

Prerequisite Skills Detail for the 2009 ESRI T3G Institute

1. GIS software-specific skills

First-order concerns

- Thematic mapping
- Joining and relating tables
- Querying by attribute and by location
- Setting layer properties (subset, hotlink, scale dependent display)
- Setting map projections (vector data, merging vector and raster data)
- Data formats - shapefiles vs. geodatabases vs. other (file structures)

Second-order concerns

- Data & metadata creation
- Attribute data
- Event layers
- Heads-up digitizing
- Using ESRI Virtual Campus and other training options
- Creating transportable map documents
- Statistics and summary tables
- Graphs, layouts
- ArcExplorer (AEJEE) vs. ArcGIS vs. ArcGIS Explorer

Third-order concerns

- Geo-registering images
- Using the major extensions: Spatial Analyst, 3D Analyst, Network Analyst
- Modifying the ArcGIS interface and using scripts

2. GIS concepts, cartographic understanding, geographic sense

- Potential uses of GIS - what kinds of projects/problems
- Data models/data representation (Vector, Raster, Image, TIN; Maps as models)
- Databases (attribute data)
 - Measurement levels (qualitative vs. quantitative)
 - Database design
 - Basic statistics
 - Summarizing data
 - Sampling/drawing inferences from samples
 - Correlation
- Spatial Data
 - Scale (resolution, generalization)
 - Accuracy/Evaluating quality
 - Coordinate/Reference systems
 - Map projections
- Understanding metadata
- Sources of digital data
- GPS concepts/limitations
- Cartography & Graphic design
 - Data classification
 - Data symbolization
 - Design principles/visual communication
- GIS/Spatial Analysis operations
 - Overlay (point-in-polygon, polygon-on-polygon)
 - Spatial join
 - Proximity (buffer, nearest point)
 - Aggregation
 - Cartographic modeling
- Geographic inquiry (familiarity with basic geographic questions/concepts)

3. Basic computer skills

First-order issues

- Total comfort with file management
- File/folder navigation
- File compression
- File naming conventions
- File transfer between machines, platforms
- Security (Read only, backups, working on a copy)
- Familiar with software installation (organization, security/administration)
- Comfort using software help files, manuals, FAQs, readmes, and online conferences
- Comfort creating and using databases
- Familiar with external storage devices
- Familiar with network operation
- Familiar with Windows and Macintosh operating systems idiosyncrasies
- Comfort with file associations
- Comfort with rebooting/recovering from errors
- Comfort with basic software applications (Explorer & Notepad; Finder & Simpletext)
- Comfort with the Internet

Second-order issues

- Able to use some presentation software
- Able to use digital cameras and scanners
- Able to identify, convert, and use graphics in different file formats

4. Classroom teaching background

- Comfortable teaching with technology
- Comfortable teaching open-ended questions
- Comfortable with project-based learning
- Familiar with teaching with insufficient resources
- Comfortable running integrated discipline projects
- Familiar with running multi-class period activities that require day-to-day saving and storage
- Knows the difference between and can identify goals, objectives, activities, assessments
- Familiar with training special needs students and slow learners
- Familiar with educational standards in various disciplines
- Familiar with "news mining"
- Skilled at module writing

5. Adult training background

- Working with teachers
- Working with "experts who aren't"
- Working with teachers from non-traditional classrooms
- Working with teachers focused on multiple/separate grade levels
- Working with slow learning adults
- Constructing and modifying on the fly schedules for training events
- Training with insufficient resources
- Exploring issues of relevance in new geographic settings

6. Troubleshooting savvy

- Problem-solving as a mindset and habit
- Knowing how to diagnose a problem
- Being able to identify sources of assistance
- Being able to request assistance
- Knowing when to and when not to request assistance
- Having resources allocated for tech support services