Alignment of goals, assessment and activities in national GIS&T curriculum and BoK

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Over the past two years two related national GIS&T curriculum initiatives have been underway. UCGIS has initiated a substantial revision of their Body of Knowledge document (DiBiase et al. 1996). So far work has concentrated on identifying a model for how a ‘new’ BoK 2.0 can be kept up-to-date through broad and continuous input from the GIS community, and enable direct connection from knowledge areas and units to learning resources. Under a UCGIS steering committee, the work to develop the new BoK 2.0 will be governed by an editorial board to maintain an ongoing peer-review of contributions and updates to the BoK. In this way the new BoK 2.0 will be less of a final printed reference document and more like a constantly developing online resource akin to a wiki and online journal, where new or revised entries will go through peer-review and editorial curation.

Closely related to the BoK work, but as an entirely separate initiative, the Association of American Geographers (AAG), with funding from the Geography Education National Implementation Project (GENIP), are currently developing a course proposal for a new Advanced Placement (AP) course in Geographic Information Science and Technology. AP courses are equivalents of introductory college courses, but given at high schools as a way for students to earn college credit while still in high school. AP courses exist in many subject areas including Human Geography and Computer Science, but so far no AP course exist for GIS&T. A proposal for this new course will need to include a template syllabus, appropriate and viable assessment protocols, professional development for high school teachers, buy-in from university programs to accept AP course credit, and more. In order to generate a template syllabus and appropriate assessment tools, the proposal writing committee has gathered information on introductory level GIS&T courses from 200 sample schools across the U.S. A subset of those courses has been analyzed for content to determine enough commonalities across all of them that could serve as a core set of skills, competencies and knowledge areas for a generic AP course that would be possible to translate into college credits in a large number of 2- and 4-year institutions.

In the work with the AP GIS&T course it has proven to be very useful to use the existing BoK, as well as the Geospatial Technologies Competencies Model, as a reference vocabulary (or ontology if you will) for the comparison of course content across multiple institutions. This identification of skills, competencies and knowledge areas is also critical to identify learning modules and assessment methods that align with course content and goals. Thus, it is clear that a new BoK will have a critical role to play in the further development and specification of learning outcomes and associated curriculum development, not just in the context of the ongoing AP GIS&T course, but for many similar initiatives like the certification of GIS professionals and for GIS program development.

A key concept in all of this work is alignment. Starting with the specification of a knowledge area, divided into units that are broken down into topics like “Buffer” or “Spatialization” allow us to specify units of knowledge that can serve as desired learning outcomes. From those outcomes we then need to identify how some form of assessment can help determine if a student has acquired the knowledge and that in turn will help guide instructional designers to identify the necessary pedagogy and activities that can take the student to that point. Unless we have made sure to align learning outcomes (such as BoK
topics) with assessment protocols and learning activities, we cannot say that our instruction is intentional about the desired outcome.

The two initiatives, BoK 2.0 and AP GIS&T projects can potentially provide all needed pieces of this alignment puzzle. BoK can serve as the ontology or vocabulary for expressing and specifying what a core set of knowledges are, and the work with the AP GIS&T course to identify appropriate assessment methods and validated scales for measuring outcomes. By ensuring and supporting alignment of goals, outcomes, assessment, and activities we could provide a rigorous insightsub units that describes what a piecof

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