

technology integration

Communicating Math Thinking: Most math teachers will say that there isn't enough time in their classes to do everything necessary -- explain a concept, answer questions, model problem-solving, give students time for independent practice, and prepare them to solve problems on their own for homework. Not to mention the classroom management necessary to keep students on task during all of that. But technology provides math teachers a unique advantage. They can offer direct instruction to students, one-on-one, before class even begins. And instead of going to the board to share their work, students can create a more lasting product of their thinking.

screencasts

Tool: Jing

Equipment: Computer with mic, Internet connection

urls: Jing at <http://www.techsmith.com/jing>;
screencasting info at <http://musallampresentation.com>

Screencasts are a great tool for both teachers and students. A screencast is a recording of your computer screen, along with your audio narration. When introducing a new mathematical concept, some teachers create short screencasts explaining the concept and solving a few sample problems. Students then watch the videos for homework. Students can watch or re-watch the screencasts as many times as necessary. Then, in class, the teacher can spend a short amount of time answering questions about the screencast and a majority of time helping students with independent practice on similar problems. If students need a refresher, the screencast is always there. Teachers can also create screencasts for homework reviews. And, eventually, students can create their own screencasts, as a project, to tutor one another, or to put into a portfolio that will show growth over a year.

sketchcast

Tool: Sketchcast

Equipment: Computer with mic, Internet connection

url: www.sketchcast.com

Similar to screencasts, Sketchcast allows students and teachers to draw on a virtual whiteboard and record their audio narration. However, Sketchcast is completely web-based, so it doesn't require users to download anything onto their computers. Students can simply log in, begin sketching (using a computer mouse) and record their verbal thinking as they solve a problem or explain a concept.

Much like screencastings, teachers can use the tool to introduce a concept or review homework. Students can create their own sketchcasts as a tutoring device or for a class project.

voicethread

Tool: Voicethread

Equipment: Computer, Internet connection

url: <http://voicethread.com>

Voicethread allows users to upload an image and then narrate it. But the beauty of Voicethread lies in the commenting abilities. One person can upload a photo and record a narration, but then several others can upload their own narration or verbal or written comments. Teachers often use Voicethread to start class discussions. For example, a teacher might post a photo of a house's roof and ask students whether the roof makes an obtuse, acute, or right angle. Each student then leave a comment explaining their theory. Students can also each upload their own Voicethread – perhaps each student can post a photo of something they see around their home and identify the angle they see. Other students can then add to the discussion. Voicethread also allows users to annotate over their images, drawing lines, circles, or numbers as they explain their thinking.

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Data: No matter what level of math you teach, data analysis is a large part of the subject. Traditionally, students spend loads of time learning to create bar, line, and circle graphs. But technological advancements in data visualizations let students delve deeper into large data sets than ever before. And all the while, they're learning skills useful in one of the fastest growing mathematical fields -- data visualization.

many eyes

Tool: Many Eyes

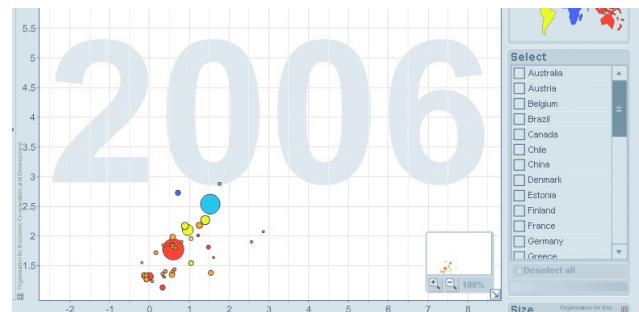
Equipment: Computer, Internet connection

url: <http://manyeyes.alphaworks.ibm.com>

Many Eyes allows users to paste in data from any Excel file (your own or one you downloaded from a site like data.gov or NOAA). Users can then choose from more than a dozen ways to visualize the data. Students must understand graphs well enough to choose the visualization that best suits their data. Then, they can make minor changes to the visualization – assigning data to axes, creating labels, etc.

Many Eyes also has several public visualizations students can analyze to familiarize themselves with the site and with data analysis.

Google gadgets



Tool: Google Gadgets

Equipment: Computer, Internet connection

url: <http://www.gapminder.org/upload-data/motion-chart>

Google Gadgets can display data in a wide range of visualizations. One of the more intriguing visualizations, though, is the “motion chart.” Almost any data set can be displayed as a motion chart, similar to those on Gapminder. With motion charts, students can simultaneously display data, compare various data sets, and demonstrate how the data has changed over time.