



## How to Conduct a GooWi Explorers Project

GooWi Explorers projects involve defining a research topic and research questions, conducting research using the internet, library or historical archives, data archives, and/or original data, organizing information collaboratively within a wiki, and developing a web page and Google Earth artifacts to communicate findings.

### What is a Wiki?

A wiki is simply an online environment in which multiple registered users can view, add, subtract, modify and organize content into pages and folders, as well as conduct asynchronous discussions through comment/reply chains. Wiki pages can also be used to lay out web pages and develop Google Earth placemark balloons – two things we will do in this project.

*A fun fact to know and share:  
"Wiki" is a Hawaiian word  
meaning fast or quick.*

Please see the video and print tutorials in the Teacher Resources section of the GooWi website to learn how to access online tools, set up your wiki, create student accounts, and manage files. Feel free to contact the project staff at any time for assistance!

### How to Choose a Topic for Investigation

You will want to pick a topic that fits within your course subject matter and is interesting for your students. The only requirements are that the topic centers on some geographic aspect of the environment or human civilization that has changed over historic time, and that sufficient data and other resources are available to support your investigation. The geographic scope can be local (e.g., your community), regional, or even broader, and the timeframe can be decades, centuries, or millennia. You may or may not be able to use information from one of the early explorations of Montana as a baseline for your study.

We suggest that you review the map of explorers' routes and example data sets we have placed in the Research Resources section of the website. There are of course many other types of data. Let us know what topic(s) you are considering and we will help you locate potential data sources. You may want to let your students select from a few possibilities or help refine the specific research questions. However you wish to proceed, the project leaders must approve your topic and research questions before you begin your project.

### Developing a Research Strategy

Once you have selected your topic, you should engage your students in a discussion of what they need to find out to answer their research questions and how they would go about their investigation. *Avoid*

*setting students loose on blind internet searches!* Make a list of what data the class would like to collect, and where they might find it, and how they would use it. For example, will they compare a time series of maps to determine changes on the landscape? Will they look at specific types of historical records to track land claims through time or when critical legislative changes occurred? They should also start thinking about how they might display their data. For example, do they need to create spreadsheets for graphs? Will they create overlay maps in Google Earth? This is all part of your research strategy. Although it will likely change a little through the course of your study, it is important to have a firm plan before you start.

### How to Organize your Class

Depending on your class size and computer resources available, you may want to divide the class into work groups with discrete research assignments. We recommend having no more than three students sharing a computer. The groups can be organized around types of data to be collected (e.g., GIS shapefiles and Google Earth kmz files, images, articles, historical records, etc.) or by subtopic. Each group should have one student with editor status on the wiki. The editor will be able to delete and rename pages. The other students will be able to create pages and folders and reorganize them, which should be the bulk of the project

### Introducing Students to the Wiki

Each class project will have its own wiki. It may work best to display the project wiki on your classroom projection screen so that everyone can see it together. As a class, you can edit the front page to describe your project, the research strategy you have decided on, and the responsibilities of your work groups. Your entire wiki will be reviewed periodically by the project team and external evaluator so students should pay attention to proper spelling and grammar. We recommend having students become familiar with The Grammar Book: <http://www.grammarbook.com/>, and including that resource in your wiki sidebar.

Demonstrate how to create a folder by creating a “Drop Box” folder. This is where students can place files that they would like the project team to help them with (i.e., GIS files that need to be converted).

For the next segments it would be best if each work group has a computer. Start by having each group create a folder to contain their work. Each group should then create a home page within their folder. This is where they can log their activities, communicate with one another, and keep track of what materials they have collected, etc. They will edit this page during every work session.

Students should also make a page for literature citations where they will keep a running list of the source for everything they download or describe. They can weed this list out later once they know what they will actually use for their project. It is a good idea to introduce students to proper citation methods early on. We recommend using The Owl at Purdue: <http://owl.english.purdue.edu/owl/>, and including that resource in your wiki sidebar.

## Gathering Resources

Set a specified time for groups to collect their information and encourage them to use after school time if needed and if home conditions allow. Have students read the “Conducting Research” student guide as an introduction. This document can be found under Teacher Resources on the website.

### Internet Research:

- You may need to demonstrate how to do key word searches on the internet if that is part of your research strategy.
- Make sure students review The Owl to see how references should be cited. Make a rule that nothing can be downloaded from the internet onto the wiki without a proper citation being placed on the citation page. This will save a lot of time later.
- Encourage students to find articles with differing points of view or conflicting information. They should reflect on the credibility of the source, publication date, and supporting documentation for the arguments presented and describe which they think is more reliable and why.

### Images and Video:

Using the Google search engine, students can search for images by keyword and the word “image”. However they should be advised to always look for the copyright information to see if the image can be used and to cite the image properly. Wikimedia commons (<http://commons.wikimedia.org>) offers a searchable database of images, animations, and videos under various Creative Commons Licenses. You might want to upload the link to your wiki sidebar. Many maps of plant, animal, and habitat distributions are available through the Montana Natural Heritage Program website (<http://mtnhp.org/default.asp>).

### GIS Data:

Students can search the Montana GIS Portal (<http://gisportal.msl.mt.gov/geoportal/catalog/search/search.page>) and other databases to see what types of GIS data are available. If they find something that might be useful, they can download the zipped folder. They should not extract the files from the folder unless you are using GIS. If you are not using GIS, just place the zipped folder in the Drop Box and let the project team know that you would like it to be converted into a Google Earth kmz file. Students should be made aware that the metadata file (a file with data about the data) is equivalent to a proper citation for GIS data, and should always be kept together with the data file.

### KMZ Files:

Students may find data already in kml or kmz format on the internet. They can search for these using a keyword(s) and “kmz” in the search box. However, again they must be sure to determine the source of the data and record it on their citation page.

### Historical Records Offline:

Not all useful records are on the internet. Students may need to consult the local library, city hall, or historical archives to locate specific documents. Most libraries have a library loan service that you can use to access additional materials. You will be responsible for obtaining all required permissions and ensuring proper student etiquette for these types of studies.

### Original Data:

Your research strategy may require students to take their own photographs or videos, make observations, or conduct interviews with various people. Such activities must be overseen by your school and comply with your school regulations. Again, all materials collected should be time stamped and described on the citation page.

### Analyzing data

The most difficult task for students will be figuring out what the information they have collected really means. They may need to develop spreadsheets, charts, graphs, illustrated timelines, and various types of overlays in Google Earth. They can also use Google Earth to measure distances and area to describe the geographic nature of events. Creating such visualizations is an important part of the data analysis process. These artifacts often reveal the meaning of data better than any other mechanism. Students should have an opportunity to experiment with different ways to display their data. Work groups might present options for the other students to consider and comment on through the wiki.

### How to Design a Google Earth Presentation

As a class, students should create a planning page for their GE presentation. It will contain a master list of what placemarks, balloons, image/data overlays, and screen overlays they would like to include in their presentation and designate the order in which these artifacts should appear. Please see the video and print tutorials in the Teachers Resources section of the GooWi website for step-by-step instructions on how to use Picasa web albums, create various types of artifacts in Google Earth, and develop a webpage in a wiki. You can share these tutorials with your students as you see fit.

Each work group should be assigned specific artifacts to develop. They should create a separate folder in the wiki and a separate folder in GE for each artifact where they will store their work in progress. Their updated kmz file should be downloaded to their wiki folder after each GE work session.

You should refer to the video and print tutorials available on the GooWi website for specific instructions on how to create various artifacts and use the auxiliary tools like Picasa web albums.

### How to Design a Webpage in the Wiki

Students should understand that their audience will be other students and their teachers nationwide, and should speak to that audience. They should read the "Writing for the Web" and "Designing your

Webpage” student guides as an introduction. These are located under Teacher Resources on the website.

Their webpage should describe their research topic, specific questions, and strategy. It should describe the data they collected, how they analyzed those data, and their final conclusions. The webpage should also include a downloadable kmz file(s) containing the class’ Google Earth presentation.

The class should create a new page in the wiki for web page layout. Students might look at other sites on the web and decide what they like and do not like, but should be encouraged to *keep it simple!* It may be helpful to create a sketch of the layout to work from before starting to format their page. Depending on class size, one group might be in charge of layout, while another group drafts content. The students should look over the Draft Project Review Form so that they understand how their project will be reviewed, and make any final adjustments they want.

### Peer Review

Once the class has completed a draft of their webpage and Google Earth presentation, their project is ready to be reviewed by the other three classes. Please notify the GooWi project staff when you are ready so that we can migrate the webpage to the GooWi website and solicit the reviews.

When you receive a notification that one of the other projects is ready for review, please schedule time as soon as possible to conduct the review so that the other class can stay on track. Have your students read “Giving and Taking Criticism” prior to starting their review. Then have them look over the project and fill out the Draft Project Review Form. When they have completed the form, you should place it in the Drop Box and notify the GooWi project team.

Your class will review each of the other three class projects. It may work best to conduct the first review as a class, and then to save time, divide the class in half to conduct the other two reviews. It is not necessary to have all students participate in all of the reviews, as long as each student has at least one opportunity. Once the other class has made revisions, the students who reviewed the original project should review the changes that were made and comment on those changes using the Revised Project Review Form.

If you have a project under review, the GooWi project team will contact you when your three reviews are ready, and will place them in your wiki Drop Box. You should go over all of the reviews, by category, as a class and make a list of things that need to be fixed. Divide up these responsibilities among your work groups and set a deadline for completing them. When your revised webpage and Google Earth presentation are ready, notify the GooWi project staff. For the second review, we will repeat the review process and place those reviews in your Drop Box.

Your class should then make any additional revisions and submit the project for final approval by the GooWi project staff. We will then place the project on the GooWi website for the entire world to see!

Good luck, have fun, and contact the GooWi project staff at any time for assistance!