

## **Connecting Curriculum Mapping and Technology**

### **Digital Forms Aid Data Analysis and Decision Making**

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The purpose of curriculum mapping has always been to improve student performance, but now that technology can provide a hub that links all the components of curriculum, assessment, and instruction in the schools, those connections can be strengthened and better analyzed to build student learning over time.

Storing curriculum maps—records of the taught curriculum anchored in a calendar—in digital form provides teachers with a flexible tool for entering revisions and adjustments as they occur in the classroom. Teachers across a district can examine what is actually going on within one school or compare differences between schools. Because curricula are documented and archived electronically, faculty can easily look at what has transpired in past class settings that helped or hindered student progress.

Most importantly, mapping has always been a remarkable tool for communication among teachers as they peruse both vertical and horizontal perspectives on curriculum and assessment, between administrators and staff as standards are aligned with real practice, and for any new teacher arriving in a school who needs to see the archive of past curricular experience. As noted in *Mapping the Big Picture* (ASCD, 1997), when teachers and administrators view learning both cumulatively—via mapping—and through observing students daily, they'll find gaps and repetitions in how standards are actually carried out.

What has evolved with technology and curriculum mapping over the past few years falls into the following areas:

- Improvement in the collection, analysis, and reporting of student performance data.
- Increased search capabilities in more refined areas through the entire database.
- Networks and linkages among schools involved with mapping and external Web links to enhance resources.
- Use of videoconferencing for staff development and student purposes in relationship to the mapping process.

- Integration of lesson planning and mapping tools into Internet programs.
- Ease of aligning directly to state standards.
- Expansion to include features for specialized populations and alternative schools.
- Expansion to other education settings: universities, nonprofit organizations, and businesses.

## The Latest in Web-Based Mapping

To inform readers about the most current work with mapping and technology, I asked three leading Internet curriculum mapping programming groups to share their observations from the field. Each represents a respected team who has worked in collaboration with hundreds of teachers to refine and respond to the dynamic possibilities for integrating and aligning K-12 curriculum and assessment.

**Jim Westrick, codesigner for Curriculum Mapper from WestJam Enterprises at <http://www.curriculummapper.com>** noted that in the past four to five years, technology advances have pushed curriculum mapping into areas few imagined at the outset. When The Curriculum Mapper™ was introduced, it acted primarily as a data repository with a built-in search engine. Today, features such as analysis tools, standards integration, and publicly accessible curriculum maps are standard on most mapping systems. The biggest breakthroughs, however, are fundamental and reflect the initial spirit of mapping regarding communication and articulation about what we teach, how we teach it, and how we assess learning. Westrick says the following are the most comprehensive ways he feels technology has affected curriculum mapping.

- **A nationwide database of curriculum maps.** The most positive feedback received about The Curriculum Mapper™ is from teachers who use its nationwide database of curriculum maps. This unprecedented sharing of curricular ideas has promoted best practices and stimulated communication and collaboration among teachers in more than 25 states.
- **Advanced analysis features.** As the World Wide Web and its users become more sophisticated, in-depth analysis of curriculum maps is possible. Technology now allows users to merge multiple curriculum maps into one document for better horizontal *and* vertical analysis. Using particular search criteria (e.g., state academic standards) educators can make these documents an accurate reflection of where and when and how topics are addressed throughout an entire district.
- **Embedded documents and hyperlinks within curriculum maps.** Curriculum maps may now contain more than just one-dimensional text, allowing users to “dig deeper.” For example, The Curriculum Mapper™ allows writers to attach a document or spreadsheet anywhere within a map; the user might see a notation such as “Click here to see my lesson plans” or “Click to see the grading rubric.” This feature provides another layer of information to support a data-driven curriculum.

- **Reinforcement of accountability through public access.** Curriculum maps aren't only for teachers; parents and community members also have a vested interest in the curriculum offered in a school or district. Administrators can make curriculum maps publicly accessible by placing a link on the school or district Web site to allow the community to view them (individual teacher names are removed from the public maps). Curricular information shouldn't be a secret, and as curriculum maps become easily accessible public documents, accountability is reinforced among all stakeholders.

Technology combined with the mapping process can also help educators better serve the needs of students, according to **Bena Kallick and James Wilson, designers of Curriculum Compass: Mapping for Alignment from Technology Pathways at <http://www.techpaths.com>**. They make the following points: *Students need teachers who can assure continuity and coherence of curriculum.*

Teachers need to be able to plan thoughtfully together so that learners do not experience gaps or too much repetition as they go from one class to the next and one year to the next. How can teachers do this in what has traditionally been a time-intensive practice? Teachers who have been mapping their curricula may have many separate documents with a variety of data but no shared database. If, for example, there are 100 maps being researched by 100 teachers trying, in isolation, to understand what constitutes a high-quality curriculum, the task is overwhelming and unwieldy. Mapping with a shared database and appropriate technology, on the other hand, is an evolutionary system of building knowledge about teaching and learning. Well-designed software should allow teachers to

- Plan collaboratively over the Internet—any time, any place.
- Identify the best lessons, units, and assessments.
- Take note of what precedes and follows any given course of study.
- Find collaborative partners, learn from the work of others, and share assessments through a sophisticated search function—in less time than one planning period.

*Students need teachers who can make wise decisions about curriculum, instruction, and assessment from a report function.*

Teachers need to learn how to use the assessment data to alter the flow of the curriculum. The new mapping technology allows educators to study reports from the software that tell them where a skill is being taught, in what context, by whom, and how the skill develops over time. Teachers also need to be able to align their work with state standards. They need reports that not only show the alignment but also provide information about how many of the standards have been addressed, how much of the content and how many of the skills have been addressed, and what remains to be addressed over the course of study. This report function is a new and critical breakthrough in mapping.

In addition, teachers can use the reports from the software to make important decisions about what needs to be emphasized and what may be of lesser importance. Based on the realities of the classroom data, reports provide information that allows departments, grade-level teams, or

schools to make decisions about what curriculum topics need to be retained, adapted, or removed.

*Students need teachers who are part of a community of learners engaged in the professional experience of giving meaning to information.*

Technology transforms the data into reports that provide patterns and trends. When teachers analyze such reports, they engage in the intellectual activities of hypothesizing, inquiring, and evaluating—they, like their students, are challenged to higher levels of thinking. Thus, the school becomes a learning organization in which all members are focused on growth and all learners benefit.

**Roger Smith, lead designer of Atlas from Rubicon International at <http://www.rubiconatlas.com>**, described the programming work with the Atlas curriculum mapping system. The work includes a variety of ways for capturing the taught curriculum, curriculum integration, and alignment with state and local standards; tracking progress against school improvement plans and support for resource specialists; and providing options to share curriculum with parents and the community.

As a Web-based tool, Atlas can make curriculum mapping an easy-to-use system that schools can customize for their particular needs. For example, international schools have tailored programs to match their unique language requirements. Teachers can use Atlas to review curriculum and share best practices through its ability to link curriculum maps to other resources, including online sites, lesson plans, and rubrics.

The following are the among the latest developments:

- The ability to map and search curriculum in multiple languages.
- A sophisticated unit-planning capability.
- The ability to sort data from multiple categories and have immediate access (e.g., by teacher, school, standard, essential question, or skill).
- The ability to focus on the attitudes and character traits that users wish to examine.
- The use of templates for lesson plans, rubrics, and assessments.
- The ability to conduct in-depth analyses of alignment of class assessments to state and local standards.
- The ability to generate more than 20 different kinds of curriculum maps.
- Adaptations to support special needs education.

## **Parting Thoughts**

Teacher insight and sophisticated computer programming will continue to refine how schools use curriculum mapping. Technology has provided the hub that links pertinent data from individual learners not only to the school but also to the district, the country, and the world. As educators draw on these connections to focus their teaching, they should begin to see

improved performances in their students' learning and achievement.

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