

## **ESRI Virtual Campus Developments Academic and Industry Partnerships**

Ann B. Johnson  
ESRI, Higher Education

### **Abstract**

From the conception and subsequent debut of the Virtual Campus in 1997, ESRI has embarked on a new approach for development and dissemination of GIS educational opportunities. ESRI's Educational Services department has a long history of producing high quality GIS teaching materials and traditional classroom-based courses for users of its software products. With the emergence of the Internet and the possibility of web based courses, ESRI began working to perfect a concept that you can create a rich learning environment on the web via a GIS focused Virtual Campus. As the program has expanded and grown, it has branched out into uses that were not foreseen by ESRI. It has opened opportunities for collaboration and partnerships between ESRI, individual educators, educational institutions and Users of GIS in all areas of government and private industry.

### **Introduction**

As initially conceived, the Virtual Campus would provide many of the resources of a real-world campus with easily accessible courses, GIS educational resources (including a library of GIS materials) and an environment where knowledgeable GIS educators, students and users could interact. The Virtual Campus was not meant to be a replacement for traditional classroom courses or degree programs, but provide a valuable educational resource for an expanding GIS Workforce.

While it was envisioned as a way to educate the working professional in the latest ESRI technology, ESRI has discovered that educators at all levels of education are creatively using the materials developed for the Virtual Campus to advance GIS education. Virtual Campus Web courses are being used in conjunction with or as a prerequisite for traditional GIS classrooms instruction. Some Web courses are also being used as part of distance education programs in GIS at colleges and universities in the US and around the world. Educational institutions have granted credit for online courses or incorporated the Web course as part of a credit course in GIS towards certificate and degree programs. Instructors are using the free modules to introduce their students to GIS and, at the same time, online or distance learning. Web course applications classes allow educational institutions to offer courses in subjects or disciplines that their institution may not have the resources to offer in a traditional setting. Many of the resources of the campus can also be used for free by anyone even if they are not taking any of the courses. The library with thousands of abstracts and references, online seminars by authors and instructors, live chat rooms and the ability of setting up an online office space are just some of the resources that are available.

Educators also can benefit by becoming authors for Web courses. Experts in theoretical or practical applications of GIS can apply to author a Web course for the Virtual Campus. The educator, when accepted, can use the structure of the Knowledge Base and component-based structure to create a Web course. Authors do not have to worry about how to format the course or learn HTML to produce a class – they can focus on the creating the content for the course.

### **History and Current Development**

Web-based courses and distance education were in an early development phase when ESRI started on this project. Educators in the academic realm were being encouraged to develop web-based courses using the materials that had used in a traditional classroom setting. In concept, you just had to modify how the materials were formatted – paper to digital and then “present” them on a web site. With the Educational Service department’s background in education and course development, it was seen as an easy transition from creation of traditional classroom courses to building Web courses. GIS Technology courses, covering the use of different software products, would be produced by ESRI staff that has developed the existing classroom courses. Applications courses would be developed by outside experts in the various fields using materials they had used successfully in classrooms or in the workplace. GIScience courses would be prepared by well known GIS educators and researchers from around the world.

It was soon discovered that while the content for texts, exercise manuals and online courses contain the same concepts, the delivery methods for web courses necessitated a total change in content language and presentation. This redesign in content included the necessity to limit the amount of text. Each concept and explanation had to be rewritten in as compact and explicit writing style as possible. The underlying web structure, the web interface, navigation tools, and the course content structure also had to be designed so that students could easily maneuver within the course and around the Virtual Campus. Through trial and error, research, commitment and testing, ESRI has developed a framework for developing online courses in a consistent format that meets the varied needs of its students. This process of developing materials for web delivery has lead to a “component-based” design for Web courses. All courses on the Virtual Campus have the same format and structure. This helps the author of courses by systematizing how the materials will be written and helps the student taking the courses because all courses are organized in a consistent format and structure. Once a student has taken one course, they know how to take all other courses. Web courses are meant to be self-paced, and combine hands-on experience, interactivity and instructional support that is beneficial to different learning styles. There are four basic instructional components in each or Virtual Campus web course using this component-based design process. These components are (1) Concept, (2) Examples, (3) Exercises, and (4) Feedback/Assessment. Each Course is broken down into 4 to 6 Modules. Each Module contains Lessons covering specific topics. Each topic has sections on Concepts, Examples and Exercise. At the end of each Lesson is a Lesson Quiz. At the end of all of the Lessons in a Module is a Module Exam. Modules are designed to take students approximately 2 to 4 hours to complete. Students who miss questions in quizzes or exams can return to the specific topic to reinforce the concept in that lesson. After successfully completing the course by

passing a comprehensive online exam, students can download and print a certificate. They can also return to the web course if they need to relearn any of the topics or concepts.

### **Conclusions**

With more than 45,000 participants from more than 156 countries logging on to Web course modules, the Virtual Campus is providing evidence of the validity of the concept of using the Internet to teach GIS. ESRI is continuing to develop and refine component-based web course development and delivery methods. More modules and courses are being authored and more are in the planning stage. With more than 40% of the participants logging on to courses coming from educational institutions, ESRI hopes to continue supporting and promoting the use of Virtual Campus Web courses as part of academic programs. ESRI hopes to expand the uses and learning opportunities provided by the Virtual Campus and work with educators at all levels in creative use of the Virtual Campus courses and resources in education.

### **Reference**

This paper was developed using materials prepared for use at the Association of American Geographers annual meeting by Judy Boyd, ESRI Virtual Campus, March 2000.