

Dewey Hansen Education Foundation Grant 2015
West High School – Additional Project Information
Denece Lord 4/14/2015

Project description:

Field Trips –

Jon Bushey

- Earth Science Field Trip: Norm's Island, Riverfront Park Billings – 2 classes one day, 2 classes the next day

Students will measure depth of stream channel, construct cross section of stream, make observations of soil types, groundwater and stream processes

- Geology Class Field Trip: Sites around Billings – 1 class, 1 day

Geologic features and geologic history and timeline of the Billings area, create stratigraphic cross sections of the area

- Geology Class Field Trip: North Central Wyoming 3 days, 2 nights

Observe and analyze structural geology, paleontology, stratigraphy and geomorphology of the Big Horn Mountains – integrate geology with Native American history/culture of the area

Gayle Lam

- Environmental Science Field Trip – 1 class, 1 day – Bozeman, MT

Meet with Ben Lloyd of CommaQ Architecture, – observe various projects which use sustainable practices in city planning and construction, importance of restoration and why it is good for community development, kids will then complete a project on city planning and how they would redesign Billings if they had unlimited funds

- Environmental Science Field Trip – 1 class, 1 day

Visit an active family farm to observe operations and farming practices then visit an industrial farm to observe operations and farming practices – compare and contrast the 2 types of farming and the effects on the environment and food production, tie in to a unit on food and agriculture that incorporates the West High School Garden.

- Environmental Science Field Trip – 1 class, 1 day – Beartooth Mountains

Visit a wilderness area, observe and discuss the importance of the preservation and appreciation of wild places

Steve Greene

- Earth Science Field Trip – Riverfront Park – 1 day, 1 class

Introduce the students to the study of hydrology, GPS mapping and its uses, complete waterflow studies, soil sampling, mapping of area and places soil samples are from with follow up on data interpretation, use soil maps of the area for later projects related to soil development

- Chemistry Field Trip – Billings – 1 day, 4 classes rotating throughout the day

Visit a local gas producing plant to observe the production of various gases and how the gases are used by various industries in the community, relate chemistry gas laws to what students are observing and learning

Denece Lord

- Earth Science Field Trip – Four Dances Recreation Area (Sacrifice Cliff) and Pictograph Caves State Park, Billings – 1 day 2 ½ classes, 1 day another 2 ½ classes – 5 classes total

Observe and experience agents of chemical and physical weathering, erosion, deposition and the continually changing landforms that result from these processes, observe the geological location of Billings in the Yellowstone River Valley and floodplain, Billings' relative position to the Big Horn, Pryor and Beartooth Mountains, seek out evidence for the Yellowstone River once flowing on top of the rims and how it has eroded its way down to its present location, the role the geology of the area has had on determining early migrations of animals and ancient peoples, the early white settlers to the area etc – how the geology affects the biology of an area

- Earth Science Field Trip – Phipps Park, Billings – 1 day 2 ½ classes, 1 day another 2 ½ classes – 5 classes total

End of the school year performance assessment where students explore, observe, analyze, and interpret the landscape using the Earth Science concepts learned throughout the year, photo journals with explanations and a creative piece of work – poetry, short story, song lyrics with music, artwork related to what they learned at Phipps will be presented

Classroom Projects -

Maureen Ladd

– Rockin' Physics at West High STEM Guitar Project – Physics II,

Continuation of the National Science Foundation's STEM Guitar Project, a 10 week project where students build electric guitars and in the process learn concepts of vibrations, waves, tension, force, electromagnetic induction, wiring, circuitry and gears, also gain practical skills in woodworking, soldering and playing the guitar, problem solving and teamwork play an important role as well – at project's end, students will cooperatively create a slide show and give a public presentation on the making of an electric guitar- this past year, the public presentation was attended by teachers, parents, administrators, the Billings Gazette and the local TV stations

Gayle Lam

- West High School and Community Garden – Biology and Environmental Science Classes

Three years ago Environmental Science classes, with help from Dewey Hansen funds, developed and built a community garden on the west side of the West High building – is integral to studying land use and the industry of food in the US-students gain firsthand knowledge of requirements for successfully growing food and how larger industries impact the environment- important concepts in Montana where agriculture is still an important part of economy –

Environmental Science classes – required to research and maintain their own section of the garden, keep a journal containing research of the crop they are growing and details of the progress made, learn about community supported agriculture, discuss GMO's, organic farming and global impacts and

influences on foods, complete a unit on the “Perils of Our Food” examining the industry of food in the US and globally

Biology Classes – use the garden during studies on energy (photosynthesis, cellular respiration), plant ecology, ecosystem interactions and food pyramids and webs

School and Community Aspects – Other groups are encouraged to use the garden – last year West High special education classes worked in the garden then used produce to make classroom treats such as salsa for their chips, outreach to grade schools in the area has been made and one school is interested in doing educational activities with the garden – we hope to increase the outreach in the coming years to more elementary schools and people in the surrounding neighborhoods

Chuck Swarm –

- Science and technology integration and cross curricular opportunities with a 3-D printer
Earth Science topographic maps, landform development, Human A&P prosthetic design, physics 3D conceptual models are a few areas with immediate application, STEM models are using these printers to support application in all curricular areas

Science Olympiad Team –

Maureen Ladd, Steve Greene – Coaches

Science Olympiad is a hands-on, problem solving science competition where students work in teams to solve a problem using science knowledge, science process skills and mathematics – engineering and technology skills and creativity are also important aspects – kids on the team work concessions at school events to earn money for registration fees and resource CD’s. Last year was the first year for this team at West High, high transportation costs to Bozeman for the State competition is the biggest hurdle for the team

Professional Development –

Professional development is imperative for science teachers to stay current in an 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, science books included, were weeded out last summer and the librarians are anxious to build 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 library budget. We would like to be able to help them out in acquiring these books.