



How learning happens.™

## **SynapticMash: Our Learning Management System Design Philosophy**

We built LearningQube -- the SynapticMash learning management data platform -- from the ground up to analyze each facet of the learning process from teacher to learner.

Traditionally in the education software marketplace, strong focus is placed on student performance in terms of personal growth as well as comparisons among larger peer groups. By breaking free of the established mold of top-down data modeling, the LearningQube data model is capable of analyzing the effects that all aspects of the learning process have on the learner -- curriculum, assessments, standards, teachers and schools.

This change in thinking allows SynapticMash to develop solutions which comfortably integrate into (and often simplify) the daily routine of education professionals and consumers while gathering meaningful information about the process as a whole.

By breaking down the education process into the base elements (teacher, school, and student) we began to build a process map (figure 1) of the key elements in learning. By adding the two significant branches of process - classroom learning and assessments (figure 2) - it is possible to create a stronger picture of how information is related. The model is expanded by adding the metrics between student and classes, and creating correlations between classroom units and assessment items via standards (figure 3).

### **Analyzing and Modeling the Learning Process**

With this high level process and data model defining how the platform architecture is laid out, SynapticMash's tools provide real-time, formative decision-making, long term professional development, financial analytics, targeted curriculum management and a digital learning community meant to strongly impact end-of-year student outcomes as well as promote long-term educational goals.

District administrators can now view up-to-date information regarding schools, departments and programs. More detailed information can be viewed in drill-downs all the way to the student level. Principals have pertinent information for their schools including such predictive data alerts as truancy and dropout predictors.

Teachers can perform on-demand standards-based monitoring, build a syllabus, create and upload curriculum, grade work and perform real-time data analytics to adapt curriculum to the needs of their current group of unique students. Professional development and data-mining experts can perform powerful gap analysis on all facets of the education process to identify areas which need improvement and to evaluate the effectiveness of professional development spending with hard data analyses.

Parents are enabled to keep current on what is happening in the classroom as well as to view assessment results. Students can interact with an exciting online learning environment which is data aware and provides content that is relevant to their current course and standards expectancy. By tying this social network/ learning management/digital dashboard hybrid into the SynapticMash data warehouse, strong personal relationships are no longer limited to the student's current school. Students can easily stay connected with peers and educators even after long distance moves, state relocation (such as juvenile detention, foster care, orphanages, etc.) or graduation into new school levels.

### **Truly Integrated Products**

By leveraging our distinctive model of the learning process we built a tightly integrated suite of products encompassing student information, the assessment process and curriculum management (figure 4) to help all parties involved in the education process make informed decisions.

Each product is backed by **DataQube**, the SynapticMash enterprise-class data warehouse, that houses a unified and extensible data model. Information can be synced from data marts at the district or regional level up to statewide and national data warehouses. As students move from school to school or even district to district, information travels with them including instruction and assessment history. Within the public learning space, students build a portfolio spanning the entirety of their learning career.

The student information system – **StudentQube** -- provides a modern solution to the traditional tasks of enrollment, student management and reporting (including federal, state and district specific reports). The student information system operates in concert with **MashQube** (a firewalled dashboard/social network) to present information to administrators, teachers, students and parents.

Curriculum and classroom tools are provided by **EduQube**, allowing teachers to build standards-based content and syllabi, conduct digital learning activities, manage seating charts, keep grades and take attendance. Data and content can be aggregated to MashQube, providing a richer learning community for projects and activities.

Formal and quick in-process assessments are provided by **ExamQube**, wrapped in a powerful data reporting tool which can easily provide multidimensional result sets with custom pivot points and cluster groups. Reports are tailored to target specific facets of the learning process, drilling in on positive and negative factors for both an individual and macro level.

### **Persistent Learning Communities**

Tying the stack of products together is the SynapticMash social network, **MashQube**, which features an integrated data dashboard including content from the entire product stack. Each user customizes their interface to match their daily workflow, keeping daily information close at hand. Students build portfolios that last the lifetime of their educational career while participating in a collaborative online learning space. Educators, professional development

specialists and administrators can use data collected from learning community activity for meaningful analysis and reporting.