GIS: Illinois Round Barn Project

Summary

This information is for a lesson on GPS and GIS titled "State of Illinois Round Barn Project". The lesson is intended for use in any class that is studying the local history of their state or county. Overview: This project is designed to bring the use of GIS and GPS to the schools in Illinois. In this project, students will learn how to collect data and information using certain criteria. We selected round barns since they are found across most of the state.

Materials

ArcVoyager Special Edition and/or ArcView and the normally installed datasets, from the ESRI K-12 CD-ROM
Installation & use:
1. Install ArcVoyager or ArcVoyager Special Edition and their datasets.
2. Download or request the data for their study area from the project site.
3. Print out the manuals for each student (or group), and have them follow the directions for setting up the data.

Instructional Procedures

State of Illinois Round Barn Project
Overview: This project is designed to bring the use of GIS and GPS to the schools in Illinois. Since these are new topics for most students, we are trying to develop a project all students can participate at any grade level in Illinois schools. In this project, students will learn how to collect data and information using certain criteria. The criteria can be modified to any type of state project as well. We selected round barns since they are found across most of the state. There are 102 counties in Illinois and it has been reported that round barns can be found in over seventy of the counties or maybe in all 102.

The idea of the project is two fold. The first one is to map the barns locally for schools or school districts using GIS and GPS. This could be accomplished on a county map using TIGER data and either ArcView or ArcVoyager. The second one is to use the Internet to bring the results together on one map of Illinois at a web site that all schools across Illinois can explore. The main goal of this project is to see if there is a pattern to the location of round barns. If there is a pattern, the next step is to explain what might have caused this pattern.

Objectives:
Students will:
learn what GIS is about
learn what GPS is and how to use a GPS unit
learn how to collect data based on certain defined criteria
download data from a GPS unit
transfer the data to Excel and modify the data into a GIS format
place the data in a format that will work with ArcVoyager or ArcView
import the data as an event theme into ArcView or ArcVoyager
take digital pictures and hot link these images to the landmarks (optional) ?? develop a spatial awareness for the area around them

Materials needed:
ArcVoyager or ArcView 3.x
GPS receiver (This project was based on the Magellan 315)
Microsoft Excel or notepad

GPS download cable
Topo!GPS (optional -- but makes it a lot easier to download directly)
Clipboard and pencil
Digital camera
Local maps new and old
Lots of batteries

Part 1 -- What is GIS

Using ArcVoyager, teachers will present to students what GIS is all about. After exploring the whole United States, teachers will focus on the State of Illinois and then their own county. This can be done either with the physical or cultural data on the CD (The county data will be supplied to the school and/or taught on how to download TIGER data to use).

Part 2 -- What is GPS

After studying their local area as decided by their teacher, the students will be given an introduction to GPS receivers. Students will be taken outside and taught proper methods of collecting data points. The students will then go around school grounds or some selected area to collect real time data. Besides collecting points, students will also be taught on the proper way of recording data for the points they saved. The students will then return to the classroom and share their data collection as well as explain what they discovered.

Part 3 -- Introduce the statewide project that they are going to participate in.

Explain how barns are considered the "cathedrals of the prairies" in Illinois. Barns also signified a person's wealth. Farming was and still is a major economy in Illinois. Barns could be found in every county of Illinois. Many of the barns reflect ethnic and popular culture. Until the mid-ninth teen century most Illinois barns were the product of folk culture. Later, farmers had access to pattern books distributed by agricultural experiment stations at land grant colleges like the University of Illinois, farm equipment manufacturers and catalog companies.

By the end of the first quarter of this century, there were few, if any, new barns being built in the traditional ways. Log barns reflect the mid-Atlantic culture that came west with the pioneers. Several examples of these single-crib and double-crib barns still can be found along the Mississippi River in central Illinois' Calhoun County. The Dutch-style barns, designs used by emigrants from the Hudson River valley in New York, have a more complex architecture. With a high roof ridge, low eaves and greater width than length, their distinctive silhouette is easily identifiable on the prairie. This type of barn can be found throughout Illinois, but there is a concentration of them predominately in the western, north central and east central sections of the state.

English barns are the most common in the state. One type, the three-bay barn, is a one-level structure. The center bay is often a passageway running from one end to the other. The side bays are used to store hay or unthreshed grain or to shelter animals. A common variation is the raised-basement, three-bay barn. The New England barn has the doors on the gable-end and an extended drive-through passageway. Such a structure allows for expansion at the end of the barn and is adaptable to larger farming operations. The Pennsylvania German forebay barn was introduced to America by immigrants from south-central Europe. A typical example is a large barn on a masonry foundation, often built in the side of a hill. The structure allows farmers to drive vehicles into the second-level haymow. The second story, known as a "forebay" or "overshoot," projects four to six feet over the lower-level entrance and is designed to protect livestock from the weather. Several examples of this style of barn can be found in northern and central Illinois. They are concentrated in Stephenson County, but there are some interesting variations in Adams County.

Just before the Civil War, farm periodicals, notably The Prairie Farmer, began publishing advice on barn building. State universities began to spread new ideas about barn designs. The revival of the round barn is credited to the University of Illinois, which built several on its campus in Urbana-Champaign and published a bulletin in 1910 describing how to build them. The style reached the

height of its popularity in the decade preceding World War I. Round barns are scattered throughout the state. Variations on the round barn are the "doughnut" and "oval" barns, with floor plans reflecting their names. Illinois also has examples of octagonal and polygonal barns, some of which have ten, twelve or even twenty sides.

Having described the different barn styles, focus on round barns. Find out if anyone has ever seen one. If they have, ask them to describe its location. At this point have the class decide what criteria they will collect when they find the barns (see sample data sheet). Round barns exist in most counties of Illinois. This also requires the students to define the type barn. For this project, besides being round, a multisided barn greater than 4 sides) can also be located.

Part 4 -- Collecting the Real Time Data

At this point the students need to locate all the round or multi-sided barns in their area. When they find one, they need to collect the data for it. Besides collecting the GPS reading for the barn, the student should take a picture of it as well. Depending on what the teachers wants to collect, the students could interview the owner about its history as well (See the sample data collection sheet). This data will be used on the statewide web page with a picture if possible. Another source for locating a round barn would be the county records, if the students want to explore this possibility as well. From these records, a student should be able to locate the approximate lat/long for a barn that doesn't exist anymore.

Part 5 -- Pulling the Data Together

After students have found the barns, they need to pull the data into a common format. One major step is to download or record the data from the GPS unit (See download guide: page 1). This data should be recorded with the other information and pictures. Following the steps in the (See download guide: pages 2 - 4), the students and/or teacher can prepare the data in several different formats so it can be used in ArcView or ArcVoyager.

The next step is to get the data for the base map of their project. This can be accomplished by using TIGER data (See the TIGER data handout), or topographic maps that can be developed from those who are running the web site. They will be happy to georeference the study area. After adding the base map, the data that the students collected can now be added as an additional layer as an 'event" theme (See download guide: page 5). If the teachers/students want to take it to the next step, they can link their GPS landmarks to the pictures they collected (See download guide: pages 6 -- 7).

Part 7 -- Why?

Using just the local maps, students might not be able to see a pattern with the round barns. The next step is to submit the data to the statewide project. Based on the number of round barns located, the map generated could be done on two levels. The first level map will be a statewide map with every barn located on it. The second level will be a county map with all the barns located with a link to a picture or text about them.

After mapping all the data that was collected, the students' next job is to see if there is a pattern to the location of the barns. Is it cultural? Is it regional? Is it based on a period of time? Why aren't there any round barns in a particular region? The students or class could then submit their results to the web site so they can be posted.

The final outcomes from this project could be many. Hopefully, the students will develop a spatial awareness for the area around them. After looking at the statewide data, the student should be able to understand the historical development of agriculture in Illinois better. Another outcome is to see the similarities and differences that exist across the state. The final outcome would be developing communication between schools across Illinois to compare/contrast their local communities.

Resource materials:

  - [Sample data collection sheet](#)
    attached.

- [Downloading, Preparing and Importing GPS data manual](#) (prepareimport.pdf) attached.
- [Accessing Local GIS Data: TIGER 95 from ArcData Online](#) (tigerdata.pdf) attached.
- [Illinois Web Site](#)

Bibliography

Copyright © 1999 ESRI Canada

Authors

[Utah LessonPlans](#)