

# DMAS: Distributed Mathematics Assessment System

Summer Report 2007

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In this summer, I have mainly concentrated on and done the following:  
*DMAS System Interface to WME* and *DMAS Search Engine (DMASEngine)*.

1) (Done) Building and fixing/improving the *DMAS System Interface to WME* to make teachers and students access and use the DMAS directly from any lesson page of WME modules. It was done under the following URL:  
<http://wme.cs.kent.edu/testing/kimpton/index.php>

DMAS system in general will provide APIs interface to other applications on the Web including WME. These APIs can serve different requests either from:

- Server-to-Server (i.e. from other servers such as WME server to DMAS server) or
- Client-to-Server (from an Internet browser to DMAS server).

## \* Teacher Mode:

I have implemented the later case (i.e. Client-to-Server) as WME-to-DMAS respectively by supplying a callback URL using some parameters such as: unitID (or testID), userMode (here as a teacher), source (WME), reference page (WME page to return control to after you are done from DMAS or the caller), and action (what to do: make a new test, edit a test, view/edit students grade and so on). So now after choosing a certain lesson page (LP), a teacher from the *Admin page* can do the following tasks (under Assessment part):

a- From a question set of a LP, *pose new question(s) or import from DMAS*: A teacher can author questions or use the DMASEngine to search for questions and then import them directly into the question set.

b- *Create/edit assessment test* for the LP: a teacher can click on this link to create and edit a new assessment test having full features of DMAS editing tool including search/import questions, adding and deleting questions and so on.

c- *Manage lesson page test (using testid)*: by clicking this link, a pop up window shows up listing all the assessment tests of the current LP only. So the teacher can click on any and the testID (or unitID) will be provided automatically to the DMAS system for test Management. This can include

adding/deleting or editing test questions, generating test codes for the test, viewing student grades, hide/show test and so forth.

d- *Add test link for lesson to students*: this show/Enable or hide/disable assessment test link on the WME page so that student can take the test through this link.

e- *DMAS Home*: to go to the DMAS home page for more features and functionalities if needed.

f- For every assessment test created for the WME lesson page, a section called *Assessment Test Link(s) for the LP* is created with the name of the test and two links: edit/remove, and Grades Administration to view/edit student grades for this test directly from the current WME LP.

#### \* Student Mode:

To take a test, from the main home page of the WME (no student login needed), a student can click on *my class* button to open a pop-up window listing the names of the teachers. Then she can click on her teacher's name to list the question sets and test names of the teacher and then click on intended assessment test link of a lesson page to start the exam directly from the WME lesson page:

My class button -> teacher's name -> test name

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#### 2) *DMAS Search Engine (DMASEngine)*:

- I have updated/improved the first version of the DMAS search tool (DMASEngine).

- The search covers the local school database (SMAD) and all other participating DMASs of other school sites– All is transparent to the user.

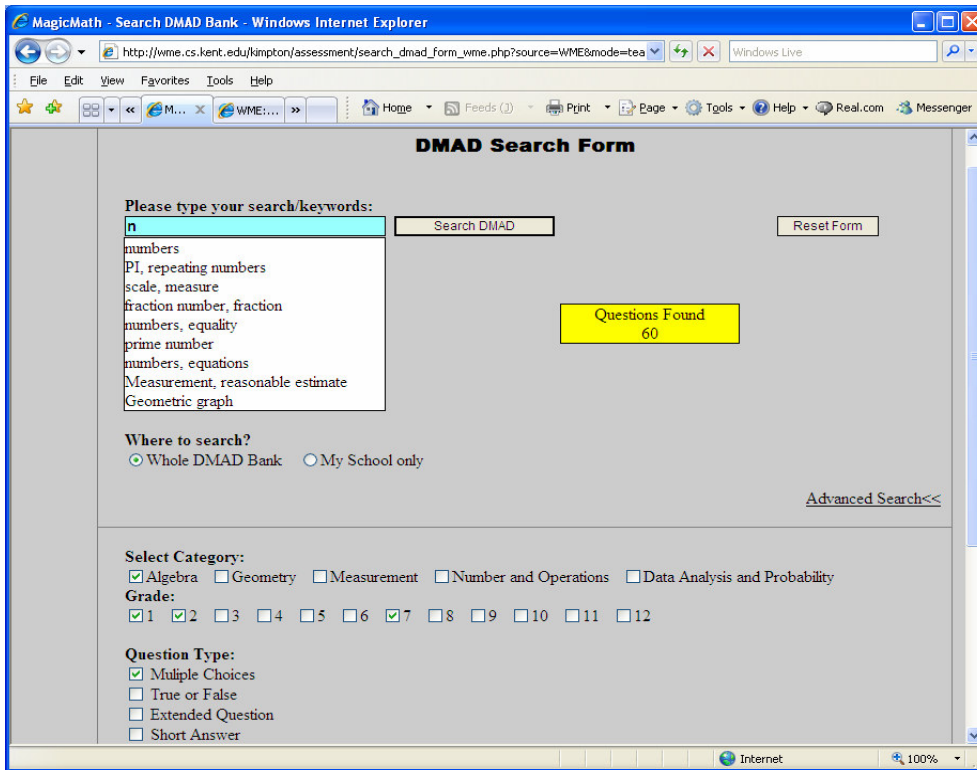
- A teacher (user) can easily *search for assessment questions* on particular subjects and at specific grade levels.

- The search can be narrowed by subjects, topics (for example, fractions, algebra, geometry, and measurement), keywords, grade levels, question type and author.

- The search engine will also look for geometrical graphs, questions with formulas, and those containing images (gif, jpeg, etc.).

I have introduced and used the AJAX (**A**synchronous **J**avaScript **A**nd **X**ML) technology in the DMASEngine to get better, quicker, and more efficient search results and more interactive web applications.

Using AJAX, JavaScript can communicate directly with the DMAS server, using the JavaScript **XMLHttpRequest** object. With this object, the JavaScript can trade data with a DMAS server, without refreshing the page.



- The DMAS Engine uses **ResponseXML** property that returns an *XML document object* (instead of string – as it was in the old version), which can be examined and parsed using W3C DOM node tree methods and properties. So while a user typing keywords or text in the search box:

- The DMAS Engine dynamically can fetch information such as suggested keywords/comments or subjects from DMAS bank databases using AJAX technology.
- The returned data from the DMAS server (databases) will be dynamically created and converted into an XML document format.
- Then DMAS Engine will use the DOM to parse the returned XML document and extract the values to be displayed to the user and that is not like standard auto fill feature.

\* In case of *Advance Search*: I have also changed the search options/criteria (such as categories, question types, grade levels, etc) from menus to checkboxes so that the search can include multiple items of the same group. For example, the DMAS Engine can search for questions from Algebra for grades 1, 2, and 7 and multiple choices only (as seen above).

So simply WME-DMAS interface is done and DMAS system is now ready to be deployed in schools and used by WME.