

West High Science

*Dewey J. Hansen & Helen Cothron Hansen
Memorial Fund*

Denece Lord

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Application Form

Project Name*

Name of Project

West High Science

Amount Requested

Amount Requested

\$24,558.89

Grade Level

Please select grade level below.

9th-12th Grade

Primary Subject Area

Please select the primary subject area of your grant.

Science

School

Please select your school from the list below.

Billings West High School

Number of Students Served

Please enter the number of students that will be potentially served by this grant.

800

Project Cost

What is the total cost of your project?

\$24,558.89

Statement of Need

Please describe the need for this project. For example, how will this project impact student learning?

The Science Department at Billings West High School maintains a long term goal of expanding the scientific learning experiences and opportunities for our students beyond the classroom walls, to take the science they are learning in the classroom and experience it in the world around them. We cannot offer our students these opportunities beyond the classroom without the generous financial support of the Dewey Hansen and Helen Cothron Hansen Memorial Endowment Funds. This year's requests will fund a multifaceted set of experiences and opportunities for our students. These opportunities include a myriad of field trips for Earth Science, Chemistry, Environmental Science and Geology students including travel and teacher substitute costs; group participation in the statewide Science Olympiad Competition; a STEM

engineering project designing and building electric guitars in Physics 2; continued maintenance and development of our school/community garden; utilizing emerging technology by purchasing a 3D printer (to be shared with the Tech Ed Department) to design and create scientific models to help bring concepts to life; to expand and update the science resources section of our newly configured school library and continued professional development for 2 teachers in science/technology integration, engineering integration and the new Next Generation Science Standards.

Primary Goal

Please describe the primary goal of the project and how it blends with School District 2 goals and curriculum.

The best way to really learn the District Science curriculum is to do and experience that science; to take it beyond the textbooks and classroom walls and put it into the students' hands, under their feet and into a context and application in their everyday lives. Students spending time in the field making observations, collecting and analyzing data, conducting field studies, delving further into science concepts through research and design, and applying those concepts learned in the classroom to "real life" experiences is highly effective in bringing a deeper relevancy to the educational experience. Students develop a better understanding and appreciation for why and what they are learning and a deeper insight into the world around them.

Project Description

Briefly identify the major activities and materials involved in your project.

- Field Trips to expand and apply information learned in class include - Norm's Island, Riverfront Park, Four Dances Recreation Area, Pictograph Caves, Phipps Park, geo-tour of Billings, Big Horn Mountains 3 days two nights, CommaQ Architecture in Bozeman, a family farm and a corporate run farm in Hysham, MT, the Beartooth Mountains and local gas producing plants in Billings.

- Classroom projects include a continuation of the National Science Foundation's STEM Guitar Project in Physics 2 in which kids learn the concepts of physics by designing and building working electric guitars, and the maintenance, upkeep and continued development of the West High School/Community Garden which is used to support lessons in Environmental Science and Biology, It is shared with other classes in our building such as the special education and life skills classes, as outreach to area elementary schools and to the people in the surrounding neighborhoods.

- Science and technology integration and cross curricular opportunities with a 3-D printer jointly shared with the Science and tech Ed departments includes the creation of topographic maps and landforms in Earth Science, prosthetic design in Human A&P and conceptual models in Physics and Chemistry. STEM models are using these printers to support application in all curricular areas.

- Science Olympiad Team - This is a hands-on, problem solving science competition where students work in teams to solve a problem using scientific knowledge, science process skills, mathematics, engineering and technology skills and creativity. The kids on the team work concessions at school events to raise money for registration fees and resource CD's, but need assistance with the high transportation costs of getting to Bozeman for the State meet.

- Professional Development - Professional development is imperative for science teachers to stay current in a ever and quickly changing field and with new national science standards that incorporate engineering, technical reading and writing and higher level math along with new discoveries in science. We need ways to stay on top of what we need to know and do to make sure our students are scientifically ready for their future beyond high school.

- Funding Library Books - West High has a newly configured, up-to-date library. Outdated books, including science books, were weeded out last summer and the librarians are anxious to build and expand the science research and science recreational reading section. They have a wish list of 105 science books that would take

them many years to acquire on their present library budget. We would like to be able to help them out in acquiring these books.

Professional Development

If your project includes professional development, how will it improve student performance?

Next year the focus for our 2 teachers attending NSTA will be the Next Generation Science Standards, integrating engineering, math and technical reading and writing into our curriculum, which are major factors in the NGSS, what has currently been developed to support teachers in implementing these different threads and what are other teachers across the country doing who have begun successful implementation of NGSS. On their return, we will discuss the information in our PLC's to see how we can begin to apply this information to our present curriculum and what we need to change about what and how we teach. This helps keep us current in the field which strengthens how we teach the science concepts, and in turn, strengthens student performance in the subject matter and the honing of science process skills and critical thinking.

Project Timeline

When will you implement your project?

This project will be implemented during the 2015-2016 school year.

Plan for Evaluation

How will you evaluate student outcomes for your project?

Each student project will have its own set of requirements and evaluations such as photo journals, logs, field reports, tests and quizzes. These would all be formal types of assessment. More informal, yet extremely important, assessments will be observations made by teachers of students while they are participating in the activities. Are they engaged in the activity? Are they asking questions? Are they making good observations? What discussions are they having with each other? Are they making connections to concepts taught in the classroom? Finally, are they excited about what they are experiencing and learning? All of these will provide an effective tool for evaluating student outcomes.

Project Budget

Please identify other funding sources, if applicable. You may either type or attach a budget

Field Trips -

- Substitute teachers: 26 @ \$85 per day = \$2,210.00

- Transportation: 13 school buses @ \$241.07/bus & 6 vans (price varies) = \$5,033.91 (est)

-Gas, hotel, food for over night trip = \$2150.00

Garden supplies = \$1300.00

3-D printer& filament = \$2,388.00

Science Olympiad travel expense to Bozeman Tour Bus = \$1230.00

Electric Guitar: 20 kits @ \$200.00 each = \$4000.00

2 teachers to attend NSTA @ \$2,000.00 each = \$4,000

105 Science Library Books = \$2246.98

**In addition to this year's funding, please also use carry over funds from 2010 - \$2663.39 and 2014 - \$3470.00

Supervisor Approval*

I have recieved approval from mysupervisor to apply for this grant.

Yes

Attachment 1

Please attach any photos, pages from catalogs, or other documents below. This is optional.

Attachment 2

Attachment 3

File Attachment Summary

Applicant File Uploads

No files were uploaded