February 1, 2012

Dear Montana Middle School Teacher:

The University of Montana (UM) is seeking qualified Montana middle school teachers to participate in a educational research project entitled "Project-based, Collaborative Learning with Google Earth and Wikis (GooWi Explorers)", which is funded by the National Science Foundation. Participating teachers are eligible to receive stipends of **$1000**. This letter outlines the details of the project. Please read it in its entirety.

The purpose of this project is to create and test an online framework through which teachers can engage their classes in project-based, collaborative learning activities across a range of geographically centered disciplines. A goal of the project is to introduce students to a specific suite of transferrable 21st century cyber-enabled workforce skills as early as possible in their academic careers. Specifically, students will learn to use cyber-based tools to conduct scholarly research, collaborate effectively with peers, and communicate professionally with their intended audience. The specific tools and resources to be employed include Google Earth, Wikis, and other online resources.

Teachers and students will select a topic of interest to them – one with relevance to their own communities and/or local landscapes. All class projects must relate to cultural and/or environmental change in Montana over the past several centuries, using initial European contact as a temporal baseline. Several explorations, including the Verendryes (1742-1744), Lewis and Clark (1804-1806), Hunt/Astor Party (1810-1812), and Bonneville (1831-1833), brought Europeans into contact with Montana's Native American tribes and landscapes. In addition to written accounts that survive today, paleoecological and archeological records, together with Native American oral histories, can be used to develop a rich picture of past conditions. We encourage projects that involve the collection of original data by students (photos, interviews, etc.) to augment past and present comparisons. Using these data, students can develop deep and robust understandings of natural and human induced changes over historic time, in places of importance to them.

Teachers and students conducting GooWi Explorers projects will be supported by project personnel and by various components of the project website (www.spatialsci.com/GooWi/). The teacher resources will include a curriculum overview, technical (computer and internet) requirements, Google Earth and Wiki tutorials, suggested instructional procedures, and example project ideas. It will also include guidelines for helping students develop viable research questions, conducting effective and efficient internet research, evaluating the validity of information acquired over the internet, citing source materials, and presenting new materials, as well as age-appropriate explanations of the legal and ethical use of information and information technology with on-line quizzes using example situations. We will also model scientific argumentation, constructive collaboration, and the peer review process. Teachers will be able to select from these resources as needed throughout the course of the project.

Resources to support student research will include:

- a library of KMZ files, such as expedition routes, tribal lands, geology, climate, and natural history that are not currently available within the Google Earth "Layers" library.
- descriptions of Google Earth's embedded layers and how they might be useful for class projects.
- a list of internet resources available as starting points for research on various expeditions. For this demonstration project, this list will be confined to expeditions reaching Montana, including the Verendryes (1742-1744), Lewis and Clark (1804-1806), Hunt/Astor Party (1810-1812), and Bonneville (1831-1833).
- a list of existing data resources, including the NOAA Paleoclimate database, the Library of Congress Digital Collections, and others that would be of use in examining various natural science or social science topics.

Communication and collaboration will take place within password-protected, Wiki-based workspaces, including a project workspace to facilitate teacher-staff communication through an embedded forum, and separate classroom workspaces to support student work. Using their Wiki workspaces, students will collaborate with their working groups to develop their research projects and presentation materials, including learning basic HTML to format Wiki Web pages and Google Earth placemarks. Project personnel will assist teachers in mentoring students, and students from other participating classes will conduct peer reviews. Students' final projects will be posted to the student work show case on the project website.

To qualify for participation in this project, you must teach middle school (6^{th}, 7^{th}, or 8^{th} grade) science, geography, social studies, history or other subject in which you could embed a two to four week, student-driven research project related to the exploration of Montana, as described above. You must have some proficiency using cyber-based tools and resources, including Google Earth, in particular, as well as adequate access to computers and internet to conduct an internet-based project. In addition, you must have permission from your school principal to engage in the project. Successful applicants will take part in a new and engaging, inquiry-based, class project that meets their own learning objectives for students, yet is supported by a rich assemblage of technological, pedagogical, and academic resources, including one-on-one mentoring by project staff and professional peers. In addition, you will have the opportunity to help guide the development of the framework to maximize its effectiveness for future use. Your students will receive a unique, technology-embedded, hands-on learning experience that will broaden their understanding of the respective content area and greatly strengthen their cyber-enabled 21^{st} century workforce skills.

Project Schedule

The 1-year GooWi project will begin in the summer of 2012 with a two-day orientation workshop for selected applicants. The orientation will be held on June 11 and 12 at The University of Montana in Missoula. Your travel expenses will be covered by the project. You can also earn **16 OPI renewal units** if you so desire.

Prior to the orientation, you will be asked to take a 60 minute, on-line, pre-study survey that includes (1) a portion of the "Survey of Enacted Curriculum", which includes demographic data (gender, race, years teaching, educational background, etc.); school and class data (# students, % minority, % female, grades included, etc.); and teaching styles and preferences (use of lecture, media, homework, group work, field trips, etc., and (2) the Technological Pedagogical Content Knowledge (TPACK) assessment , which seeks to determine how to integrate your knowledge of technology within your specific discipline. Results of this pre-program survey will be used to characterize the classroom situations, preferences, and experience of teachers included in this study.

The orientation workshop will be dedicated to introducing you to project staff and resources, brushing up on Google Earth and Wiki techniques, discussing ideas for class projects, and activities focusing on best practices for project-based collaborative learning.

During the 2012-2013 school year (preferably fall semester) you will lead your class in conducting a GooWi Explorers project. The project should take from **two to four weeks** of class time. You may divide students into work groups as you desire, but all students should participate in the class Wiki where they will compile, analyze, and synthesize information that they gather using the internet-based research resources on the GooWi website. The students may ask questions from their mentor at any time. When students have completed a draft of their presentations, they will have these artifacts reviewed by students from another participating class. They will use these reviews in finalizing their presentations. Final presentations will also be reviewed by project staff before being placed in the student work showcase.

As part of the curriculum, your students will take short assessments before beginning their project and upon completing their project. These assessments will include cover student knowledge of cyber-based

tools, resources, and practices in scholarly research, collaboration, and communication, as well as student interest and attitude toward using such tools to build content knowledge. The assessments will be conducted online using a unique ID number for each student, such that project staff will not know individual student identities. You will be responsible for assigning the unique ID numbers (i.e., their school lunch number) and maintaining a master code key.

Project staff will be available to you through the project's Wiki forum Monday through Friday from 9:00 am to 5:00 pm and by telephone before and after normal business hours during your entire implementation period. We will also make school visits to assist with technology issues as required.

At the conclusion of your activity, our external evaluator, Dr. Randy Knuth, will contact you to conduct a brief telephone exit interview. You will also be asked to take the online TPACK assessment, which we will compare to your pre-activity TPACK results. The survey should take no more than 30 minutes to complete. When all participating teachers have completed their projects, we will hold a conference call for teachers to share their experiences in conducting their GooWi Explorers activities and ways the experience could be improved. We will continue to provide on-line technical support and discussion forums to assist you if you wish to continue implementing GooWi Explorers projects.

By applying to participate in this study, you agree to complete the data collection and other activities outlined above. Further, you are confident that your school has adequate computer facilities to conduct this internet- based instruction, and that you have permission from your principal or superintendent to participate. After completing the **online application**, you will need to submit a **letter of support** from your principal as well as your **signed teacher consent form** to:

Heather Almquist
Dept. of Geography
304C Stone Hall
University of Montana
Missoula, MT 59812

If you have any questions concerning the contents of this letter or the teacher consent form, please do not hesitate to contact Heather at (406) 370-0139. Applications are due on **March 30, 2012**. Application decisions will be made by April 13, 2012. We look forward to hearing from you!

Sincerely,

Heather Almquist, Sarah Halvorson, Lisa Blank, and Jeff Crews
The UM GooWi Explorers Project Team