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## Authentic, Technology-Based Activities in the Era of NCLB

Media specialists everywhere have stories to tell about teachers who believe they no longer have time to teach their favorite units, collaborate, or use technology in educationally sound or creative ways.

You can help!

A fourth grade teacher described it best: “There’s so much in the curriculum pushing at us.”

Media specialists everywhere have stories to tell about teachers who believe they no longer have time to teach their favorite units, collaborate, or use technology in educationally sound or creative ways. The combination of NCLB and other demands have created a situation where teachers have little time or interest in using technology beyond basic instructional management and easy-to-implement instructional tasks they are comfortable with. A study by the National Education Association (NEA) and the American Federation of Teachers (AFT) reported that teachers are more likely to use technology for instructional management tasks than they are for instruction.

According to the report, “When Congress passed the No Child Left Behind (NCLB) Act in 2002, with its large mandate for testing and accountability, it not only restructured the way school technology is funded but also shifted the focus of school technology spending toward improving school testing and data-analysis capabilities. The climate for experimental endeavors and instructional usage thus shifted toward practicing for test-measured skills.” (National Education Association in collaboration with the American Federation of Teachers “Access, Adequacy, and Equity in Education Technology,” May 2008.)

But you can help by bringing your creative ideas to your teachers!

For example, I’m excited about two of my current favorite instructional activities. Both support and complement the demands of NCLB and a tight curriculum while providing authentic and engaging activities that students enjoy and their teachers consider worthwhile. The first, Eye Spy Math, challenges students to use geometric terms as they examine and analyze primary source photos presented in a PowerPoint presentation. The second, an Excel-based chart and graph activity, supports state math standards, state information, and technology literacies; it also creates connections between reading and technology.

### EYE SPY MATH

Eye Spy Math (in “Guides and Overviews” at [www.loc.gov/teachers/preview/professional/guides](http://www.loc.gov/teachers/preview/professional/guides)) was developed by Gail Petri, education resource specialist with the Library of Congress Office of Strategic Initiatives. The primary source photos, which are mostly of buildings and scenes available in the American Memory collection, were selected because they illustrate geometric shapes and terms. As students view Eye Spy, they brainstorm the terms depicted in the photos. In one photo two men wearing 1950s era hats and clothing are playing checkers. It elicits the terms square, rectangle, circle, parallel lines, and oval. A photo of “men on

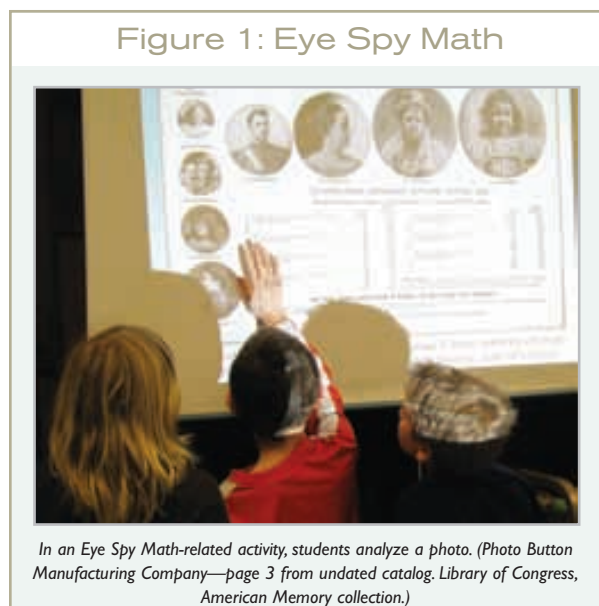
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horseback riding inside circle of tipis on a Washington Indian Reservation” challenges the students to discover triangular shapes in the teepees, hillside trees, and the confluence of roads. They find cylinders and rectangles in the sides of the tents. A challenging photo of two wagon wheels helps students review perpendicular, concentric circles; students who may have difficulty with some terms eagerly identify the pentagon and a variety of other shapes depicted in the photo. For another example, see Figure 1.

Eye Spy Math is ideally used as a whole-class activity with students viewing the photos on a projection screen. As students brainstorm and share the terms, others can point to them on the screen. Fourth grade students love to use a pointer and take turns at the screen. Eye Spy Math is a powerful yet easily manageable way to engage students. It’s also a nice break from the demands of test preparation because it’s fun while also supporting curriculum.

I’ve used the activity with students in grades 4 and 7. A fourth grade teacher is thrilled with how well it supports and encourages a review of geometric terms prior to students taking their state math test while also providing an engaging experience. A seventh grade math teacher considered it one of the most engaging activities her students had experienced. Roberta Endich, a high school media specialist and webmaster from Massachusetts, suggested using Eye Spy in high school geometry. “I can feel the teams getting together and trying to beat each other out, each team getting one photo to analyze. Competition generates a lot of brain action, and I think it’s a wonderful approach to using primary sources to teach math terms.”

No matter the grade, allow at least 30 minutes to complete the activity. If time allows, integrate history and geography into the activity by talking about what the photos depict.



The activity can easily be done in a classroom setting with or without a computer and projector. If a video projector or smart board isn’t available, you can download the slide show to individual computers prior to the start of class. Students can use the worksheet as they identify and list geometric terms. An added bonus of this activity is that it doesn’t require a lab, which may be tied up for student testing. If computers are not available for student use, the photos can be printed to allow students to work individually or in small groups with the photos and note-taking forms. Media specialists who want to help busy teachers and encourage the use of the primary sources and inquiry with photo analysis could prepare packets of photos that are laminated and ready for students to use when the time arises.

Jane Donahue and Julie Straub, elementary media specialists from Pennsylvania and students in an online class I teach, believe the activity “goes to a higher level of thinking because students have to understand and visualize specific mathematical concepts to be able to know what to look for in the pictures.” They added, “Our students would be highly motivated to visually ‘pick apart’ these photos. Questions will abound: Why were these pictures taken? Why do they look so old? Who were the people in the picture? Where were the pictures taken? Why are they black and white?”

#### SUPPORTING ACTIVITIES AND EXTENSIONS

- Before students begin Eye Spy Math, we show them primary sources stored in the school media center. These include school yearbooks, scrapbooks, old attendance logs, and newspaper clippings from several past decades. These tangible items add to the interest and excitement.
- Students can find information about the topics depicted in the photos by selecting the hyperlinks and examining the subject headings.
- My online students Donahue and Straub suggested the Eye Spy Math activity could be used to introduce children to the math section in the media center.
- Students can also be taught online reference skills using A Maths Dictionary for Kids, an animated, interactive dictionary with more than 600 terms.

#### REFERENCES

National Education Association in collaboration with the American Federation of Teachers, “Access, Adequacy, and Equity in Education Technology,” May 2008 (33).

Library of Congress, American Memory collection, <http://memory.loc.gov>.

A Maths Dictionary for Kids, [www.amathsdictionaryforkids.com](http://www.amathsdictionaryforkids.com), Jenny Eather, 2008.

- Student photographers can use a digital camera to take photos of geometric representations in their classroom, school, or neighborhood. These photos can be added as a surprise element to the original Eye Spy slide show, or students can use them to create their own Eye Spy programs.
- Seventh grade math teacher Endich even suggested Eye Spy activities for history, science, and foreign language: “For history it would be wonderful to have photos from a particular time period (or several) and have students try to find clues to indicate when the photos are from, or search for some other evidence indicating a point of view, situation, time, etc. [For example, see Figure 2. —Ed.] In science, one could find pictures that demonstrate scientific procedures, have students name the parts of a lab ... parts of a flower ... something to that effect. In foreign language, students might have to name familiar things in a photo in the class language. It’s basically being a detective and finding clues to fit a fixed criteria. Teaching students to search for small details is a great way to have them become more observant for clues in photos and perhaps they will carry that skill into real life.”

#### AN EXCEL-BASED CHART AND GRAPH ACTIVITY

The Excel activity moves students beyond the typical “what’s your favorite pet” survey graph. It also moves media specialists and teachers from being deliverers of instruction to becoming facilitators of students using technology in authentic ways. Fourth grade students learn Excel basics when they make charts and graphs depicting their reading fluency scores. Students create their first chart and graph after they record their first reading fluency score and then update the chart and graph throughout the year. The activity is authentic, ongoing, and empowering. Students quickly learn how to progress beyond the basics of creating a chart and graph and enjoy exploring the creative possibilities provided by fonts, borders, and colors. Overall, the activity gives students ownership in their reading and technology

#### Figure 2: Eye Spy Math Resources in American Memory, Library of Congress

##### PowerPoint slide show

<http://memory.loc.gov/learn/educators/handouts/EyeSpyFiles/EyeSpyMathFeb05.ppt>

##### Documents used in the PowerPoint

<http://memory.loc.gov/learn/educators/handouts/EyeSpyFiles/EyeSpyMathLinks.doc>

##### Mathematics Model Activity

[www.primarysourcelearning.org/tps/step2/m/m\\_a/eye\\_spy/index.shtml](http://www.primarysourcelearning.org/tps/step2/m/m_a/eye_spy/index.shtml)

#### Figure 3: Standards Alignment

Excerpts from Minnesota Standards for Information and Technology Literacy, Technology Skills, Grades 3–4 (Minnesota Educational Media Organization, Minnesota Department of Education) Available at [www.memoweb.org](http://www.memoweb.org)

Literacy Standards benchmarks that align with Minnesota Math Standards and Benchmarks, Data Analysis, Grade 4:

- Students can use a spreadsheet to enter labels and numbers and set cell alignment.
- Students can create a graph using chart functions with appropriate labels, scale, and intervals.
- Students can create a graph using a spreadsheet.

Literacy Benchmark supported by suggested extensions for Eye Spy Math:

- Students produce graphics using a digital camera and scanner.

skills progress and in their personal data. We explain that their personal data is another example of a primary source. Allow 45–60 minutes for initial instruction and 15–20 minutes for updates and finishing touches.

The activity supports reading and the expectation that teachers use data. It supports the Minnesota state math data analysis requirement that is embedded in the Minnesota Standards for Information and Technology Literacy. (Minnesota information and technology literacy standards are being embedded in the content standards as content standards are reviewed.)

#### ALTERNATIVES

- Use Inspire Data to create dynamic, visually appealing charts, graphs, and slide shows.
- Use Kidspiration to create kid-appealing charts and graphs and offer differentiated instruction. (Both tools are available from <http://inspiration.com>.)
- Have students chart and graph other personal data such as keyboarding scores, state test scores, and screen free time.

See Figure 3 for a standards alignment for both the Eye Spy and the Excel activities.

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