Implementing Spatial Thinking Across the College Curriculum

DAVID DIBIASE
Education Industry Solutions
ESRI
Email: ddibiase@esri.com

The organizing committee’s invitation to take part in this specialist meeting asked me to draw upon my experience developing educational initiatives at Penn State University and Esri. I did have the opportunity to play leading roles in the design and implementation of a half-dozen graduate and undergraduate programs during my university career. Now with Esri it’s my privilege to observe and advise many more. When asked for advice about how to design a successful academic program, I point to the systematic program planning methods I found to be effective for forging consensus within and across disciplines (Cookson 1998). However, as I think about implementing cross-disciplinary spatial curricula I conclude that those familiar methods are not well suited to the problem at hand.

In light of other contributors’ position papers and related research, the ideal outcome I envision for this enterprise is not to establish a discrete academic program or curriculum. Instead it is to infuse throughout the general education curriculum learning activities that foster “spatial abilities” (however defined). Is it too far a reach to imagine that spatial abilities might someday be including among the overarching objectives of several leading institutions’ general education programs? This is one trait of what colleague Tom Baker and I have called “the spatial university” (Baker and DiBiase 2012). Though a few higher education institutions can reasonably claim to be “spatial universities” (in his position paper, Don Janelle states “UCSB is spatial”), none to my knowledge has succeeded in “spatializing” its general education curriculum. This, I believe, constitutes a grand challenge.

Beyond tried and true program planning models, it’s instructive to look at lessons learned in earlier “across the curriculum” movements. One with which I have some experience is the effort to establish ethics across the curriculum. Three lessons learned in that movement seem germane here:

1. “Micro-insertions” of ethical contexts into existing domain-specific learning activities may be more effective than stand-alone ethics classes, extended ethics modules, guest lectures, or extra-curricular activities for infusing ethics broadly across the curriculum (Davis 2006);
2. Subject-matter experts may be more effective than specialists in teaching ethics within a particular discipline, though non-specialists must be taught how to teach ethics (Davis 2002); and
3. Achieving (1) and (2) require institutional commitments to provide sustained interventions by specially qualified staff at established resource centers. Several of the institutions represented in the specialist meeting have centers of this kind.
Lessons learned from “ethics across the curriculum” may be applicable to the spatial thinking movement. However, important differences in context must be kept in mind. One is that ethics education has had the most impact in professional programs like business and engineering, whose curricula are subject to accreditation by organizations like the Association to Advance Collegiate Schools of Business and the Accreditation Board for Engineering and Technology. A few institutions—including Penn State—have even mandated formal ethics training for all graduate students (Pennsylvania State University 2012). Corresponding mandates to incorporate spatial thinking don’t exist, and seem unlikely to arise in the foreseeable future. Absent such a mandate, the greatest impediment to implementing spatial thinking across the curriculum will be this community’s ability to demonstrate its benefits. As other position paper authors suggest, a good place to start may be to define spatial thinking broadly and clearly, and to identify and fill gaps in the relevant research.

References: