Shapes From Folded Paper

Paul Adams
Grades 9 & 12, Chemistry
Beall High
Allegany County

Following is a great hands-on activity for all age groups. I use it for the shapes of molecules, but so many other uses spring to mind. The names for the shapes are those that chemistry gives them, but you can ignore the names altogether and apply them however you see fit. I hope you have as much fun with this as my AP Chemistry class does.

2. Cut the handout lengthwise along the center line.
3. Tape the two halves together (side by side) and trim the excess margins.
4. Snip off the incomplete triangles at either end—or, if you’d like to make a permanent shape, leave them attached and use as tabs on which to apply tape or glue.
5. With the lined side being the outside, fold the strip inward along the solid lines.
   a. Triangle: Assemble a triangle by folding inward along the creases. Fold each triangular section into the one before it (see Fig. 1). Always fold inward along the crease, so the lines are visible.
   b. Tetrahedron: For the four-sided tetrahedron, unfold three of the triangle sections and form the shape in Fig. 2.
   c. Trigonal Bipyramid: To assemble this pyramid on top of a pyramid (six sides), unfold two more triangles. With some practice, you get the shape in Fig. 3.
   d. Octahedron: This eight-sided shape can be made using the same sides as the trigonal bipyramid. Rearrange as shown in Fig. 4. Note: Two of the sides are open.

The Wind

Monica Carr
Kindergarten
Liberty Elementary
Baltimore City

After reading “Wind,” a poem by Meish Goldish, introduce some related vocabulary words: wind, breeze, strong wind, and gale. Use the words in sentences that help define them.

• Wind is air that is moving.
• Wind that barely moves the leaves on the trees is called a breeze.
• When the wind blows hard enough to sway trees, it is called a strong wind.
• When the wind breaks twigs or branches, or blows down signs, it is called a gale.

Experiment #1: What Moves Most

Objective
Students will test the wind’s strength by blowing several objects to see how far they’ll move.

Materials
cotton balls, leaf, pencil, tissue, crayon, masking tape, prediction chart, graphs, crayons, marker

Procedures
1. Test the following objects: cotton ball, leaf, pencil, tissue, crayon.
2. Ask students to predict which object will need the most blows to move between two points marked with masking tape. Record the predictions.
3. Blow the objects.
4. Graph the results.

Experiment #2: Air Is Real

Objective
Students will prove that air is real by blowing through a straw and into a balloon.

Materials
straws, cups, balloons, water, paper towels

Procedures
1. With students, blow air through the straw onto your hands. Discuss what happens.
2. With students, blow through the straw into a cup of water. Discuss what happens.
3. Blow up a balloon. Ask students why the balloon gets bigger.
4. Have students squeeze the balloon to feel the air.
5. Put the top of the balloon under water and let the air out. Discuss what happens.

Experiment #3: Bubble Fun 1

Objective
Students will blow bubbles and determine who blows the most in 10 seconds.

Materials
bubbles, clock with a second hand, chart, illustration story

Procedures
1. Arrange students in groups of 3-7 and have each student blow bubbles for 10 seconds.
2. Ask them to record on a chart how many bubbles were blown by each group member.
3. Have them draw a picture of the person who blew the most bubbles and indicate how many bubbles he/she blew.
4. Share results.

Experiment #4: Bubble Fun 2

Objective
Students will answer the following questions and illustrate their answers.

• Would you like to be a bubble?
• If you were a bubble, where would you go?

Materials
writing paper, pencils, bubbles, crayons, fan, paper towels

Procedures
1. With students, blow bubbles into a fan. Watch the bubbles float away.
2. Discuss the two questions above and ask students to volunteer answers.
3. Have students illustrate their answers and share their pictures with the class.
4. List and discuss things that the wind blows.

Deducting Out-of-Pocket Expenses

The Internal Revenue Service is re-mining teachers and other educators to claim out-of-pocket expenses for such items as textbooks, computer equipment/software, and classroom supplies on their 2003 tax returns. The deduction is available to educators in public and private elementary and secondary schools.

To be eligible, you must work at least 900 hours during the school year as a teacher, instructor, counselor, principal, or aide. You may subtract up to $250 of qualified expenses when figuring your adjusted gross income (AGI) for 2003. This deduction is available whether or not you itemize deductions on Schedule A.

Last year’s Job Creation and Worker Assistance Act instituted the deduction for 2002 and 2003 only. For more information, call the IRS Tele-Tax system toll-free at 1-800-829-4477 and select Topic 458, or read it online at http://www.irs.gov/taxtopics/tc458.html.

The Goldfish Experiment

Donna Clem
Grades 10 & 11, Biology & Physics
Aberdeen High
Harford County

Background
Goldfish respiration can be measured by counting the number of times the fist opens its mouth per minute.

Lab Materials
• two 600–1000 ml beakers
• two goldfish
• thermometer
• ice cubes
• two foam cups (one for ice and one for warm water)
• timing device (or a watch with a second hand)

Safety
Students should handle breakable equipment carefully and use protective eyewear and gloves. They should under-
Maryland’s Regions

Maryland Teacher of the Year
Aaron Deal, Maryland Teacher of the Year
Computer Science
Salisbury Middle
Wicomico County

Enduring Understandings
• Maryland has distinct regions.
• There are differences among Maryland’s regions.
• Location affects lifestyle.

Essential Questions
• How are Maryland’s regions and counties arranged?
• How might location affect a population’s commerce and lifestyle?

Evidence of Understanding
Your family has been exploring the possibility of moving and, after much deliberation, has agreed to move from the Eastern Shore to the Western, Capital, Central, or Southern region of Maryland. You’ve been asked to conduct research and present your findings to the family. They are looking for a location that will appeal to all family members based on each member’s lifestyle preferences and occupational opportunities.

You will create a nonlinear presentation using PowerPoint that will supply the information your family has asked for.

Prerequisites
Students must understand...
• Inspiration software
• PowerPoint
• cutting and pasting graphics from the Internet
• inserting slides from other PowerPoint slides
• hyperlinking with buttons, text, and drawn objects

Cooperative Group Work
Students will determine the most suitable region for their families’ possible relocation and meet with students who have chosen the same region. These groups will create a PowerPoint slideshow documenting facts about the region, especially those that influenced their decision.

Learning Experiences
Use the Internet to research Maryland regions and counties. Be sure to visit...
• www.midsun.org/destinations/default.asp
• www.op.state.md.us/
• www.marylandwine.com/mgga/vineyards/climate.html

Discuss data gathered with group members and with other groups.

Watch a videotape on life in Maryland.

Use Inspiration software to create a concept map that depicts the organization of Maryland’s regions and counties.

Interview family members about occupational goals and lifestyle preferences.

Project Requirements
Groups will create a slideshow that includes...
• a picture of their selected region
• data about the region
• how the climate and location of the chosen region might influence residents’ lifestyle (recreation, dress, traffic/transportation, jobs)

Each student will create a nonlinear presentation that includes...
• a map of Maryland that depicts distinct regions and counties
• data about each region hyperlinked from the map
• possible adjustments residents from the chosen region might have to make if they were to move to the Eastern Shore
• an explanation of how the region meets the family’s needs in terms of occupational goals and lifestyle preferences

Technical Requirements
The PowerPoint presentation must have...
• an introduction slide
• an interactive map of Maryland with hyperlinks to each regional slide (created by cooperative groups)
• correct spelling, grammar, and punctuation
• an easy-to-read slide design (take into consideration font/background color contrast, font style, font size, layout)
• buttons and links that work correctly

¡Hola Mexico!

Our first-grade team at Calvert Elementary usually completes each social studies theme with a celebration day. After studying our neighboring country Mexico, we celebrated with a Fiesta Day. Wearing handmade paper sombreros, students from each classroom visit the other first-grade classrooms and partake in different activities. One classroom hosts the breaking of the piñata, which students in each classroom have had a hand in making. In another room, the children perform The Mexican Hat Dance. One classroom offers a nachos-and-dip appetizer...may deliciouso! In another classroom, the students hear a wonderful tale about Mexico’s traditions.

In my classroom, the students craft Mexican chicos (boys) and chicas (girls) from clothsepins. The children learn that, while a Mexican’s everyday clothing is comparable to an American’s, traditional clothing is worn during Mexican fiestas. During our Mexican culture unit, the children are exposed to this beautiful clothing through pictures, books, and authentic clothing articles. The children learn to identify and pronounce the names of these ceremonial clothes.

Men often wear highly decorated sombreros during The Mexican Hat Dance and serapes across their shoulders. Women wear colorfully embroidered blusas (blouses) and poblanas (long skirts) during fiesta time. Also, leather sandals called huaraches are worn.

To create this fiesta doll, each student needs the following materials:
• Wooden clothsepin, preferably with a flat head
• Short piece of pipe cleaner (for a belt)
• Small strips of muslin or linen (for the man’s pants and serape or the woman’s blusa and poblana)
• White cardboard butter pat holder (for a sombrero)
• Small colored tissue square (for a flower)
• Plenty of colorful markers to design the brightly colored clothing
• Newspaper (for a desk protector during the muslin/linen coloring process)
• White glue (for attaching the sombrero and clothing to each doll)

Using colored markers, demonstrate how to add facial features and hair to the head of the clothsepin. Color brown huaraches onto the bottom tips of the clothsepin. Design the top of the butter tray to resemble a sombrero. Draw colorful designs on the strips of material to resemble ceremonial Mexican clothing. Dab glue to attach the clothing strips to the clothsepin. Twist the pipe cleaner around the clothsepin so that it resembles a man’s belt or a woman’s sash. (The pipe cleaner also secures the pants or poblano to the clothsepin.) Finally, glue the butter tray or flower tissue onto the flat head of the clothsepin.

When completed, the Mexican dolls can practice speaking their learned Spanish greetings to each other or count out the number of dolls in español. Enjoy! ■

Geometer’s Sketchpad

Bernadette France
Grades 9–12, Mathematics
Colonel Richardson High
Caroline County

Tessellation: a repeating pattern that completely covers a plane surface, leaving no gaps or overlaps (see Figure 1).

One of my favorite activities to do with my geometry students is a tessellation project using Geometer’s Sketchpad software. I usually teach tessellations in conjunction with the Transformations chapter. The activity is great for all levels and any number of students, provided each has a computer on which to complete and save his or her projects.

My students complete this project in our main computer lab equipped with 30 computers. I give each student a step-by-step instructional handout and demonstrate the software tools first, so the kids understand how to navigate through the project. Then we complete the first few steps of the tessellation project together.

I demonstrate the early steps by projecting a computer image onto the wall of the lab, and the kids follow on their individual computers. While we complete the first few steps together, I can walk around and monitor their progress, helping those who have problems. Once they get the hang of how to construct the basic shape to be tessellated, students can then proceed at their own pace.

Once they have filled a page with their tessellated shapes, I show them how to color and shade them. An animation feature allows students to make their tessellation rotate around a fixed point, and I give extra credit to students who do so.

Students save their tessellations to their Student Data Lockers (password-protected folders that can be accessed from any computer in the school). I retrieve the completed projects and print them on a color printer in my classroom. I then display the finished products (with student approval) for the rest of my classes to see.

Many thanks to Tim Moore and Kathy Wood for their continued help each semester with this project. And much recognition goes to my kids, who discover cool, new things to do with this program each and every semester. I learn just as much from them as they do from me! ■
A Visit from the Gingerbread Boy

'Tis the week before Christmas and all my reading inter-


Day 1

− I present a rubric to assess students’ reading, writing, and cooperation for the week’s unit of
work.
− Pairs of students use a graphic organizer to summarize the literary elements (characters, setting, conflict, resolution) of a version of the gingerbread boy/man story they know. One student serves as a recorder, and the other presents the pair’s version to the class.
− I read The Gingerbread Man, retold by Eric A. Kimmel, aloud to the class.
− Students compare orally the literary elements in the book to what they remembered and recorded on their graphic organizers.
− I introduce other versions of the story:
  − The Cajun Gingerbread Boy, rebaked by Berthe Amoss
  − The Runaway Tortilla by Eric A. Kimmel
  − Gingerbread Baby by Jan Brett
− I share autographs and pictures of the authors and we discuss geographic setting, and equipment needed to make them. Then I divide the class into small groups and assign jobs. (Groups are determined by the level of cooperation demonstrated in previous activities.)
− Each group follows the recipe to make the cookies.
− While the cookies bake, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index cards for the book they read and presented.
− Students and I assess their performance during the week using the rubric.
− Each group student with others interested in the same story.
− Each group reads its book and prepares to present it to the class by:
  − reading the book aloud,
  − performing it as a radio play,
  − drawing a mural of the plot of the book, and
  − presenting the group’s original idea.
− Students complete a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− Small groups present their book to the class.
− Students read the directions for decorating their cookies and diagram their designs on paper cookie cutouts.
− Groups roll out the dough, cut out the cookies, and bake them.
− While the cookies are baking, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index cards for the book they read and presented.
− Students respond to the following: Decide which version of the gingerbread boy story you like best. Now write a paragraph to tell me which was your favorite. Be sure to give several reasons for your choice and details to support each reason. If time permits, students may share their responses.
− Students exchange and play the Gingerbread Man match games.
− Students and I assess their performance during the week using the rubric.
− Students take home decorated cookies for their families, as well as fond memories of reading intervention class this week.

Day 2

− Students select the version of the story they wish to read.
− I group students with others interested in the same story.
− Each group reads its book and prepares to present it to the class by:
  − reading the book aloud,
  − performing it as a radio play,
  − drawing a mural of the plot of the book, and
  − presenting the group’s original idea.
− List materials needed and a plan to acquire them
− Choose a method to attract players
− Draw a plan (to scale) that models the game
− Submit a list of the game rules
− Students will submit a drawing of the game, a summary of how the game is to be played, and the rules. You could ask them to make predictions on possible winnings, justify their determination of the pay-out money, and write an equation to predict winnings.
− Students will accumulate materials needed to construct their game
− Submit a drawing modeling their game board, making sure they have designated areas for each game part (This should be drawn to scale if students are capable—a good time for algebra and geometry.)
− Participate in a trial of their game board (Have them record any flaws and report these find-
ings to the group for discussion.)
− Get approval of the model drawing from all group members and the teacher
− Make a poster stating the rules
− Construct the game board according to the plan

Day 3

− Student groups present their book to the class.
− Students complete a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− Small groups present their book to the class.
− Students complete a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− The class reads the recipe for gingerbread man cookies and determines the ingredients and equipment needed to make them. Then I divide the class into small groups and assign jobs. (Groups are determined by the level of cooperation demonstrated in previous activities.)
− Each group follows the recipe to make the cookies.
− While the cookies bake, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index for the book they read and presented.

Day 4

− Student groups present their book to the class.
− Students complete a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− The class reads the recipe for gingerbread man cookies and determines the ingredients and equipment needed to make them. Then I divide the class into small groups and assign jobs. (Groups are determined by the level of cooperation demonstrated in previous activities.)
− Each group follows the recipe to make the cookies.
− While the cookies bake, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index cards for the book they read and presented.

Day 5

− Students respond to the following: Decide which version of the gingerbread boy story you like best. Now write a paragraph to tell me which was your favorite. Be sure to give several reasons for your choice and details to support each reason. If time permits, students may share their responses.
− Students present a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− The class reads the recipe for gingerbread man cookies and determines the ingredients and equipment needed to make them. Then I divide the class into small groups and assign jobs. (Groups are determined by the level of cooperation demonstrated in previous activities.)
− Each group follows the recipe to make the cookies.
− While the cookies bake, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index cards for the book they read and presented.

Day 6

− Students respond to the following: Decide which version of the gingerbread boy story you like best. Now write a paragraph to tell me which was your favorite. Be sure to give several reasons for your choice and details to support each reason. If time permits, students may share their responses.
− Students present a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− The class reads the recipe for gingerbread man cookies and determines the ingredients and equipment needed to make them. Then I divide the class into small groups and assign jobs. (Groups are determined by the level of cooperation demonstrated in previous activities.)
− Each group follows the recipe to make the cookies.
− While the cookies bake, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index cards for the book they read and presented.

Day 7

− Students respond to the following: Decide which version of the gingerbread boy story you like best. Now write a paragraph to tell me which was your favorite. Be sure to give several reasons for your choice and details to support each reason. If time permits, students may share their responses.
− Students present a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− The class reads the recipe for gingerbread man cookies and determines the ingredients and equipment needed to make them. Then I divide the class into small groups and assign jobs. (Groups are determined by the level of cooperation demonstrated in previous activities.)
− Each group follows the recipe to make the cookies.
− While the cookies bake, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index cards for the book they read and presented.

Day 8

− Students respond to the following: Decide which version of the gingerbread boy story you like best. Now write a paragraph to tell me which was your favorite. Be sure to give several reasons for your choice and details to support each reason. If time permits, students may share their responses.
− Students present a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− The class reads the recipe for gingerbread man cookies and determines the ingredients and equipment needed to make them. Then I divide the class into small groups and assign jobs. (Groups are determined by the level of cooperation demonstrated in previous activities.)
− Each group follows the recipe to make the cookies.
− While the cookies bake, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index cards for the book they read and presented.

Day 9

− Students respond to the following: Decide which version of the gingerbread boy story you like best. Now write a paragraph to tell me which was your favorite. Be sure to give several reasons for your choice and details to support each reason. If time permits, students may share their responses.
− Students present a chart that compares the literary elements of the three versions (see Fig-
ure 1).
− The class reads the recipe for gingerbread man cookies and determines the ingredients and equipment needed to make them. Then I divide the class into small groups and assign jobs. (Groups are determined by the level of cooperation demonstrated in previous activities.)
− Each group follows the recipe to make the cookies.
− While the cookies bake, students may play the Gingerbread Man match game at www.quia.com/custom/20919gate.html. Small groups then create their own match games on index cards for the book they read and presented.

Day 10

− Students respond to the following: Decide which version of the gingerbread boy story you like best. Now write a paragraph to tell me which was your favorite. Be sure to give several reasons for your choice and details to support each reason. If time permits, students may share their responses.
A Barrel of Monkeys

As a fourth-grade teacher, I’ve found that writing is one of the most difficult concepts for students in the elementary grades to understand. But I’ve discovered a writing strategy that’s motivating and appealing to my students. The strategy involves three bananas, three monkeys, and a barrel of monkeys—metaphorically speaking.

Introduce the three main topics of your writing as your three bananas, for example: “My three favorite books are...” My favorite banana is my remote-controlled banana (banana #3), and my bicycle (banana #3).”

Then introduce your first paragraph below the topic paragraph as the first monkey, Bing. In the Bing paragraph, provide two details supporting why Nintendo is your favorite toy. Repeat the process with Bongo—the third monkey and third paragraph—providing two details on why the remote-controlled car is your favorite toy. Repeat the process with Bongo—the third monkey and third paragraph—providing two details supporting why the bicycle is one of your favorite toys. Conclude your composition with the Barrel of Monkeys—the last paragraph summarizing the previous three.

Using Bing, Bang, and Bongo, students can easily see if they’ve included all the steps in the writing process. Peer review and revision are relatively painless because students have a visual picture of what should appear in the writing. Then give students a disk to take to the computer lab, and print out their final copies.

Using Bing, Bang, and Bongo, students have their own disk, and revising their rough drafts becomes a pleasure, as they can use Spell Check and the last paragraph summarizing the previous three.

We spend a lot of time in our undersea bubble, reading and talking about the little world we’ve made. Following are the materials and resources I use to make it come alive.

Books
- The Magic School Bus in the Ocean Floor by Joanna Cole
- A House for Hermit Crab by Eric Carle
- Ocean Animals by Michael Chinery
- How to Hide an Octopus & Other Sea Creatures by Ruth Heller
- The Rainbow Fish by Marcus Pfister

Other Resources
- The Preschool/Kindergarten Mailbox, 1991 (Sea Life)
- The Preschool/Kindergarten Mailbox, June/July 1994 (Fish)
- The Primary Mailbox, June/July 1994 (Ocean)
- Project Wild Aquatics
- National Geographic films and magazines
- Students’ imaginations!

Materials
- 16 mil gauged clear plastic sheeting—30’x20’ (You should be able to get a piece cut from the bigger roll—usually 100’x20’—at any hardware store.)
- duct tape (lots of it and don’t buy the cheap kind)
- fishing line
- 21’ box fan and extension cord
- any materials you’d like to put in your own bubble

Directions
1. Lay the 30’x20’ plastic sheet out completely and fold longitudinal (so that its dimensions are 15’x15’).
2. Double-fold the sides together all the way around taping as you fold with heavy-duty duct tape, but leave a 15” open seam for an air tunnel opposite your doorway.
3. Fold over the 10’x5’ section (saved from the sheeting) lengthwise, so it’s 5’x5’.
   Double-fold the sides together and seal with duct tape (the remaining two sides open). Attach this air tunnel (diagonal) around the open seam. Tape a box fan to the air tunnel blowing inward. You can adjust air flow as needed to keep the bubble inflated.
4. Make a 2’-3’ slit in the plastic in the opposite air tunnel. This is where students will enter (As students get in, the air will rush out. Pinch the shut and the bubble will fill again.)
5. Hang the sea creatures you’ve created from fish. Poke a pin hole in the plastic and knot your line to the top of the bubble. (Tape won’t stick to its inside.)
6. It’s best to hang everything inside the bubble. This keeps things in order as you inflate and deflate. Remnants can also be used by other students, they love to be together. When you’re finished using the bubble, just everything from inside and fold up into a neat pack store away. Enjoy and have FUN!

Books and Beyond: A Schoolwide Reading Challenge

Because I’m always looking for ways to encourage reading, I help promote a schoolwide reading challenge. Books and Beyond is a reading challenge involving students and staff in grades 1-5. Its goal is to increase the recreational reading habits of both students and adults.

Each student’s and staff member’s name is posted on a central wall in the school. The program requires participants to obtain eight stickers in order to receive the gold medal award, which is a large gold sticker on the wall and a medal attached to a ribbon that students and staff may wear.

To earn each sticker, students in grade 1 must read 100 books and students in grades 2 through 5 must read 300 pages. Thus, gold medal readers have read 420 books this year.

In grades 2 through 5, students receive a free book through the Primary Mailbox. Each grade level participates in a different reading challenge each year.

For instance, top readers enjoy local plays or author visits. The media specialist and I plan two schoolwide events each year to celebrate student reading. Midyear we invite a published author to the school, and at the year’s end we host a play, puppet show, mime, or storyteller. Yes, test results have improved, but the real reward is students’ improved reading ability and the smiles on their faces as they share with others the books they’ve currently reading.

When students reach 500 books, they attend an Ice Cream Sundae Party, where they may choose their own sundae. Each year to date, students have chosen ice cream from dozens of local vendors.

Students are always striving to boost the number of books read by staff members. This year’s goal is to read at least 1 million pages.

As the reading teacher, I reward students for reaching specific goals. Students who have read 100 books attend a Literary Luncheon, where they share their favorite books and authors, and each receives a free book with a nameplate dedicated to them and featuring a photo of them.
Birding Through the Year

George Radcliffe, Finalist
Grade 7, Science
Centreville Middle
Queen Anne’s County

Introduction
In my life science classes, birds are used as a theme for labs and activities throughout the year. Students are trained, as researchers for the Maryland Bird Breeding Atlas Project, a 5-year study of the birds breeding in every area of the state. Students learn to use ArcView, a Geographic Information System (GIS) mapping program, so that data can be spatially portrayed. They learn basic bird auditory and visual identification skills and organize into committees covering areas such as specific species, mapping, and data-quality control. Queen Anne’s County is undergoing a rapid increase in growth, and the data collected allows students to examine first-hand the effect of this growth on organism biodiversity.

The birding theme helps integrate the curriculum and serves as the justification for the content and many of the skills students must learn. In addition the project:
- involves the students in authentic science, where they work side-by-side with the scientific community.
- provides valuable supplementary data to the Maryland Bird Breeding Atlas Project.
- students learn basic bird auditory and visual identification skills
- students use Think, Show, Tell method.
- students examine first-hand the effect of this growth on organism biodiversity.
- students work with you and your students. Visit www.mascd.net/envirothon/who.htm can give you the names of forestry, agriculture, and wildlife professionals who can provide training in these fields. Most of them have educational departments and would be more than happy to work with you and your students. Visit www.mascd.net/envirothon.

Think, Show, Tell
A Framework for Solving Application Problems

Math students often have difficulty working through real-world applications. My pre-calculus and statistics students have been using the following framework for solving application problems. We call it the Think, Show, Tell method.

Think
- Read the problem and determine your objective.
- What do I need to find?

Show
- State the purpose and procedure of any activity involving live animals.
- Place two beakers on your desk. Mark one for the experimental fish and the other for the control fish.
- Measure the temperature of water in each beaker with your thermometer and record it.
- Control fish: Starting temperature __°C
- Experimental fish: Starting temperature __°C

Don’t do anything to the control fish! You’ll let its temperature remain the same throughout the experiment.
- Practice counting the fish’s respirations. Work as a team.
- Add ice to the experimental fish beaker. Use your thermometer to measure the water temperature. When the temperature reaches 9°C, remove the beaker from the setup. Record the data on Table 1.
- Next, measure the temperature of the control fish’s water. Count its respirations for one full minute. Record this data in Table 1.
- Repeat these steps until you have increased the temperature of the water around the experimental fish to 24°C. Each time you measure the breathing of the experimental fish, be sure to measure the control fish’s water temperature and respirations also.

Conclusions
1. What is the purpose of the control fish in this experiment?
2. Compare your experimental fish data with other groups. Is there a pattern evident among the different experimental fish data? Explain.
3. What was the independent variable in this experiment?
4. Do you think there are any other variables involved? If so, state them and justify your statement.
5. Was your prediction correct?
6. Graph the experimental fish data collected as an xy scatter plot. What other type of graphs might be appropriate for this data? This graph may be produced on a TI 83 calculator, Logger Pro and computer display, or an Excel spreadsheet. Review the graphing rubric provided by MSDE.
7. Determine the slope for the line of best fit.
8. Write an equation for this line.
9. Provide an analysis of your graph in a single paragraph.
10. How would the control fish data look if graphed?
11. Calculate the average number of respirations for the control fish.
Tone Lessons

Anne Gellrich
Grades 9-12, English
Boehm Manor High
Cecil County

The English I High School Assessment and English/Language Arts content standards call for students to read literature and “identify features of language that create voice and tone and explain and give evidence to support perceptions.” The following lesson makes learning to identify tone easier—even for ninth-graders.

First, students need the vocabulary of tone. Begin by providing your students a list of words that may be used to describe tone. You can find some on the Internet or create your own. A list of 35–50 words gives students a broad range of words with which to work. Classify the words as positive or negative and discuss their meanings, especially their connotations.

Teaching With TLC

They’re labeled oppositional, hyperactive, moody, depressed, and explosive. Despite these hurdles and various learning and emotional disabilities, all of my students qualify to pursue their high school diplomas. Their resilience, courage, and character inspire my quest to ensure their success.

Each day begins with an enthusiastic greeting and some TLC I ask for their highs and lows from the day or night before, and I write them on the board. They write them, too—in complete sentences in their journals. This is how we relate and connect to each other and identifying the type of connection we require constant collaboration with other teachers, so I routinely add some from www.readingatoz.com. After reading their selected books, students establish ownership by binding them and adding them to their personal libraries.

During Integrated Language Arts, each student receives instruction in a very small group. Our routine enables students to rotate through five instructional “stations.”

In writing workshop, they work through the writing process according to the curriculum and always have a goal, publish their work, bound, illustrated, and displayed on our bookshelf; their books are shared with anyone searching for quality literature.

During phonics, they complete hands-on activities—playing file-folder games, using magnets to spell words, taking part in an ongoing class

Prime-Time Programming

Background

Who determines what television programs we see on the air? Corporate media owners, station managers, producers, and advertisers all have a say, but the ones who make the real decision are the viewers. Data on audience viewing is compiled by services such as Nielsen Media Research, and this research determines a program’s rating. High ratings favorably influence program decisions because advertisers want to buy time on these programs. To be financially successful, networks and stations need programs that are a big hit with viewers.

This learning activity gives students an opportunity to see how the process of program selection works and how ratings influence what programs stay or go.

Materials

Periodically, local newspapers print the Prime-Time Nielsen Ratings for a television viewing area (see Figure 1, © Nielsen Media Research, Inc.). These ratings indicate the top-rated programs and break down the data by day, date, and time across major channels. Distribute a copy of this data to the class.

Procedures

Introduce this scenario to the class: You are a producer at a major television network that has just come up with a hit prime-time program, the network executive whom you must act as the network executive. Remember, the future of your network is at stake… even for ninth-graders.

The rest of the class will act as the network executives whom you must convince to produce and air your show. Students may work on this activity individually or in groups.

1. Study the ratings sheet provided to determine which types of programs and which time slots get the highest ratings. Use these ratings as the basis for your program plans and decisions.

2. Write a proposal for the pilot program you create, including the following:

   • Title of your new program
   • Type of program (genre)
   • Basic plot
   • Running time (1/2 hour, 1 hour, etc.)
   • Demographic appeal (Whom do you want to watch your show?)
   • Potential actors to play the central characters

Sample Tone Words

Tone: The tone of a literary work is the author’s attitude toward his or her audience and subject.

Scrabble game, and writing definitions in self-made dictionaries (also published).

During computer, they’re free to explore educational Web sites like www.kidsdomain.com and use software to practice reading skills.

Jaimie Jezovnik
Grades 3 & 4, Special Education
Robert Moton Elementary
Carroll County

Independent reading is time dedicated to reading a book of their choice for enjoyment.

Finally, for guided reading, students choose their books from www.readingassist.com. After reading their selected books, students establish ownership by binding them and adding them to their personal libraries.

At the end of Reading Rotations, each child receives at least one positive statement about what he or she accomplished for the day. The public, specific encouragement motivates my kids to continue the good work.

Then the class enjoys read aloud, primarily because they can actively participate in the process. During read aloud, I assign each student a different colored Post-it note. When they connect with the text, I stick their colored note in the book. They love to see their Post-its pocking out! We also play catch, tossing a Koosh ball to each other and identifying the type of connection we make.

At every turn, my students participate in decisions about how they’ll receive their instruction and evaluate the learning process. Facilitating all these activities requires constant collaboration with other teachers, so the exceptional staff at Robert Moton Elementary remains flexible, knowing that the plans can change according to the students’ interests. The close, respectful relationship we develop with our children inspires their achievement and, of course, our own.

Tips: While I always follow the recommended lesson plan (which helps a lot when planning five different reading groups), I routinely add some tips or might before they’re published. Anything warm and fuzzy helps my students connect to text in a memorable way.

During lunch and recess, my students prefer to play chess. It’s helped them remain calm in a chaotic atmosphere, demonstrate good sportsmanship, and apply learning to leisure.
A+ Resources for the Geography Classroom

Weldon Jones
Grade 7
Social Studies
Pomocoke High School
Anne Arundel County

It seems everyone has a Top 10 list of something. So here’s my Top 10 list of great resources for teaching geography.

1. The National Geographic Society. The Geography Bee is an exceptional way to get students involved in geography. The bee requires participants to answer questions about geography, and the questions are often quite challenging. Students may progress from school-level bees to the Maryland Geography Bee and National Bee. (Large scholarships are available for National Bee winners.) This is a great activity to start or support at your elementary or middle school. To learn more, check out www.nationalgeographic.com/geographybee.

2. National Geographic maps are a great classroom resource. Go to the site’s Educators’ Home Page—www.nationalgeographic.com/education—to find black line maps with customizable features as well as a stunning variety of teacher resources.

Goal Getters: Building a Community of Learners

Nancy Kozko, Finalist
Grades 1
Phelps Luck Elementary
Howard County

Witness 500 students and 70 staff members with voices raised in affirmation and celebration you’ve arrived at Phelps Luck Elementary at 9:45 a.m.

I stand tall! I stand tall!
I take pride in my work, pride in my school, pride in my family, pride in myself.
I will achieve! I will achieve!
I stand tall! I stand tall!

This daily ritual is one of several important elements in building a community of learners, increasing motivation, enhancing learning, and providing students the tools they need to be effective learners—now and in the future.

One of our most exciting initiatives is Goal Getters. Through this schoolwide program, established by Phelps Luck Guidance Counselor (and Howard County Guidance Counselor of the Year) Tricia McCarthy, students identify individual and/or group goals, determine the steps needed to achieve them, devise a plan for doing so, and monitor and reflect on their progress.

Staff members spend about 5–10 minutes each day reviewing the goal-setting process and meeting with students to discuss their progress. And they spend a considerable amount of time building learning-to-learn skills that will help them plan for success. They also model the program for students by choosing to set and achieve their own goals, and then apply the curve-fitting concepts discussed in the lecture to a problem being investigated by NASA professionals.

Career Exploration via Mathematical Investigations

Letting students apply in a real-world setting their interactive mathematical and computer-programming investigations is often difficult. However, while teaching at Pocomoke High School, I’ve been able to nurture partnerships with several applied mathematicians and computer scientists in a nearby NASA Goddard Space Flight Center facility. From time to time, when feasible with their workloads and schedules, these NASA professionals help me show my students how the mathematical concepts they’re learning are applied every day.

My students and I take a field trip to the flight center, where the employees and I have designed a project requiring students to develop and apply curve-fitting techniques. During the first phase of our investigation, the mathematicians and I develop statistical and calculus concepts encompassing linear least squares line theory and related equation derivation, measurement calibration, curve-fitting techniques, and refractive correction estimation.

Following the lecture, the students are assigned to groups working with a NASA mathematician or computer scientist at some of the Center’s computer facilities. Each student gathers experimental data from NASA instrumentation and then applies the curve-fitting concepts discussed in the lecture to a problem being investigated by NASA professionals.

This has proven to be a valuable lesson format and instructional strategy, allowing students to:

• learn mathematics through a unique applied approach.
• analyze real-world problems that require math for their solution; and
• observe the diverse make-up of the facility’s professional staff and recognize that career opportunities in mathematics and computer science are available to every student, regardless of sex, race, or national origin.

You might also want to develop similar experiences with area businesses or local college/university personnel.
National History Day

As a social studies teacher, I’m an active supporter of the National History Day program since it aligns with national and state social studies standards. Students are required to conduct historical research, develop historical interpretations, and collect and evaluate information from primary and secondary sources.

The program’s flexibility allows teachers to meet the learning needs of all their students. For instance, students are given a choice of topic and presentation format. They may work in small groups or individually. And they decide whether to present their findings as a research paper, media documentary, exhibit, or live performance.

To better prepare students for the rigorous of high school, all eighth-graders at Milton Somers Middle are required to participate in the program. And in order to implement this program in all my classes, I need to provide structure, models, and scaffolding for my students.

To accomplish this, I developed status reports, which break the project down into 11 steps. By breaking the project into small chunks, all students are able to conduct their historical research and report their findings in their chosen formats.

Having a highly structured format in place allows me to more easily monitor student performance and promotes greater student achievement.

I invite social studies teachers to visit my Web site (http://ccboe.com/teachers/etubb) to view the program I developed for my classes. Teachers are welcome to use any of the materials I’ve provided online, including a History Day schedule, parent letter, status reports, help-links for writing thesis statements and bibliographies, model process paper, and checklists for grading students’ products.

I recognize teachers’ need to modify materials to fit to their own classrooms, so I’ve designed my site so that teachers using Microsoft Word can download, save, and amend these materials to suit their—and their students’—specific needs.

Teachers will also find links to Maryland History Day (www.marylandhistoryday.org), the state affiliate of the national program, which is sponsored by the Maryland Humanities Council, and to National History Day (www.nationalhistoryday.org), whose annual contest is held at the University of Maryland, College Park. These sites offer a wealth of additional resources to enrich social studies classes and your students’ journey into historical research.

More social studies resources—from creating your own Web page to professional development activities—can be found on my site by clicking the Link to Teacher Resources button. I hope that other social studies teachers find this information useful, and I welcome your feedback at etubb@ccboe.com.

MarylandClassroom
A Publication from the Maryland State Department of Education
Office of Academic Policy
Communications and Strategic Planning Office

Ronald Peiffer, Deputy State Superintendent
Edward L. Root, President, State Board of Education
Nancy S. Grasmick, Secretary-Treasurer of the Board
Nan Mulqueen, Editor-in-Chief
Robert L. Ehrl, Jr., Governor

The Maryland State Department of Education does not discriminate on the basis of race, color, sex, age, national origin, religion, or disability in matters affecting employment or in providing access to programs. For inquiries related to departmental policy, contact the Equity, Access and Compliance Branch, Maryland State Department of Education, 200 West Baltimore Street, Baltimore, Maryland 21201-2595. Phone: 410.767.0433, TTY/TDD: 410.333.6442, Fax: 410.767.0431.

If you have any questions or comments about this publication, please contact Nan Mulqueen, editor, at 410.767.0475.

Doing the John Travolta

Learning how to read and write is very exciting and yet challenging for first-graders. Each day in our languages arts class, we use a method of instruction called the Four-Block Model. The four blocks—that is, the four basic ways students have always learned to read—are Words, Writing, Reading, and Self-Selected Reading. A school or teacher usually chooses one of those methods in hopes of reaching most of the students. But with the Four-Block Model, we’re able to reach all students by teaching all four methods every single day.

During the Guided Reading block, students focus on reading-comprehension skills. During the Self-Selected Reading block, students get to see themselves as readers and build fluency. In the Writing block, students learn to use their knowledge of phonics to write compositions. Along with applying phonics, they have an opportunity to practice penmanship and to learn about the writing process, grammar, and the mechanics of good writing. The Working With Words block allows students to explore words, word families, spelling, and phonics, and to see how they can use what they learn about words in their reading and writing.

Our class enjoys Working With Words more than any other block! Here’s one of our favorite Working with Words activities.

A new word is introduced to the class using a game called “Guess the Covered Word.” The game begins with the word spelled out in letter cards. However, each letter card is covered with a sticky note. Students ask me “yes/no” questions about the word as they try to guess it.

Questions may include: Is it a noun? Does the word have a short e sound in it? Does it begin with a digraph? As questions are asked, students begin to guess at the letters. When a letter in the word is guessed, I uncover the letter. Eventually, the students are able to guess the whole word. I then introduce the spelling of the word. We discuss its meaning and the sound that each makes.

Next comes the really fun part! I model how to clap, stomp, and “John Travolta” the spelling of the word, and the class repeats the process with me. Everyone claps out the spelling of the word three times as they shout each letter. Next, everyone stomps out the spelling of the word three times as they shout each letter. Finally, everyone “John Travolts” the spelling of the word three times!

John Travolta? Yes, this is the student’s favorite part. Students swing their hips from side to side for each letter as they shout the letter’s name. At the same time, they raise and lower their pointing hand—up and down and up and down—just like John Travolta in the movie “Saturday Night Fever.” After the class does this, I cover the word back up, and we try to spell the word aloud again using the clap, stomp, and John Travolta method. Without actually seeing the word. This is definitely my students’ favorite way of learning new words.

I close this Working With Words activity by asking volunteers to spell the word aloud on their own from memory. Students get a pretty big bang for its buck is called The Simple Triangle.

The Simple Triangle

Whenever I put together a math lesson, I try to keep in mind the many ways students learn and retain information. I try to build interest in a topic (or skill) by making an idea fun and memorable. Not every lesson connects with each of the different learner types: kinesthetic, visual, auditory, etc. And always get the most mileage out of activities that students can take home and share with their parents and friends. One activity that gets a pretty big bang for its buck is called The Simple Triangle.

The Simple Triangle, students discover why the length of line segments matter when forming a triangle. In short, they learn that the sum of a triangle’s two shorter sides must be greater than its longest side.

Materials
• three dice for each group of students
• plastic straws cut in lengths of 1, 2, 3, 4, 5, and 6 inches (Cut three straws in each size, so you have 18 straws total.)
• string for threading through the straws to form a triangle

Procedures (for teacher)
• Arrange students in groups of 2–5.
• Demonstrate how the straws must meet to form a triangle by threading the straws and placing an example on the chalkboard.

Procedures (for students)
• Toss three dice. Determine if a triangle can be formed by using the straw lengths that match each number rolled.
• Record the numbers and result (“Yes, it makes a triangle.” or “No, it doesn’t make a triangle.”) on the data sheet.
• Make a record of all possible outcomes that will result in a triangle.

Record Sheet

<table>
<thead>
<tr>
<th>Side A</th>
<th>Side B</th>
<th>Side C</th>
<th>Example</th>
<th>Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>2</td>
<td>&lt;</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>+</td>
<td>3</td>
<td>=</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>+</td>
<td>4</td>
<td>&lt;</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>+</td>
<td>5</td>
<td>≠</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>+</td>
<td>6</td>
<td>≠</td>
<td>No</td>
</tr>
</tbody>
</table>

Questions
• Which combination of numbers will form a triangle?
• What pattern of numbers results in a triangle?
• How many triangles can be formed from the numbers rolled?
• Use letters and math symbols to express what you’ve discovered—e.g., (a + b) < c.

The greatest thing about this lesson is that it lends itself to teaching the properties of triangles, the classification of triangles, problem solving, predicting, measuring, and a whole lot more.