Site planning using GIS: University/agency service learning collaboration

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Overview

• Planning projects with Army Corps of Engineers, Mark Twain Lake (ACOE MTL)
  – Alumni connection
  – Other areas/agencies too, but focus on ACOE (IL, MS Rivers)
  – MOU

• Multiple layers and courses in curriculum
  – Visitor Impact Management
  – Open Space Planning
  – Site/facility planning
  – GIS and GPS technology
Underlying Philosophy/Benefits

• Students learn better via hands-on projects
• Collaboration with practitioners provides multiple benefits
  – Real-life examples supporting classroom learning
  – Future opportunities for internships/jobs
  – Keeps the teacher current, curriculum dynamic
• Service learning is invaluable
  – Opportunity for meaningful success/failure
  – University supports community development efforts
  – Student has actual experience/projects to bring into job market
OR Resource Management Course 1

• Social-psychology and impacts of recreation
  – Carrying capacity, ecological impacts
  – Satisfaction, motivation, conflict, etc.

• Introduction to GIS
  – Initial exposure to ArcView GIS, Garmin GPS
  – Basic data display, map making, demographic mapping

• Visitor Impact Management technical report
  – Research on historical, managerial, user data
  – Field data collection via photos, GPS, on-site notes and interviews (e.g., manager and users)
  – Results and implications shared with manager
  – Familiarize student with area (ACOE MTL)
Meeting managers and touring site, ACOE MTL
Park and Open Space Management Course 2

• Presently taught at campus “outdoor lab”
  – Provides opportunity to “show” instead of “tell”
  – Experiential learning easy (e.g., invasive species management)

• Open space management
  – Land acquisition legislation/funding, urban/rural space typology, natural resources inventory (NRI), etc.

• Open Space Master Plan technical report (Indian Creek)
  – Create a plan for a “blank slate” or new features
  – Presented to agency and manager, including suggestions for management (e.g., wild lands, multi-use trail)

• Mapping by students with GIS experience, GPS by all
NPS Gateway Arch Tour- Urban Open Space Planning overview
Site Planning
Culminating Course

• “Nuts and bolts” of open space design
  – Based on needs identified in master plan from previous class
  – Discussion, not lecture, of design (e.g., multi-use trail, campsite, boat ramp)
  – GIS lab (50%) and on-site (35%) HEAVY

• On-site planning and layout
  – Instructor and practitioner facilitate
  – Students “layout” facility on the ground
  – GPS mapping of proposed facility using GPS
  – Technical report with maps, materials, budget...agency is “construction-ready” (e.g., MTL multi-use trail)
GPS Data Collection and Trail Design
Final Trail Map Overlaid on Digital Orthophoto at MTL Indian Creek Area
Detailed Supporting Maps
Student Challenges

• Travel to site
• Procrastination factor
• Fear of technology
• On-site details (which they will ignore and create more travel issues)
  – Bring extra batteries
  – GPS data collection check via laptop on site
• Manager expectations versus student product
  – Students can do excellent and poor work
  – Discuss this before beginning
• Group projects
Teaching Challenges

• Flexibility and Fluidity
  – Course and site are dynamic from year to year
  – GIS instruction needs to be tailored to situation
• Service learning means more time for YOU!
• Arc GIS/GPS use is finicky and frustrating
  – Teach via written lab, guide through techniques?
  – Can take longer than expected
  – Changes in software
• $$ to acquire technology
Conclusion

• Service learning=
  – Real experience
  – Community, user, agency benefits

• Student has technical reports to provide evidence of ability to potential employers

• Understanding GIS technology gives an advantage in gaining employment

• Students are meaningfully engaged in learning process via community service