Multi-representation course description

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Basic ideas

The structure or description of a particular class can be represented in several different ways:

- course standards/objectives

- "I Can" lists

- class syllabus and schedule

- etc.

To a great extent these are different views of the same ideas, though with different creators and consumers. Parents and students consume the class syllabus and schedule and "I Can" lists, but most likely will not understand high level standards and objectives. Teachers consume the course standard/objectives and "I Can" lists but create the class syllabus and schedule for a specific offering of the class. The higher level information is shared by all teachers of a given course within a state (or more) and is created by domain experts.

Consider a web site that provides a representation of the structure of the course with the ability for different audiences to view information appropriate to them. Because much of the data is shared among a large number, possibly many thousands, of teachers/class offerings, it is feasible to provide better information about objectives for students and parents. (Parents may currently observe a vast gulf between abstract course standards maintained by state boards of education and the minimal course calendar provided by teachers to students, and be unable to properly assist their child without

input from the teacher. And this input is often needed in real time, in the context of a particular assignment.)

Here's a description in terms of a particular user interface:

The teacher provides students and parents with a URL representing a particular course (e.g., 8th period common core 1 math for 9th grade). View the URL and you see essentially a syllabus and class schedule, modified by the teacher as necessary and filled in with more information (e.g., test dates) during the term.

The student or parent can see an abbreviated form of the educational objective on the schedule (or calendar) and follow that to common resources such as "I Can" statements or even more abstract descriptions. Creating this reference, or link, to objectives, which in turn provides access to shared information, should not require much effort on the part of individual teachers and could make it worthwhile for a relatively small group of people to develop and maintain high quality, common resources.

This representation of the structure of the course is amenable to providing access to other materials as well. For teachers and mentors or supervisors, it may be appropriate to store and access lesson plans using this structure. For all parties, the shared representation of the course could be a gateway to a curated index to appropriate materials available on the Internet. More specifically, for a particular objective, some classes of users should be able to add pointers to resources elsewhere on the Internet — videos, worksheets, interactive activities, etc. — and possibly different classes of users may be able to indicate which resources were particularly helpful (e.g., by "up voting" the most pertinent or highest quality materials).

Beyond the "free" materials on the Internet, there are also a lot of for-fee materials (see http://www.teacherspayteachers.com/). An opt-in view could show materials that aren't free.

The representation and presentation of these additional materials is of course very important, and having an appropriate structure which separates them by learning style and/or type of material is critical. For teachers specifically, the structure can serve as a prompt, or reminder, of the best pedagogical practices.

Implementation

The description so far has implied that there is a web site where domain experts create course outlines and supply information at different levels of

abstraction, and where teachers can create a view of this specific to a particular class and add their syllabus/course calendar and tie it all together.

A more likely scenario is that the common information maintained by domain experts follows a model for such course descriptions and is stored in a repository (see separate document). As the repository contains an API for accessing the information, web sites could reuse the common data for different purposes. E.g., something like Blackboard where a teacher maintains schedules and assignments and points to different resources could consume the common information via API for integration into that environment. Existing web sites which point to educational materials by subject could reuse the course structure via API instead of inventing a new one. This is an example of how the data could be reused in existing contexts to avoid duplication. But note that enabling the consolidation onto fewer, higher quality indexes of materials should be a goal of this effort.

The class structure and common information will be stored in a common repository for consumption in multiple contexts, but a reference view (web site) should be provided, with the ability for teachers without existing learning environments to create class-specific information which integrates with common information about the subject.

Existing, partial implementations

But we already have this, right? Isn't this Blackboard (or your favorite web site/software)?

- A web site which indexes materials for math teachers may represent the structure of the course in terms of the abstract objectives, and for each objective point to a few resources that they have curated.

- Blackboard can be used to create a lot of this but (wild assertion) the material is generally limited to that which is authored or curated by the individual teacher.

- We don't (wild assertion) have a way for individuals from the large population to maintain and curate an index to the many educational resources available. (We have lots of indexes that necessarily recreate representations of class structure of varying quality.)

- Almost no states/districts/schools (wild assertion) have a way for students and parents to follow a particular class (syllabus/schedule)

and from there easily access appropriate materials beyond the small amount that the teacher might have had time to document. (It isn't simply a matter of integration for ease of use; the teacher must have a way to easily reference the objective in a manner that identifies the relevant resources.)