

Teaching GIS Technology to Prison Inmates: A Volunteer's Perspective

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Abstract

In the 1990's, the University of Kentucky, in cooperation with the Federal Bureau of Prisons, began teaching basic GIS skills to inmates, funded by a grant from ESRI. The initial class, "Computer Mapping," covered basic digitizing and attributing. The curriculum has evolved, however, to include more technical subjects: ArcView, Spatial Analyst, and Avenue. Besides doing exercises from the textbook, students participate in projects resulting in public-domain GIS coverages.

The experience of the students, volunteers, and prison officials has been positive and encouraging. Students completing the 12- to 18-month courses earn certificates, and when released, seek employment in the GIS industry.

Background and History

- **1998**
 - Initiated as cooperative program between the University of Kentucky and Federal Bureau of Prisons
 - Scot Samson, Univ. of Ky. Agriculture Extension
 - now located at Mississippi State University
 - Steve Kinzy, ESRI, St. Louis
 - Federal Bureau of Prisons hardware & classroom
 - 8 PCs, 2 Calcomp 36 x 24 inch digitizers, 1 HP “C” size plotter
 - ESRI donated software and textbooks
 - Program required a student commitment of 500 hours of study
 - Class met once a week for 2 hours
 - Students given 5 hours per week study time
 - Lecture-exercise format and self-paced study using ESRI workbooks
 - ArcView and PC ARC/INFO products were featured
 - Majority of time spent on “projects”

Background and History (continued)

- **2000**
 - Authors volunteered in February 2000
 - Added Avenue and Spatial Analyst to curriculum
 - PC ARC/INFO temporarily dropped
 - “Graduation” of first class
 - Certificates for:
 - Introduction to ArcView
 - Introduction to Avenue
 - Working with ArcView Spatial Analyst
 - Awards for Distinctive Achievement in GIS (500 contact hours) and Outstanding Achievement in GIS (1,000 contact hours) from University of Kentucky.
- **2001**
 - Time commitment reduced to 250 hours
 - Inmate rotation between prison facilities, interest level, and staff and volunteer commitment hard to maintain for 500 hours
 - Students needed to be within 20 months of their anticipated release date
 - Students hope to find work upon release; therefore, “use it or lose it” attitude

Program Objectives

To provide inmates:

- An appreciation for GIS technology and how it is used as a tool
 - We are able to associate examples of GIS use with either a student's background or area of interest
 - ESRI's GIS handbooks (GIS in Healthcare, Confronting Catastrophe, etc.) are very good source material and provide very vivid examples
- A basic understanding of GIS concepts and techniques
 - What is a coverage/layer? What components make up coverages? Defining projections, coordinate systems, and how to convert from one projection to another
 - Map design and layout
 - Digitizing techniques and editing digitized data
- An appreciation of data, its collection, pedigree, and usefulness in relation to GIS
 - Understanding accuracy and effects of scale
 - Recognizing problems with data sets
- Enough skills for advanced students to work as GIS technicians upon release
 - Book work and exercises are not enough to be considered skilled in GIS
 - Significant effort in a minimum of two "real" projects with their associated problems and challenges offer a more comprehensive understanding of the skills needed to be employed as technicians
 - Sometimes inmates are motivated to pursue a professional career (for example, Environmental Science) because of their GIS experience

What the Program is Not

- A production or contract employee
 - No money or like services are exchanged
 - Projects are “real life” but are done as learning exercises, not for contract work
 - Students want to do something “meaningful” that may have some societal benefit
- A degree-granting program
 - Certificates are awarded, but students do not earn university credit hours
 - If volunteers are certified ESRI instructors, a student may earn an ESRI training certificate
- Job recruiter
 - But, we want to help place appropriate students

Accomplishments

- Enthusiastic response from inmates
 - Always 8 to 10 inmates on waiting list for class
 - Students are motivated to stay with program
 - Read material in advance of class
 - Want more projects even though they have completed all of the lessons
 - Read ESRI publications and subscribe to ESRI monthly publications
 - Help each other through the lessons
 - The advanced students will sit with the newer students to help them through the training material
 - Want to be the “go-to” person when another student has a question (then ask the instructor!)
 - Ask for additional GIS training
 - Know that there are other modules and more sophisticated tools (3-D analyst or ArcMap)
- “Graduates” have gone on to work on GIS-related degrees from universities or looked for work in GIS-related areas
 - ESRI is very supportive in assisting inmates in these endeavors by providing contacts and other resources.

Accomplishments

- Student projects are tied to “real world”
 - Usually from the volunteer’s area of interest (agriculture, soils, water, or geology)
 - End goal is to produce a GIS coverage that can be used by the general public
- Project examples:
 - Converted printed hydrologic atlases of Kentucky to digital form
 - Over 70 different maps in one county for use on the Web
 - Expanded the usefulness of an existing GIS coverage for use in IMS
 - Created 120 county index maps for use in groundwater atlases of Kentucky

These projects give the students a great sense of accomplishment and help them feel that they are doing something useful for society.

Challenges

- Inmates' issues
 - Rotation to other facilities before finishing their training
 - Weekly contact hours too short for consistency and retention, although students do read textbooks during the week
 - Upon release, inmates are restricted to halfway houses, which limit their job possibilities, and Bureau of Prisons rules strictly prevent volunteers from any contact with graduates upon their release. Follow-up, therefore, is difficult.
 - As federal felons, they are prohibited from working with any company having federal grants or contracts.
- Limited number of workstations and lack of client-server work environment
 - Each station is standalone, and student must have a local login account. If the computer is down, there is no way the student can use another workstation.
- Instructors must rely on Bureau of Prisons staff to fix or load everything on workstations
 - Low priority for Bureau of Prisons staff
 - Cannot easily load data or move data between machines
 - Updates and bug-fixes are impossible to load

Challenges

- Limited types of “real world” projects and data
 - Because students are Federal inmates, there is concern regarding security and privacy issues
 - Most of the data sets have to be in the public domain and cannot contain any citizen information, including addresses
- Bureau of Prisons forbids Internet access by inmates
 - An obvious concern because of the nature of their crimes and potential for abuse.
 - It was difficult to get the Bureau of Prisons to enable a Web browser to be used for HELP files, even though the workstations were not physically connected to the Internet
- Bureau of Prisons staff changes
 - Orienting new personnel to the program and its needs

Pluses for Volunteers

- Obvious satisfaction of helping inmates become useful and productive citizens
 - Knowing that it gives students the potential for a job outside the food service industry upon their release
 - Sparking the confidence to pursue new careers
- Dynamic working environment
 - Eager students with diverse backgrounds and levels of education
 - Willingness to try and try again when working on new ideas and projects
 - Working with enthusiastic students energizes volunteers

Future Direction

- Upgrade to client-server environment
- Upgrade workstations to be able to run more sophisticated programs
- Develop more encompassing curricula to include ArcMap with additional extensions and include a GPS module
- Develop a meaningful certificate beyond the achievement awards
- Recruit volunteers with different interests to give students more interesting projects to work with

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