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DMAS & WME

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Demo of Improved DMAS from WME

Piloting DMAS at Kimpton and User Feedback

10/08/2007

Outline

- DMAS System Structure
- DMAS System Interface to Web Applications
- Improved DMAS System Interface From WME
- Piloting DMAS at Kimpton school
- User (Teacher/Students) feedback.
- DMAS Search Engine (DMASEngine)
- Issues/Conclusions and Future Work



DMAS System Interface to Web Applications

- DMAS system will provide APIs interface to other applications on the Web such as WME, MathPASS, or other applications on the Web.
- 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).
- I either case, DMAS system interface will handles all different calls in proper way.

DMAS System Interface to WME



Integrating DMAS with WME (DMAS as On-Web Service in WME using Callback)



Integrating DMAS with WME (cont.)

Procedures:

✓ DMAS system (DMASEngine) is invoked via a URL to search/import questions from DMAD bank. This URL will receive POST or GET data including a "callback URL".

 The user can search for (or import) questions in from the DMAD bank databases.

✓ When ends, the user will be redirected to the callback URL using something like (...?UnitID=...) appended at the end of it.

This call back URL is a program that knows how to take the data returned and display it or records it in the database for the WME page involved.



Improved DMAS-WME Interface (old) Teacher's Mode



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Improved DMAS-WME Interface (new)

Teacher's Mode



Improved DMAS-WME Interface (cont.) Teacher's Mode



Improved DMAS-WME Interface (old)

Teacher's Mode

WME - Feedback Administration Section - Windows Internet Explorer	Altarialistic Assessment Test Form Windows Int
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	• Mid Term
	O My Test1
Question Sets for Length and Area	O neww
	O Quiz1
1 My Question Set (Edit/Remove)	O Sept2006
Which sign would complete the statement -3 [] 2 Edit Remove V indicating that 2 is greater than -3. Remove V	O TEMP4
2 Describe what is different about getting \$5 every Edit Remove V	O Test33
first hour, \$3 for the second hour, \$9 for the third	O test44
hour, etc.	O zzTest
3 (true or false) The number 3.333 is greater than Edit Remove V	0 11103
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Questions and sets will be displayed in the numerical order you assigned	
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Improved DMAS-WME Interface (new) Teacher's Mode

Improved DMAS-WME Interface (new) Student's Mode

Improved DMAS-WME Interface (new)

Student's Mode

	WME – Admintion Login	
	Select Question Set	7
	Question sets of Dorene Ellis : <u>set1</u> (What is a Fraction)	
	Assessment tests of Dorene Ellis : practice test (Fractions)	
	Back	
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	Student Code:	
	Login	
	□ Re-take test?	
	Second Code:	

Piloting DMAS at Kimpton Middle school and User Feedback

- First version of the DMAS system has been piloted at Kimpton Middle school on 10/05/2007 for the first time!

- We (Dr. Wang, Dean, and Saleh) have visited the Kimpton school a couple times before to meet with of 7th and 8th grade teachers (Mrs. Ellis, Dorene). I introduced the DMAS system to Dorene and got some suggestions of interface improvements and got a lot of assessment materials and questions!

- Dean and I visited Dorene one day before (10/04/2007) to set up things and prepare the laptops for the next day tests and I showed Mrs. Ellis about 50 more questions she asked for and see how they look.

- On Friday, there were 4 classes taking the tests (at 9:00 am, 10:00 am, 1:00 pm, and 2:00 pm) and 12 students per class.

Piloting DMAS at Kimpton Middle school and User Feedback (cont.)

- We distributed the 'test codes' one per computer (student) before students arrived at the class.

- Students login process was very smooth (actually much better than I expected!).

- Mrs. Ellis and I explained the format of the test and the way they should be answered (accumulative process).

- Mrs. Ellis was watching <u>live feedback</u> of her student performance while they were taking the test (she liked it!).

- One incident happened in the first period, a student after answering few questions, he closed the browser window by mistake! So here comes the retake-test immediately!

10/08/2007

Piloting DMAS at Kimpton Middle school and User Feedback (cont.)

- The assessment tests appeared to be clear and most of the questions were not about the test but rather about how to use their attendance system using standard login !!

- Students login process was very smooth (actually much better than I expected!) since no userid/password to memorize.

- Students were very excited when Mrs. Ellis told them that she knows who got the what question right or wrong instantly!

Piloting DMAS at Kimpton Middle school and User Feedback (cont.): Student Mode

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Piloting DMAS at Kimpton Middle school and User Feedback (cont.): Teacher Mode

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Piloting DMAS at Kimpton Middle school and User Feedback (cont.): Teacher Mode

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Estimate the fraction represented in the	⊖ Less than 1		1 (student(s))	Answer	seq.	Student Name Abe Alsherifi		
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Tell the closest benchmark for the fract	● Greater than 1		12 (student(s))		4	Saleh Scott Bent		
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Piloting DMAS at Kimpton Middle school and User Feedback (cont.)

- Now <u>teacher/student feedback</u> after the test and comparing it to the regular written tests:
- More fun!
- Teacher and students like the random order display of questions.
- Most students preferred the online assessment testing over the regular ones!
- Ease of use, simplicity, and clarity of how to take and submit answers were mentioned.
- One student preferred the written test due to not having a computer at home!
- Also easy to change answers, clean, keyboard is easier to use than hand writing!

10/08/2007

Piloting DMAS at Kimpton Middle school and User Feedback (cont.): Student Mode

"text-messaging style" using AJAX between Teacher & student for help and instructions privately!

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	Answer: 1/4 1/2 3/4	
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8	Estimate what fraction of the following shape is shaded. What Fraction?	
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Piloting DMAS at Kimpton Middle school and User Feedback (cont.): Teacher Mode

"text-messaging style" using AJAX between Teacher & student for help and instructions privately!

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Answer: Add comment: Send	
(Wrong Answer) Score: 0.00	
Q: Tell the closest ber Answer: 0 1/4 0 1/2 0 3/4 http://wme.cs.kent.edu Message sent to the student! OK	
Add comment: Please think and redo it again!!	Π
Grade it! 0.00	
Q: Estimate what fraction of the following shape is shaded. What Fraction?	
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Piloting DMAS at Kimpton Middle school	
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0024 Done with this question	
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Answer:	
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Done with this question	
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8. Estimate what fraction of the following shape is	-
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DMAS Search Engine (DMASEngine) - old

- First version of the DMASEngine has been produced.

- The search covers the local SMAD and all participating DMASs of other sites the rest of DMAD – All that 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.).

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	Question Content Search:		
	Contains SVG graph		
	Contains formula(s)		
	Contains image (uploaded)		
	(The following info is based on people's usage and Experience):		

DMAS Search Engine (DMASEngine)- new

- DMASEngine will use AJAX technology to get better, quicker, and more efficient search results and more interactive web applications.

-AJAX stands for Asynchronous JavaScript And XML. AJAX uses asynchronous data transfer (HTTP requests) between the browser and the web server, allowing web pages to request small part of information from the server instead of loading whole pages.

- AJAX is a type of programming made popular in 2005 by Google. It is not a new programming language, but a way of using existing standards and a technique for creating better, faster, and more user-friendly web applications. AJAX is based on JavaScript and HTTP requests.

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

DMAS Search Engine (DMASEngine)- new (cont.)

- The DMASEngine uses **ResponseXML** property that returns an XML document object, which can be examined and parsed using W3C DOM node tree methods and properties.

- The DMASEngine dynamically can fetch information from DMAS bank databases using AJAX technology.

- The returned data from the server (databases) will be dynamically created and converted into an XML document format.

- Then DMASEngine will use the DOM to parse the returned XML document and extract the values to be displayed.

DMAD Search Engine (cont.)

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	Advanced Search<<	
	Select Category: ✓ Algebra Geometry Measurement Number and Operations Data Analysis and Probability Grade: ✓ 1 ✓ 2 3 ✓ 4 5 6 ✓ 7 8 9 10 11 12 Question Type: ✓ Muliple Choices True or False <td></td>	
	Extended Question Short Answer	~
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Assessment Markup Language: MAML

✓ MAML (Mathematics Assessment Markup Language) is an XML markup language for DMAS.

✓ To transmit assessment questions to and from DMAS system and to interact with outside systems.

✓ MAML will be used for representation/encoding of assessment questions and exams..

✓ MAML defines markup elements and attributes such as question head, type, classification, body, rubric, and so on.

✓ The XSLT style sheet for MAML (maml.xsl) will be responsible to translate MAML markup into XHTML + SVG + MathML.

Assessment Markup Language: MAML (cont.)

```
<?xml version="1.0" encoding="iso-8859-1" ?>
<dmad>
 <question type="Multiple Choices">
   <q head>
          <author>Dan Alan</author>
          <keywords>fraction number, fraction</keywords>
          <classification>Algebra</classification>
          <comments>fraction number, fraction comparison</comments>
          <answer>9/12</answer>
   </g head>
   <q_body>
          <q_text>Which fraction below is equivalent to 3/4.</q_text>
          <q diagram />
          <q choices>
                    <choice id="1">27/36</choice>
                    <choice id="2">8/16</choice>
                    <choice id="3">4/8</choice>
                    <choice id="4">9/12</choice>
          </g choices>
   </q_body>
 </question>
</dmad>
```

DMAS and Geometrical Graphing

MagicMath - Teacher New Question - Windows Internet Explorer http://wme.cs.kent.edu/kimpton/assessment/insert_upload.php			
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Assessment Test Giving

seq.	Student Name	Student Code	Re-take Test?	Student Code(2)	
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2	David	2199	Enabled 💌	9078	
3	Jack	2466	Disabled 💌		
4	Alina K.	3143	Disabled 💌		
5	Jim II	3986	Disabled 💌		
6	Alan	4161	Disabled 💌		
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Please enter code length (number of digits):, Integer (4 - 20):		
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Issues and new ideas

• (1) The concept of an "Answer Collection Unit". An assessment question may have one or more answer collection units.

• (2) User views of tests: "Question at a time" and "Whole test" views test progress bar (design issue!)

• (3) Test authoring support improvements.

• (4) Integrating more external components (programs) into DMAS: geoSVG and MathEdit.

Conclusions and Future Work

- Improve the live "text-messaging style" communications between teachers and their students.
- Student names must stay on the screen all times.
- Navigation links need to be much clearer.
- Add "Student Interface" for students to review their grades/performance.
- Add "Print Answers for all students" feature.
- Add features and more improvements to DMAS system to generate performance statistics, to provide diagnostics and to suggest remedial materials.
- My goal is to put DMAS system under extensive trial in schools and collecting feedback and suggestions from teachers, students, school administrators and education experts to help me evolve DMAS. As more schools adopt WME and DMAS, the distributed nature of DMAS will be demonstrated in realistic situations.

Demo and Q&A

• Take a look..

http://wme.cs.kent.edu/testing/kimpton/

http://wme.cs.kent.edu/kimpton/assessment/

http://wme.cs.kent.edu/wme_sample_page.php

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