The Outdoor Classroom: Recent advances in mobile computing for the field sciences

A workshop supported by awards of the NITLE Instructional Innovation Fund and the ACM Faculty Career Enhancement (FaCE) Project

June 16-18, 2009

Workshop Conveners: Jeff Clark (Lawrence University, http://www.lawrence.edu/) and Sue Swanson (Beloit College, http://www.beloit.edu/)

Guest Speaker: Peter Knoop (University of Michigan)

Location: Lawrence University’s Björklunden Vid Sjön, Door County, Wisconsin

This workshop will bring together faculty members in the field sciences (e.g., archaeology, ecology, geology, environmental science) for a workshop and discussion of how GPS-enabled field computers can enhance their teaching and research. The workshop is open to faculty and staff from ACM campuses and campuses participating with NITLE who are interested in utilizing mobile computing technologies. We can accommodate up to two individuals per campus though, additional attendees will be accommodated on a space-available basis; a wait-list will be created in the event of over-enrollment. Those interested in participating in the The Outdoor Classroom: Recent advances in mobile computing for the field sciences should apply by the February 9th deadline. Applicants will be notified of acceptance by March 2nd.

The event will be held at Lawrence University’s Björklunden Vid Sjön, located on the shores of Lake Michigan in Door County, Wisconsin. The workshop will begin on the evening of Tuesday, June 16th and will conclude in the afternoon on Thursday, June 18th. A tentative schedule is included below. More detailed information and registration materials will be available at http://serc.carleton.edu/outdoor_classroom/.

NITLE and FaCE (ACM) will cover lodging and meals during the workshop. Participants are responsible for travel; however, limited shuttle service will be available between the Outagamie County Airport (Appleton, WI), the Austin Straubel International Airport (Green Bay, WI), and Björklunden on Tuesday and Thursday afternoons.

Workshop Scope

The advent of inexpensive global positioning systems (GPSs); powerful, mobile computers; and wireless communication have the potential to revolutionize the way field-based science courses are conceived and delivered. Faculty who attend this workshop will consider how these new technologies enable improved curricula. Specific sessions will be devoted to the following:

- The development and critique of exercises for use in archaeology, ecology, geology, or environmental science courses.
  - How are you using or how would you like to use GPS-enabled field computers?
  - Why do you use this technology or why are you considering change?
  - How do you know if these technologies enhance student understanding?
  - When is use of this technology unnecessary or inappropriate?
Hands-on exercises to allow participants to test field computers in the great outdoors
• How can field computers complement traditional exercises in introductory-level science courses?
• What is the learning curve associated with field computers and associated software?
• What are the strengths and weaknesses of TabletPCs and handhelds?

The technical, logistical, and financial challenges of utilizing, obtaining, and maintaining field computers
• What level of technical support is needed?
• What are the start-up and ongoing financial costs of field computers?
• What are the maintenance considerations for GPS-enabled field computers?

The use of mobile technologies in student-faculty research collaborations
• How can field computers streamline data collection?
• How can field computers improve data consistency?
• What is the impact on students in terms of learning and preparedness for post-graduate work?

Best teaching practices and other helpful resources for the use of mobile computing technologies
• What are the special considerations to keep in mind when designing and implementing exercises that utilize mobile technologies?
• What teaching resources already exist?
• How can we build a community of users?

Proposed Workshop Agenda:
The workshop will be held at Björklunden, Lawrence University’s 425-acre northern campus located on Lake Michigan in Door County, WI.

Tuesday, June 16th
3:00 pm Shuttle Leaves from Outagamie Airport
4:00 Shuttle stops at Green Bay Airport
6:00-8:00 Welcome mixer and dinner with Plenary Speaker, Peter Knoop (University of Michigan)

Wednesday, June 17th
8:00-8:30 am Continental Breakfast
8:30-8:45 Outline of workshop
8:45-9:30 Group discussion: introductions and interests
9:30-10:00 Overview of hands-on activities
10:00-10:20 Break
10:20-12:00 Hands-on activities using computers in the field
12:00-1:00 pm  Lunch and opportunity for informal interaction among workshop participants
1:00-3:00  Disciplinary discussions: development and/or review of exercises
3:00-3:30  Break
3:30-4:30  Panel discussion of the technical, logistical, and financial challenges of utilizing, obtaining, and maintaining field computers
6:00-7:00  Dinner
7:00-9:00  3-D Visualization of Earth’s surface with ArcGIS and Google Earth

Thursday, June 18th
8:00-8:30 am  Continental Breakfast
8:30-9:30  The use of mobile technologies in faculty-student research
9:30-10:30  Disciplinary discussions: development and review and of exercises
10:30-11:00  Break
11:00- 12:00  Disciplinary group progress reports
12:00-12:30pm  Wrap-up discussion: best teaching practices and conclusion of workshop
12:30 – 1:30  Lunch
1:30  Shuttle leaves (GB arrival ~ 3:15 pm Appleton Arrival ~4 pm).

Additional Information:
Contact the workshop organizers for additional information.
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