Is it Time for Competency-based GIS Education?

Educational institutions have been exploring and implementing competency-based education (CBE) since World War II. This approach to teaching and learning breaks down topics into discrete skills known as competencies. Students must show mastery of each competency (or a group of competencies) before moving on to learn the next one. The U.S. armed services used CBE to train soldiers to quickly master the hands-on skills needed to support the war effort. Later, the approach was used to train staff in manufacturing and construction skills. In the past few decades educational institutions adopted CBE for certificates and degrees in academic topics.

Exactly how CBE teaching and learning proceed is up to the institutions. In medical schools, CBE tends to be face to face, but other programs are hybrid (face to face and online) or fully online. In the United States, Capella University, Western Governors University and Southern New Hampshire University are the best known fully online degree granting institutions.

Students are drawn to these programs because they can “test out” competencies they’ve learned in school or through experience, potentially lowering the needed credits toward a credential (degree or certificate). Schools and companies like the model because they can offer an “all you can eat” business model with a flat fee per month or year for all the courses a student can complete. In the U.S., the federal government encouraged the growth of these programs as a quicker, cheaper way to increase the number of college graduates and grow job-ready certificate holders.

I’ve been curious about how this approach to teaching and learning would work for GIS. And, there is now at least one institution offering credentials via competency-based education: Austin Community College (ACC) in Texas.

The curriculum does not look all that different from other GIS programs as the course names for the Level 1 Certificate confirm:

- Introduction to GIS
- Intermediate GIS
- Intro to Map Design and Use
- Introduction to Database: Access
- GIS Data Acquisition and Analysis
- GIS Capstone

The student and instructor experiences at ACC differ from a traditional program in several ways. Students can start the program whenever they like. They are not working with a cohort that tackles a topic or lesson together each week. Students are required to achieve 80% on summative evaluations before moving on to the next set of material. Students work at their own pace, but are expected to meet deadlines. Students have up to one year to complete the Level 1 Certificate, for example, but may be able to complete it within three months. Instructors monitor exams, keeping an eye on up to four students at a time. Instructors serve as both proctor and assessor. In the latter role, they may provide feedback on how a student tackled a particular task.

The program launched, only to Texas residents, in 2017. The employers who have hired graduates (both degreed and with certificates) is quite impressive. My sense is that students who learn well on their own will find competency-based programs appealing for their speed and potential lower cost. Students with experience in traditional college courses that focus on “seat time” and “passing grades” may find CBE quite a stretch.

Will hiring organisations be seeing more applicants with credentials in GIS from competency-based programs? Will hiring managers know or care about the different kind of educational experience students? Will students be drawn to CBE GIS programs over traditional programs? It’s too early to say. For now, universities like for-profit Capella University and non-profit Western Governors and Southern New Hampshire University are leading the way in educating potential employers and students about CBE. It will be up to Austin Community College and others who follow its path with GIS teaching and learning to help evaluate if the approach works in geospatial technology.

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