

**Congratulations to all of the educators and employers who participated in the 2005 Educator in the Workplace Program.**

|                    |                                  |
|--------------------|----------------------------------|
| Jack Adams         | Blair Corporation                |
| Darlene Beach      | Rouse Estates                    |
| Lisa Bigley        | Erie Plastics                    |
| Gary Bish          | Mech’s Mobile Marine Service     |
| Jeremy Criswell    | Allegheny National Forest        |
| Dawn Dietsch       | Warren General Hospital          |
| Michel Elmer       | Warren County Court House        |
| Catherine Hagadorn | Warren General Hospital          |
| Cynthia Hartburg   | High Country Flowers & Gifts     |
| Barb Kersey        | Crary Art Gallery                |
| Susan Nelson       | Rouse Estates                    |
| Susan Nelson       | Ivy Vine Quilt Shop              |
| Sharon Nowacki     | Bollinger Enterprises            |
| Anne Poppel        | Warren Public Library            |
| Phil Pompilio      | Warren Co. Conservation District |
| Karl Reiger        | Warren Co. Historical Society    |
| Mattie Schumann    | Sugar Branch Ranch               |
| Sharon Schumann    | Blair Corporation                |
| Kathryn Spencer    | Ivy Vine Quilt Shop              |
| Dustin Steiger     | Chief Cornplanter Council, BSA   |
| Jamie Tagba        | Ivy Vine Quilt Shop              |

**Business Partner: Blair Corporation**  
**Curriculum Relationship: Algebra I or II**  
**Grade Level: 9-12**

Jack Adams  
 Eisenhower Middle High School

**Objective:** The student will be able to find the correct Blair Share given the Level of Operation, Standard Allowable Time and the Actual Time of an employee.

**Standards Assessed:** 2.1, 2.2, 2.3, 2.6

**Materials:** Blair Corp. Individual Performance Reports, Level 3 and Level 5 Operation/Performance/Incentive Sheets, calculators, paper and pencils.

**Procedure:** At the Blair Distribution Center, some of the jobs that an employee will do can earn Blair Shares. A Blair Share is bonus money that an employee gets for completing a task faster than the Standard Allowable Time (SAT). The employee’s Actual Time (AT) is divided into the Standard Allowable Time to come up with a Performance Percent (PP). The actual formula looks like this  $PP = \frac{SAT}{AT}$ . You then go to the correct Level of Operation Chart and match the Performance Percent to the Incentive. This Incentive multiplied times the Actual Time is the extra money (Blair Share) that the employee will get for completing the job. This formula is represented by the equation  $BLAIRSHARE = AT \times INCENTIVE$ . Here is an example:  
 (... All time are measured to the hundredth of an hour ...)

| Employee     | Level | SAT  | AT   | PP   | Incentive | Blair Share |
|--------------|-------|------|------|------|-----------|-------------|
| Sam Smith    | 3     | 5.38 | 4.20 | 128% | \$2.83    | \$11.89     |
| Brenda Blick | 5     | 9.48 | 5.23 |      |           |             |

To figure Sam’s Blair Share you start by finding the Performance percent,  $PP = \frac{SAT}{AT}$  therefore  $\frac{5.38}{4.20} = 128\%$ , and then you look up in the correct Level of Operation Chart and find the Incentive which in this case is \$2.83. The final step is to find the Blair Share,  $BLAIRSHARE = AT \times INCENTIVE$  so  $4.20 \times 2.83 = \$11.89$ .

See if you can find Brenda’s Blair Share on your own. Check your answer with the teacher.

**Business Partner: Erie Plastics**  
**Curriculum Relationship: Chemistry**  
**Grade Level: 10-12**  
 Lisa Bigley

### Determining the Best Detergent

#### Objectives:

**Process Objectives:** The student will

1. Design and construct an experiment using scientific method and the four question strategy about the best detergent.
2. Design a rubric or data table that is made to determine differences between the types of data collected.
3. Make observations about the data and interpret those observations as they deal with their original hypothesis.

**Content Objectives:** The student will

1. Identify the variables that would affect the way a detergent reacts as identified through the four question strategy and their experiment.
2. Explain the purpose of the “ingredients” that make up detergent.
3. Describe the process by which a detergent works.

#### Primary Standard

Science:

**3.2.12 C Apply the elements of scientific inquiry to solve multi-step problems.**

Mathematics:

**2.6.11 G Describe questions of experimental design, control groups, treatment groups, cluster sampling, and reliability.**

Reading:

**1.8.11 C Organize, summarize, and present the main ideas from the research.**

#### Optional Secondary Standards:

Science:

3.2.12 A Evaluate the nature of scientific and technical knowledge.

3.2.12 B Evaluate experimental information for appropriateness and adherence to relevant science processes.

3.8.12 B Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life.

Mathematics:

2.2.11 B Use estimation to solve problems for which an exact answer is not needed.

2.6.11 A Design and construct an experiment using random sampling.

2.6.11 E Determine the validity of the sampling method described in a given study.

Reading:

1.5.11 A Write a report using a sharp, distinct focus.

1.5.11 B Write using a well-developed content appropriate for the topic.

1.5.11 C Write with controlled and/or subtle organization.

1.6.11 A Listen to others.

#### Materials:

1. Hot water
2. Thermometer
3. wooden spoons
4. Cold water
5. small jars with lids
6. tape
7. Pieces of cotton shirts(color or white)
8. Measuring spoons or graduated cylinders
  - a. Tide
  - b. All
  - c. Purex
  - d. Arm & Hammer
  - e. Cheer
  - f. Fab
  - g. Era
  - h. Whisk
  - i. Generic detergent(any)

- j. scissors
- k. Sandpaper
- l. Mustard
- m. ketchup
- n. mayonnaise
- o. Bbq sauce
- p. red wine
- q. vinegar
- r. gravy
- s. Chocolate
- t. marker
- u. lipstick
- v. Foundation
- w. Oxyclean
- x. Bleach
- y. Shout
- z. Dryell
- aa. Woollite

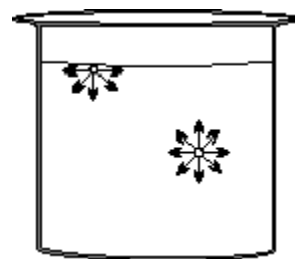
**Estimated Time:** Three to Four – 45 to 50 minute periods

**Estimated Set-up time:** 20 to 30 minutes to prep all materials

**Preliminary Activities and Prior Knowledge:**

1. Surface tension Hydrophobic and hydrophilic parts of molecules
2. Polar vs. nonpolar parts of molecules
3. Four question Strategy
4. Using these concepts, the students should know that water has many unusual properties. One of these properties would be the attraction of its molecules to one another. This attraction is equal and has a pull in all directions that it is in contact with another water molecule. The water molecules on the surface are only in contact with other water molecules on one side. The pull or attraction of these molecules is only in a downward or inward direction. This creates a “skin” over the surface as the uppermost layer is pulled inward. This skin is called surface tension. Students should also know the difference between hydrophilic and hydrophobic. Hydrophilic is the end of a molecule that is water loving or polar. It will be attracted to other substances that are polar such as water or ethanol. Hydrophobic is the end of a molecule that is water hating or nonpolar. These ends will be attracted to other nonpolar substances such as soil, grease, fats, and oils. Students should also know how to navigate through the four question strategy. (See below for the four question strategy) This should be reviewed before the lesson begins.

Figure 1: Surface tension in water, attractive forces between molecules of water



**Overview**

**The Activity: Engage:** Take out a soiled t-shirt and ask the students for several ways that we could remove the stain from the shirt and write down all suggestions that are given. Try a few of the suggested methods with the students. Eliminate all suggestions that would damage or change the shirt in any way. Separate all remaining ideas into three categories: Easy (not much physical work needed to be done by the student to remove stain), Medium (some physical work needed to be done by the student to remove stain), and Hard (lots of physical work needed to be done by the student to remove stain). Examples of what the students might say are: wash it, cut the stain out, throw out the shirt and buy another, or rub out the stain with sandpaper.

Now, brainstorm with the students for reasons why one of the suggestions would be the easiest....hopefully they've chosen using detergent. Why is using detergent easier than any of the others? What does it do that the others don't? Write suggestions/answers for the second question on the board. These suggestions should help to guide the students during the first part of the Exploratory activity.

*Explore:* Have the students break up into groups of two or three. They will need to choose a variable to test the detergent for by following the following four question strategy:

1. What materials are readily available for investigating detergent?

Examples could be water, thermometer, detergents, pieces of fabric, jars, condiments, gravy, lipstick, marker, chocolate, spoons....

2. What does detergent do?

Examples could be whiten, brighten, remove stains...

3. How can I change\_\_\_\_\_ (one of the materials)\_\_\_\_\_ to affect how detergent responds?

Examples could be to add more detergent, agitate it more, add warmer water, add colder water.....

4. How does the detergent respond?

Examples could be that it whitens, doesn't do much, brightens, doesn't remove stain, completely removes stain....

Have the students chose one item from the first question of the four question strategy and determine by working through the four question strategy what they are going to investigate about detergent. After navigating through these questions within their individual group, they will also have to list all of the dependent variables and independent variables for their experiment. Then they need to write their hypothesis:

If I (change/decrease/increase/etc) (material from #3) then (response from # 4) (increases/decreases/etc).

Students will be developing their own experiment after coming up with a hypothesis to test. They can look at the materials provided and decide how they will test their hypothesis. Students will be instructed to write out a lab guide or procedure to follow. The procedure must contain exact instructions pertaining to each step that is to be followed. The students will also be instructed to come up with a testing rubric for their hypothesis, (i.e.), what are they testing and how are they determining differences between trials? This could also be a data table in their notebooks.

The student will then be asked to perform the experiment and collect data and results. After collecting data, they will need to draw conclusions as to whether or not their hypothesis is true and also try to find a reason for this.

*Explain:* Students will analyze their data and share their conclusions or results with the class. Students will come up with a reason as to why their results were obtained by examining the ingredients on each of the bottle of detergents that they use. They will also write in their results what percentages of each type of ingredient are in each detergent.

*Extend/Elaborate:* Talk about soaps- they are water-soluble sodium or potassium salts of fatty acids and are made from fats, oils and, also by the treatment of fatty acids chemically with a strong alkali or base. They contain several components:

Surfactants- loosens and removes dirt, emulsifies and suspends dirt in water and prevent re-deposition

Builders – deactivates hard water minerals that react with surfactants and use them up before they can work on the stain

Fillers – makes materials flow, lowers freezing point, keeps everything in solution

Bleaches – bleaches colored stains

Fluorescers – absorbs into fabric, absorbs UV light, and re-emits white light

Enzymes – added to break down biological stains such as grass or blood

Softeners – reduces water retention of clothing and controls static electricity

Corrosion inhibitors – reduces corrosion inside of washer

Antifoaming agents – reduces foam produced

Colorants/ fragrances – improves appearance or makes clothing smell nice

Nonpolar regions of the detergent are lipophilic or hydrophobic. They form a micelle in which the hydrophilic ends of the molecule are facing out and the hydrophobic or lipophilic ends of the molecule are in the center.

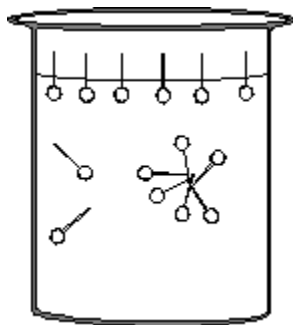
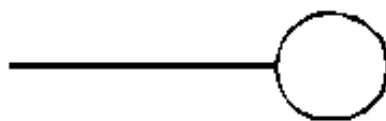


Figure 2: Surfactant molecules in water

Figure 3: Surfactant molecule

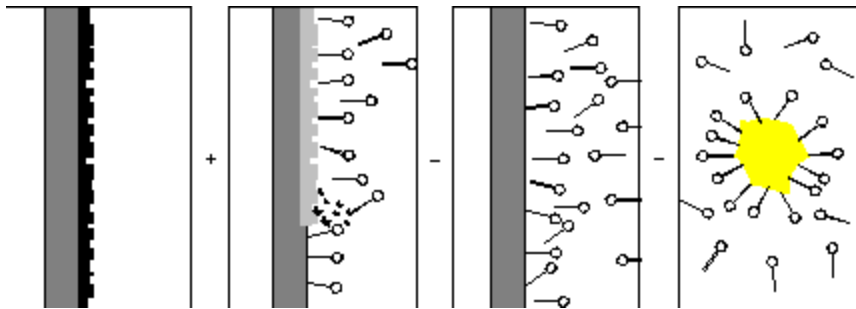


Hydrophobe

Hydrophile

These molecules surround the stain (lipid/fat) and do not allow it to redeposit on the material.

Figure 4 : Cleaning action of a surfactant



What % of each component is contained in each detergent? Does this support your results and your hypothesis?

**Evaluate:**

**Formative:** As students are conducting their research on detergents, the teacher would be asking them questions regarding their chosen lab procedures, controls, and data collection procedures that would probe into what and why they are going to perform them. Student understanding of the assignment will be assessed by watching their interactions with their group members and looking at the conclusions that they draw from the activity. Pre-experiment, students will prepare a hard copy of their lab procedure written as a formal lab report along with a rubric or data table that they are using to assess the data. The students will also keep a lab notebook with all of their observations and data.

**Summative:** After completing their research and participating in a post-experiment discussion, each student will complete a reflective worksheet and turn in their lab reports and notebooks. There will also be a post lab quiz to see if the students followed the discussion at the end.

**Level of Inquiry- Level 3**

**Rubric for Formative assessment of Project**

(Scoring of a 1-5, 1 being barely and five being always)

|  | while forming a hypothesis | While constructing the experiment to be used | While performing the experiment | After collecting data and drawing conclusions |
|--|----------------------------|--|---------------------------------|---|
| Answered oral questions to satisfaction of teacher               |                            |  |                                 |   |
| Interacted with group members and shared ideas                   |                            |  |                                 |   |
| Kept a complete hard copy of all work                            |                            |  |                                 |   |
| Lab notebook is organized and data/ideas are easily identifiable |                            |  |                                 |   |
| Asked questions of the teacher if and when needed                |                            |  |                                 |   |



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|--|--|--|--|
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Fill out table before post discussion to use during the post discussion. Be able to defend your answers.

**Reflective Worksheet:** Answer the following questions on your own. Answer them in complete sentences and back up you statements with data from your experiment if necessary.

1. What was your hypothesis?
2. Did your data support or negate your hypothesis? Why or how?
3. Are there any other ways that you could support your hypothesis through further testing and how?
4. What statement can we make from this experiment about water, stains, and detergents? Relate this statement to the prior knowledge, surface tension, polar and nonpolar, and hydrophilic and hydrophobic.

**Post- discussion quiz:** Describe the process by which detergent works? Why does detergent work better than plain water?

There are several ingredients in detergent that make it useful. Name three ingredients that are key factors in the stain removal process and why they are so important. Start with what you think is the most important ingredient and work your way down.

**Business Partner: Allegheny National Forest Service**

**Curriculum Relationship: Science**

**Grade Level: 6**

Jeremy Criswell  
 Beaty Middle School

**Objectives:**

1. The children will be responsible for creating a shoebox diorama that models different ways that they could improve/create habitat for an animal of their choice.
2. The children will responsible for writing a paper that describes their diorama and explains how the work that it shows would improve/create habitat for the animal they chose.
3. The children will be responsible for assembling a bluebird box in a group and placing it on school grounds to improve bluebird habitat.

**Materials:**

Diorama: shoebox, construction paper, markers, pictures from magazines

Written Portion of Project: composition paper, pencils

Bluebird Boxes: materials and instructions can be purchased from the PA Game Commission, tools for assembly

**Procedures:**

Introduction/Anticipatory Set

1. As an introduction to this lesson I will show the children slides of the project that I worked on with the Allegheny National Forest Services. The slides are pictures of myself and others throwing old Christmas trees with cement blocks tied to them into the Allegheny Reservoir. I will then have the children brainstorm ideas about why Mr. Criswell would be throwing old trees into the Reservoir. Follow this, I will lead the class in a discussion about habitat and in the process explain how this project was an attempt to improve the habitat for fish in the reservoir. I will explain briefly that the people who created the dam feared that trees would get stuck in the dam and clog it up so all of the trees behind the dam were cut down. I will explain that this eliminated any habitat/structure for fish to live in. Finally, I will go back to the

pictures and point out that these trees will help species of fish by giving them places to spawn, feed, and provide them with shelter from other predators and will over time improve the quality of the who lake.

2. Following this discussion, I will pass out any materials that I have for the children to use and explain the requirements for their project. I will explain to them that they will be creating a diorama inside a shoebox that shows ways that they might help a certain species survive. I will show my example so that the children understand what a diorama is and what things they need to include.
3. My example would show Christmas trees, tires, and porcupine cribs on the bottom of the lake. (These are all items that the ANF places on the bottom to provide fish habitat) I would have people cleaning up garbage and have signs that tell not to pollute the water. All these things could be made from drawings or construction paper with a little creativity.)
4. I will explain that they will need to select an animal and spend some time researching the animal so that they know what kind of habitat it needs to survive. Then after they have this information they will be able to use the materials to show how to protect/create/or add to existing habitat so that the animal they selected will flourish.

**Culminating Activity:** A culminating activity that could be done with this lesson would be to have the children assemble bluebird boxes and place them around the schoolyard. They might also research other ways to improve the habitat around the school for bluebirds.

Example: Planting certain trees/bushes.

**Business Partner: Warren General Hospital**

**Curriculum Relationship: Science**

**Grade Level: 9-12**

Dawn Dietsch

Sheffield Middle High School

**Incorporation of nuclear applications in medicine within the curriculum.**

**Objective:** Students will come to understand the uses of radiation in the medical field.

**Materials:** N/A

**Procedure:** N/A

**Activities:** Simple class room discussion and lecture as an introduction.

1. Radio – isotope tracers
  - A. Pet Scans
    1. half-life of tracers
    2. types of tracers
    3. detections of cancer
    4. detections of malfunctioning organs or systems
  - B. Nuclear medicine scans
    1. types of tracers
    2. storage and handling tracers
    3. Types of scans
      - a. heart
      - b. gall bladder
      - c. thyroid
2. X-ray
  - A. Imaging and technology
  - B. Variety of Imaging instruments
  - C. Electromagnetic spectrum
3. Chemotherapy
  - A. Pharmacy
  - B. Prepping of the patient with meds to counter act the side effects.
    1. new medications
      - a. for nausea
      - b. low blood counts
    2. diet and eating habits

3. rest and exercise
  - a. Cause of the side effects.
  - b. Precautions to the family and friends after Chemo treatments. How long does the Chemo stay with us and how is it eliminated from the body?
4. Cancer Treatment with radiation
  - A. Implants
  - B. Exposure

Expansion into individual research using a web quest or self driven internet exploration about specific applications.

**Business Partner: Warren County Court House**  
**Curriculum Relationship: Social Studies-Legal Process**  
**Grade Level: 10-12**

Michel Elmer  
 Warren High School

**Objective:** Develop an elementary understanding of the process following an arrest.

**Materials:** Classroom arranged to facilitate a courtroom style hearing.

**Procedure:** Distribute flow chart (attached) and review possible outcomes as the appropriate vocabulary is covered to allow understanding.

**Activities:** Choose characters to do a simulation of arrest proceedings, preliminary hearing, arraignment, as well as trial should it be bound over. Teacher will act as judge. You will need two police officers, District Magistrate, District attorney for the Commonwealth, Public Defender, Court reporter, Tip staff member, witness or witnesses, and a defendant, with the balance of the class acting as jury members.

Allow students time to research the position they have been assigned. They should be prepared to answer questions on the rights, responsibilities and duties of the position that they are to be in. The teacher should prepare a set of questions before research begins.

Begin by explaining the crime that has been committed. This can be done by group consensus. The students will need time to prepare for each segment of the proceeding.

Over the next class periods, skits should begin with, The arrest, then the arrangement, and finally the trial, with explanations following the slow chart.

**Business Partner: WGH-Clinical Laboratory**  
**Curriculum Relationship: Biology**  
**Grade Level: 9-12**

Catherine Hagadorn  
 Warren Area High School

**Objective:**

1. Students will learn proper techniques for culturing bacteria
2. Students will learn simple methods to identify types of bacteria
3. Students will learn the importance of hand washing

**Materials:** Expired culture plates from the hospital lab; dirty hands; soap and water; Peroxide, glass microscope slides; Q-tips; and dropper

**Procedure:**

1. Students will open one culture plate and smear finger across entire plate
2. Students will then wash their hands thoroughly with soap and water and repeat the first step
3. Plates can be taken back to the hospital lab to be incubated for several days
4. When plates are returned students will take samples of bacteria from plate and smear it on the glass slide
5. A few drops of peroxide will be added to the slides
6. If the peroxide bubbles this is an indication of staphylococcus bacteria
7. If the peroxide does not bubble this is an indication of a streptococcus bacteria
8. Students will compare the results of the bacteria cultures before and after hand washing

**Business Partner: High Country Flowers & Gifts**  
**Curriculum Relationship: Art**  
**Grade Level: 8**

Cindy Hartburg

**Career: Florist – Flower collage**

**Standards Addressed:**

Art & Humanities: 9.1.8 A,B,C,H 9.2.8 H 9.3.8 A

Math: computation, percentage

**Objective:** Student will understand the math & Art skills that are necessary to become a Florist in creating a flower collage with computing the actual cost of materials and cost to the customer.

**Materials:** Seed catalogues and magazines; poster board; wallpaper for vases; glue; cost worksheet; and flower cost sheet

**Teacher Guide:**

**Objectives:** (Specify skills/information that will be learned.)

Students will learn about the career of a Florist and how artistic skills and Math skills are needed in this career.

**Information:** (Give and/or demonstrate necessary information)

1. Discussion and visuals will be used to describe what it is like to be a florist.
2. Brochures with different arrangements will be viewed.
3. Discussion on How the Florist decides on a price for the arrangement

Encourage students who have computers at home to look up flower arrangements and bring into share

**Activity:** (Describe the independent activity to reinforce this lesson)

1. Students will find flowers in magazines and cut them out.
2. They will assign a cost to each of the flowers from a list provided.
3. Students will design an arrangement using the flowers from the magazines and place them onto a piece of poster board that has a vase drawn onto it.
4. They will calculate the cost of the flowers used and the vase.
5. They will figure time as 15% of total and add that onto the cost.

**Summary:** Students will be graded on a rubric for

1. Design of the flower arrangement
2. Correct cost workup for arrangement.

**Student Guide:**

**Objectives:** (Specify skills/information that will be learned.)

1. Artistic Skills: Elements: line, shape, form, & texture.
2. Math Skills: Computation, symmetrical, asymmetrical & percentage.

**Information:** (Give and/or demonstrate necessary information)

1. Discussion: different kinds of flowers, seasonal flowers
2. Brochures: look at different arrangements and how they are used for different occasions.
3. Cost: Pricing of flowers and vase and Time of Florist.
4. Review multiplication
5. Review percentage
6. Intro :different kinds of flowers

**Other Resources:** Google: Flower arrangements

**Business Partner: Crary Art Gallery**  
**Curriculum Relationship: Art**  
**Grade Level: 9-12**

Barbara Kersey  
Warren High School

**Specific Standards addressed**

- 9.1.12 I. Distinguish among a variety of regional arts events and resources and analyze methods of selection and admission.
- 9.4.12 B. Describe and analyze the effects that works in the arts have on groups, individuals and the culture
- C. Compare and contrast the attributes of various audiences' environments as they influence individual aesthetic response

**Objective:** To hold an art exhibit as would be appropriate for a practicing artist.

**Materials:** Suitable space, Selected works of art, computer with publisher, and data base programs,

**Procedure:** Students will be involved with all aspects of the exhibition of artwork.

1. Collecting and judging a body of work centered on a general theme.
2. Securing suitable space.
3. Hanging show.
4. Producing mailing list that include personal friends as well as dignitaries.
5. Selecting one work to be reproduced as teaser for show to be used on advertisements and invitations.
6. Creating programs and generating mailings for invitations and advertisements
7. Proctoring show
8. Providing suitable opening reception
9. Closing show.

**Activities:**

1. Discussion on who will view show and what impact art could have on that audience. Discussion of space for show and impact that has on both the art and the audience.
2. Discussion on how to advertise and promote show.
3. Using adobe photo shop and scanner or digital photo, creates an invitation using representative work.
4. Using publisher and database generate mailing list and other promotional material.
5. Debrief after show.

**Business Partner: Rouse Estates**  
**Curriculum Relationship: Social Studies, Writing, Music, Art**  
**Grade Level: K-4**

Susan Nelson

**Objective:** The goal of this lesson is to introduce the children to a well respected artist, Grandma Moses, and to celebrate the great contributions older people make in our lives. We will use our five senses to reinforce the learning experience.

**Materials:**

1. The Year with Grandma Moses, by W. Nikola-Lisa with selected writing and paintings by Grandma Moses
2. CD with folk music
3. Rocking chair
4. Quilt

5. Fabric squares cut from a fabric containing rural American scenes large enough to wrap a bar of soap.
6. Bars of scented soaps for class
7. Ribbon
8. Construction paper
9. Paper punch
10. Antique items for a visual display
11. Sugar cookies

**Procedure:**

1. Play music while children gather on the quilt to listen to the story. Invite them to ask questions about the quilt and display to give a background of life in the time period of Grandma Moses.
2. Read the book and show the art work.
3. Ask the students to share something special about their grandparents or a special older person in their lives.
4. Share cookies from an old family recipe that has been handed down from generation to generation.

**Activities:**

1. Make gifts to give to some special older person in their lives to demonstrate gratitude.
2. Students make a small construction paper card to attach to gift containing name of recipient on the outside, a short note on the inside, and the name of the student.
3. Pass out one square of fabric and one piece of ribbon to each person.
4. Wrap soap with fabric, gather the top and tie ribbon to around tightly.
5. Punch a hole in the corner of card and attach.

**Game:** Play four corners with a variation. Person sits in the rocking chair as Grandma Moses with their eyes closed and children go to different corners of the room. Grandma Moses calls out corner numbers 1, 2, 3 or 4 and the corner called sits down.

**Business Partner: Ivy Vine Quilt Shop**

**Curriculum Relationship: Social Studies, Music, and Art**

**Grade Level: K-4**

Susan Nelson

**Objective:** Students will be informed about the Underground Railroad and the important roles quilts played in helping slaves reach freedom.

**Materials:**

1. Book, Underground Railroad Sampler, by Eleana Burns and Sue Bouchard
2. 8.5 x 11 pieces of paper, with one of the 14 freedom quilt symbols printed on them.
3. Crayons
4. Scissors
5. Quilt to display (available at Ivy Vine Quilt Shop)
6. CD with African American Spiritual Music

**Procedure:** Ask the following questions:

1. Has anyone heard of the Underground Railroad?
  - a. Allow them time to elaborate a bit and then continue.
  - b. “Well, the Underground Railroad was not really a railroad with trains and tracks. It was a secret network of routes used by slaves escaping to freedom. It was a secret network of routes used by slaves escaping to freedom. The railroad was made up of trails through the countryside and safe houses or find food and clothing there.”
  - c. “Does anyone know of a town in Warren County that was important in the Underground Railroad?” (Allow them to elaborate a bit and then continue.)

- i. The answer is Sugar Grove, so if anyone gets it right, congratulate him or her and move on.
      - d. “Many slaves came to Sugar Grove on their way north to Canada, where slavery was outlawed. Some were hidden at the Miller Mansion by antislavery activists, Cynthia Catlin Miller.”
      - e. “One way the escaping slaves knew which houses would be safe is by Abolitionists quilts. These could be hung in plain sight, on clotheslines, fences, or in windows. The patterns in the quilts told the slaves where to find help, when to make their escape and which direction to go.”
  2. Display borrowed quilt
  3. Read description of each quilt block and its meaning.
  4. Pass out one quilt square for each student to color and cut-out
  5. Play CD
  6. Assemble squares on a bulletin board to create a replication of an Underground Railroad quilt.

**Business Partner: Bollinger Enterprises Inc**

**Curriculum Relationship: Math**

**Grade Level: 9-12**

Sharon Nowacki

Warren High School

**Objective:** Students will be able to count to 48, using various styles addition with 100% accuracy 10 out of 12 times daily.

**Materials:** 48 popsicle sticks, 48 small paper plates, 48 bottle caps (or items similar), a piece of construction paper in the shape of a square.

**Procedure:**

1. Make students count out 48 items.
2. Have the students arrange items into 2, 4, and 12 groups.
  - a. Have students identify how many items are in each group.
  - b. Have students create equal rows for each group.

**Activity:**

1. Have the students fill the squares with all 48 items in two layers (24 items on the first layer and 24 items on the second layer.)

Bollinger Enterprises contracts frequently with Whirley Industries. One of the many tasks that Bollinger’s completes for Whirley Industries is to box mugs for shipments. Most boxes consist of 48 mugs per box. The boxes have 24 mugs per layer.

**Business Partner: Warren Public Library**

**Curriculum Relationship: English and Math**

**Grade Level: Secondary, mostly ninth grade**

Anne M. Peppel

Eisenhower Middle High School

**Lesson Plan Objective:** Students will become familiar with one or more mathematicians who lived in the past. This lesson is important because the students should know that math is ongoing, historical process of discovery, and this will help them realize the sources of the concepts they are learning.

**Standards:** PA Standards for History: 8.1.9 D -- Analyze and interpret historical research: Historical event (time and place); Facts, folklore and fiction; Historical questions; Primary sources; Secondary sources; Conclusions (e.g., History Day projects, mock trials, speeches); Credibility of evidence

Also, standards as applicable to concepts as determined by the students' choice of historical figure.

**Goal:** Students will become more familiar with development of mathematical concepts throughout history.

**Materials:** computer lab, library reference room

**Procedure:**

1. The teacher will introduce the lesson by reminding students of the Pythagorean theorem and its discoverer, Pythagoras. Also students will be reminded of a previous lesson about Pascal's triangle, discovered by Blaise Pascal.
2. The teacher will explain to students how to do a webquest, using the web address <http://www.manteno.k12.il.us/webquest/high/Math/MathematicianBio/mathguy.html>
3. The class will adjourn to the computer lab.
4. Students will work on the webquest long enough to become familiar with how to do it. Several future class periods will be used to work on it.
5. The class will adjourn back to the classroom.
6. Students will select a mathematician for their individual report from a list provided by the teacher. This report will use at least two sources from the public library's reference room. References must be cited.

**Activity:** Students will use library research resources to create a report about contributions of a selected mathematician.

**Business Partner: Warren County Conservation District**

**Curriculum Relationship: Science and Technology**

**Grade Level: Middle Level**

Phil Pompilio

Youngsville Elementary Middle School

**Goal:** Establish and maintain agriculture in the science and technology curriculum in Warren County School District utilizing all community resources.

**Objective:** Promote participation in non-traditional hands-on agriculture related education in schools as well as pre-school and youth groups of all types.

**Materials:** Booklets, newspapers, Web site

- Procedure:**
1. Recruit volunteers to assimilate information.
  2. Identify resources available.
  3. Conduct in-service training for teachers on AG related instruction.
  4. Field trips to farms who participate in the Warren Co. AG program.

**Business Partners: Warren County Historical Society**

**Curriculum Relationship: English**

**Grade Level: 9-11**

Karl Rieger

Warren Area High School,

**Preparation:**

1. Approximately 1 month of reading short fiction and non-fiction selections from ELEMENTS of LITERATURE (text).
2. Instruction / Review of literary genres, writers' styles, figures of speech, literary point of view.
3. Vocabulary list: curator, benefactor, philanthropist, archeology, curator, anthropology.
4. Field Trip Preparation / Approval according to WCSD policy.

**Objectives:** PA Standards 1.4, 1.5, 1.8.

1. After touring Wilder Museum, students will compose original works of fiction or non-fiction based upon an item or items that they observed.
2. Students will conduct additional efficient research on the displays and appropriate time period in Warren County and PA/U.S. history.
3. Students will be aware of careers related to museums and local history.

**Materials:**

1. ELEMENTS OF LITERATURE, Vol. 1 (text)
2. WCSD WRITERS' MANUAL
3. Various Internet sites
4. Warren Public Library Research Room
5. Warren County Historical Society Pamphlets and other publications available at the Historical Society's library at its headquarters.
- 6.

**Procedures/Activities:**

1. Preparation (See above.)
2. Lecture on guidelines for narrative writing assignment:
  - a. Three typed pages. (minimum)
  - b. Bibliography required for non-fictional works.
3. Read my own examples of narratives I've written based on my visit to Wilder Museum.(Modeling.)
4. Field trip to Wilder Museum. Note taking during tour.
5. Preparation of rough drafts in class. (2 days.)
6. Final draft typing in WAHS library or at students' homes if they prefer.
7. Review career possibilities at museums.

**Business Partner: Blair Corporation**

**Curriculum Relationship: English, Foreign Languages, History**

**Grade Level: 9-12**

Sharon L. Schumann

Warren County School District

- 1.1 Reading Independently
- 1.6 Speaking Skills
- 1.8 Research
- 3.6 Information Technology
- 5.4.A Diplomacy
- 7.3.A Human Characteristics of Places and Regions

**Objective:**

The overall goal is to create an awareness of and interest in the need to obtain some basic knowledge of foreign culture etiquette.

1. Students will discuss various careers that may require travel to foreign countries and the relevance of knowing the proper greeting and dining etiquette for particular cultures. (International trade will be the main focus.)
2. Students will research and demonstrate proper greeting and dining etiquette for a chosen foreign country or culture.
3. Students will list, describe, and create some type of display of a foreign menu entrée.

**Materials:**

1. Several objects displaying manufacture labels such as “made in Taiwan” etc. (You may use labels from students’ clothes, watches, batteries, calculators, or other everyday objects brought into class.)
2. Access to the library and computers with internet access
3. Catalogs such as Blair Home Products, Carol Wright, and Harriet Carter
4. Poster board, markers, scissors, glue
5. Blackboard

**Procedure:**

1. Brainstorm with students to generate a list of career fields that may place a person in contact with foreign cultures. ( Health fields, Peace Corps, military, airlines, shipping, United States government, and international trade of all kinds)
2. Explore the labels of everyday objects within the room to discover their place of manufacture. Use items and catalogs as stated in the materials list above.
3. Discuss the need for proper greeting and dining etiquette when communicating, negotiating, and monitoring business operations (production and shipment) with foreign manufacturers.
4. Have students write on the board possible countries or cultures to explore i.e. (Arab nations, Turkey, China, Canada, South Korea, Taiwan, India, Pakistan, Malaysia, Panama, Cambodia, Brazil, Guatemala, Zambia, Denmark, Sweden, Belgium, Japan, Mexico, France, Russia, etc.)

**Activities;**

1. In-groups of 2-3, students will choose a culture and research its greeting and dining etiquette proper practices. (Discuss possible sources of information and suggest typing in the phrase “foreign greeting etiquette” into the search box of Internet search engines like Google, Alta Vista, or Dogpile.)
2. Students will then demonstrate to the class these greetings in role-play or a presentation of pictures or photographs.
3. Students will create a poster to display a typical dinner entrée or menu and list dining etiquette rules for their chosen culture. (Role-play may be appropriate for this too.)

**Business Partner: US Forest Service Science Lab**

**Curriculum Relationship: Science**

**Grade Level: 4 or 5**

Kathryn Spencer

**Birds and their Habitats**

**Pa state standards:**

- 4.7A - Identify differences in living things
- 4.8C - Explain how human activities may change the environment.

**Objectives:**

1. The students will be able to list the differences in bird species between two areas - one with human development and one without.
2. The students will be able to describe why human interaction in a habitat affects the animals living there.

**Materials:**

Tape or CD of birdsongs; bird booklets(pictures and descriptions); notebook paper; pencils; camera; large chart for classroom; video of undeveloped area (if there is not one in close proximity to the school)

**Procedure:** Motivate the students toward learning by asking them if they have heard any birds singing that day. Where? At home? At school? Do they know what kinds of birds they heard?

Using the birdsong CD play a robin and ask if the children know what kind of bird this is. Have them look it up in their booklets and read the description. Play a few more and have the students find the corresponding birds in their booklets so that they can become familiarized with the booklets. Just for fun try to imitate some of the birdsongs. Allow the students to pair up and quiz each other by imitating the birdsongs and trying to guess which bird it is. Repeat this process on a daily basis, adding new birds each day, until the students seem adequately familiar with the birds. This preparatory period will last about a week.

While studying the physical characteristics of the birds, the students will also be learning about the habitats of the different birds and predicting which birds they will be most likely to see around the school, and which they will be most likely to see in an undeveloped habitat. Make a list of the predictions to compare with the actual study results.

In order to gather data the students will go on nature walks and take notes in two different areas. The first area is right around the school. The second area is an undeveloped wooded area. If there isn't an area like this close enough to the school to walk to, then find such a place and videotape it and show the video to the students. In both areas the students will all have paper and pencil so that they can record their observations about what kinds of birds they see and hear. The camera will be used to take pictures of birds that are spotted. After each nature walk the gathered data will be listed on a chart in the classroom so that the students can easily compare and contrast their findings.

When the chart is completed, the students will be asked questions such as : Where your predictions correct? What kinds of birds did you find? What are differences between birds in the two areas? Where there more kinds of birds in one of the areas compared to the other? How do you think the school building being here affected the birds? Based on the data collected the students will answer these questions in an informal, group discussion setting.

As a culminating activity, each student will pick one of the birds off of the chart and write a story. By using their knowledge of the birds and the habitats that they live in, the students will write a story from the bird's perspective about a day in its life. There will be pictures to go along with each story that were taken while on the nature walks.

**Activities:**

Nature walks; making chart; story

**Business Partner: Chief Cornplanter Council, Boy Scouts of America**

**Curriculum Relationship: Trigonometry (orienteering)**

**Grade Level: 9-12**

Dustin Steiger

Warren High School

**Objective:** The students will be able to solve problems involving triangulation and bearing in a context of orienteering.

**Materials:** Compass, GPS (if available), laser range finder, calculator, paper and pencil.

**Procedure:** Students will complete a problem in the classroom that involves orienteering and trigonometry (Law of Sines and Law of Cosines). There will then be a follow-up activity whereby the students will act out the very problem that they solved in the classroom. If the results of the "real life" activity do not match the classroom calculations, the students will brainstorm possible reasons for the disparity.

The problem is as follows: Susan walks 36 yards on a bearing of 70 degrees. She then turns to a bearing of 177 degrees and walks another 22 yards. How far is Susan from her starting point? Exactly what direction would Susan have to walk to return to her starting point?

**Activity:** The student will act out the above problem in an open area around the school. Care should be taken to obtain precise bearings and measurements. Student will be briefed ahead of time to make sure they can operate the instruments. The students will work cooperatively with some marking spots on the ground while others measure and others record.