoring “hits” and by conducting individual interviews with EDEL 325 students and practicing elementary teachers after they have used the website. These semi-structured interviews will ask for feedback and input for the design

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<sup>1</sup> According to the Bozeman Public School District Superintendent’s office, there are 238 elementary teachers in the district (personal communication, 12/2/03).

and functionality of the website. The results will be incorporated into future revisions of the website.

**Budget**

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|---|-------------------|
| Software Purchase based on ITC consultant recommendations | \$445.00          |
| Web Designer from MSU ITC (\$45.00/hr. x 15 hours)        | \$675.00          |
| Website Programming Assistant (\$10.00/hr x 80 hours)     | \$ 800.00         |
| Hourly Employee Benefits @ 10%                            | \$80.00           |
| <b>Total Proposal Request</b>                             | <b>\$2,000.00</b> |

The Department of Education will be cost-sharing office space, computer, computer software, and faculty time for this project.