

Lesson plans are arranged in alphabetical order by participant.

|                 |   |
|-----------------|---|
| Matthew Baker   | Environmental Law & Regulations           |
| Jeffrey Carlson | Environment & Ecology                     |
| Jeffrey Carlson | Underwater Discovery                      |
| Michel Elmer    | Psychology                                |
| Michel Elmer    | Drug Addiction                            |
| Elizabeth Howe  | Chemistry                                 |
| Sally Hyde      | Comprehension of Color                    |
| Sarah Korchak   | Maintenance of string instrument          |
| Lindy Lydic     | Preparation of a business document        |
| Erica Madigan   | Library and literacy skills               |
| Bonnie Mayes    | Geometry                                  |
| Robert McKelvy  | Woodworking                               |
| Kay McKinney    | CPR and First Aid Training                |
| Robert Musi     | Drilling for oil and Natural Gas          |
| Robert Musi     | Uses and management of Kinzua Dam         |
| Robert Musi     | Abiotic factors in aquatic ecosystems     |
| Susan Nelson    | Elementary – Science, Art, English        |
| Susan Nelson    | Elementary – Social Studies, Reading, Art |
| Phil Pompilio   | Guidance                                  |
| Karl Reiger     | Library and Researching Skills            |
| Kathryn Spencer | Birds and their Habitats                  |
| Cynthia Walker  | Multicultural Connections                 |
| Lisa Yoder      | Music                                     |

**Business Partner: Seven Seas Pools & Spas**  
**Curriculum Relationship: Environmental Science**  
**Grade Level: 7**

Matthew Baker  
 Beaty Warren Middle School

**Standard 4.9: Environmental Law and Regulations**

**Objectives:**

1. Students will learn Warren Borough Zoning laws with regard to building in-ground swimming pools.
2. Describe how the development of civilization relates to the environment.
3. How to clean water for human use.

**Procedures:** (If anyone is interested, I have additional information on this lab, such as having the students design and build an entire sub-divide, not just a pool.) \*For this project the student will design an in-ground swimming pool.

**To student:** A developer has decided to buy some of the older houses in Warren and renovate them through improvements and the addition of in-ground swimming pool. You are the Environmental Engineer in charge of determining the exact placement of the pool, any requirements from the city concerning zoning laws, any you will explain to the developer how you plan to keep algae from covering the pool whenever it is built.

**To teacher:**

1. The zoning laws may be set forth, or the students can research the laws.
2. The easiest way to implement and assess this lesson is to draw up a simple and straight forward Rubric.
3. I base my Rubric on these requirements;
  - a. Map with lot and pool
  - b. Zoning laws
  - c. Requirements for Algaecide

**Business Partner: USF Forest Service**

**Curriculum Relationship: Science/Environmental, Art, Language Arts**

**Grade Level: 2**

Jeff Carlson

Russell Elementary School

**Targeted Standards:**

**Environment and Ecology**

- 3.3.4.B.-Know that living things are made up of parts that have specific functions.
- 4.3.4.C.-Understand that the elements of natural systems are interdependent.
- 4.4.4.C. Know that food and fiber originate from plants and animals.
- 4.6.4.A. Understand that living things are dependent on nonliving things in the environment for survival.
- 4.7 .4.A. Identify differences in living things.

**Art**

- 9.1.3 .A. Know and use the elements and principles of each art form to create works in the arts and humanities.

**Language Arts**

- 1.4.3. Types of Writing
- 1.5.3. Quality of Writing
- 1.6.3. Speaking and Listening

**Rationale:** The students will be able to increase their awareness of trees.

**Vocabulary:** roots, trunk, branches, stems, leaves, needles, perennial, bark, habitat, fruit, nuts/seeds, deciduous, coniferous

**Resources/ Multimedia:**

- "The Giving Tree"- Shel Silverstein
- "Take a Tree Walk"- Jane Kirkland
- "The Man Who Talked to a Tree"- by Byrd Baylor
- "Oak and Company"- by Richard Mabey,
- "Tree Flowers"- by Millicent E. Selsam

**Objectives/Adaptations:** Upon completion of the following activities, the students will be able to:

1. -identify the parts of a tree and note differences between different tree types.
2. -discuss their own experiences and observations of trees.
3. -using vocabulary words create a detailed illustration of a tree.
4. -write a narrative piece about the life cycle of a tree beginning from a seed/nut.
5. -dramatize their written story about the life cycle of a tree.

**Pre-Activities:**

Read "The Giving Tree" by Shel Silverstein

Ask each student to draw a tree from memory without using a model.

Use pictures to initiate a whole group discussion about their experiences with trees.

List the student responses in the "Know" section of a K- w- L chart.

In the "Want to Know" section, ask students to list things that they would like to know about trees.

**Activity:** Take students to forest to observe trees and let them examine several trees. Provide students with a 'journal" to record their observations by illustrating, labeling or writing. If a digital camera is available, take photos of different tree parts.

1. You might suggest to the students, for example:
2. Look to see what colors you can find.
3. See how many different shapes of leaves you can find.
4. Listen to hear what sound the leaves make.
5. Sniff to find out what the trees smell like.
6. Look to see if the trees seem to have fruit or flowers. If a tree has buds, describe what they look like.
7. Look to see if any animals (insects, birds, mammals) or plants (lichen, moss) live on the tree.
8. Touch the tree bark and leaves to see how they feel. Make some rubbings.
9. Notice to see if the tree branches point up, down or straight out.

**Post Activities:**

1. After the students have thoroughly explored the trees, using several of their senses, return to the classroom and ask each student to make a second sketch.
2. Make a gallery out of the pairs of drawings comparing the differences within each pair .
3. Look for similarities and the patterns you and the students can find repeated in each of the drawings.
4. Discuss with the students any differences in their perceptions of trees since the beginning of this activity.
5. Review/discuss the life cycle and stages of tree growth and development.
6. Write a story about the life cycle of a tree (first person point of view) from seed until the tree's demise.
7. Ask groups of students to dramatize the story of their tree.

**Extensions:**

1. Children might showcase their work with an exhibit of their drawings.
2. Invite a landscaper, nursery owner, forestry education coordinator, etc. to share
3. Information about their career.
4. Have children use a field guide or reference book to learn more about their particular kind of tree.

**Business Partner: Chapman State Park**

**Curriculum Relationship:**

**Grade Level: 2**

Jeff Carlson

Russell Elementary School

Group Size: 5- 7 children per group

PA Standard(s): Environment and Ecology- 4.1.4. C, 4.7.4.A,B  
Science and Technology- 3.3.4.A

**Resources/Multimedia:** digital camera, nets/strainers, plastic jars/tubs, magnifying glasses, ID posters and/or field guide books, Styrofoam egg containers, tweezers, chart paper and markers.

**Objectives:** Upon completion of the following activities the students will be able to:

1. Identify the similarities and differences of living things.
2. Describe basic needs of plants and animals.
3. Explain that some organisms have similar external characteristics, and that similarities and differences are related to environmental habitats.

**Pre-activities:**

1. "Create a "Water Viewer" using a milk carton, saran wrap and a rubber band.  
Water Viewer can be decorated with designs appropriate to water environment.
2. Place pan or bucket of water outside 1 week prior to nature experience to experience organisms that are attracted to stagnate water .
3. Discuss living and nonliving things and the differences between fish, insects, amphibians, plants, etc.

**Procedures:**

1. Visit a pond and use view finders to locate living and non living things in the pond. Use field guide books to identify living organisms and record on chart under the proper heading: fish, amphibians, insects and plants. Also record non-living items in a category of their own.
2. Collect water samples in plastic containers and label to take back to the classroom for observation.
3. Visit a stream and use view finders to locate living and non living things in the pond. Use field guide books to identify living organisms and record on chart under the proper heading: fish, amphibians, insects and plants. Also record non-living items in a category of their own.
4. Collect water samples in plastic containers and label to take back to the classroom for observation.

**Correctives:**

1. Make a collage with photos from magazines and label with appropriate headings: fish, insects, amphibians, and fish.
2. Play "Aquatic Bingo" with terms related to a stream or pond.
3. Students can sketch on sight their aquatic finds.

**Extensions:**

1. Bring a few gallon jugs of stream and pond water back to the classroom. Set up a classroom experiment with pond and stream water in separate glass gallon jars. The jars should include the following: biodegradable shampoo (Suave), bleach, dishwashing soap, and a control. Observe changes in algae growth over a period of 2 weeks. Cover the jar with a loosely placed lid and put on window sill in the sunlight.
2. Ask students to bring in photos, clip art, or magazine clippings of organisms in each category and create a classroom display.

**References:**

1. Fink Martin, Patricia A. (1999). Rivers and Stream§., Franklin Watts, New York.
2. Peterson Field Guides

**Business Partner: Warren General Hospital-3C Psych Ward****Curriculum Relationship: AP Psychology****Grade Level: 10-12**

Michel V. Elmer

Warren High School

**Objective:** Explain the major classification system, DSM IV, used by the mental health profession for evaluation of psychological disorders on Axis I to V.

**Materials:** Multiaxial Evaluation Report form, Global Assessment of Functioning sheet, Skits or appropriate movie (“What About Bob?” for example) to use for evaluation.

**Procedure:** Review each Axis, so students have a very good understanding of criteria to be used for evaluation. Have students perform skits or show a movie and have students use the Evaluation form to record findings. A lengthy discussion should follow.

**Activities:** Choose either a movie for them to evaluate a character or have student do a skit. Skits can be groups of 2-5 students, each portraying a different psychological disorder. Another option is to have a group therapy session with everyone participating under the guidance of a group counselor, which can be the teacher to start and move on to students as they become familiar with the process. The audience (rest of class) records the symptoms and evaluates the class of the disorder according the DSM axis I-V

**Business Partner: Warren General-Warren Psychiatric Unite****Curriculum Relationship: AP Psychology****Grade Level: 10-12**

Michel V. Elmer

Warren High School

**Concept:** Drug addiction is one of the most pressing health problems facing the United States today. The effects of drug addiction are studied in many disciplines including; psychology, sociology, criminology, biology, political science, and economics. Considering the wide ranging implications that underlie drug addiction, it is important that students begin to grasp the dynamic processes that underlie drug addiction.

**Objective:** Active learning exercise to understand the psychological and social processes of drug addiction, then record self findings in a two-page paper.

**Materials:** Ice, Popsicles, wrist bands, plastic Ziploc bags, larger plastic bags, two coolers of ice.

**Procedure:** The experience will begin during chapter five in which we will cover various psychoactive drug types and methods of taking them. The project has two components to simulate an actual addiction, the **wristband** to simulate needle tracks, and the **ice** to simulate the drug itself. Explain carefully that no substitutions may be made (frozen water only)

**Activity:** Students will log their experiences of hiding the ice addiction from friends, family, and teachers for use in describing this experience from the psychological and social perspective. They will undoubtedly be questioned about their needle tracks (wristbands) and will *not* be able to explain the truth. The log will then be a reference to develop a two-page summary of this experience. The student will record any change in behavior on their part, any stress or strain from necessary secrecy, any emotional experiences or any developing reliance on other addicts for supply that may occur to hide this addiction.

The log will begin following the first designer drug addiction (popsicles) exposure in class. The students will then be given small Ziploc bags of ice to keep with them at all times as well as the wrist bands. They will also be given a plastic grocery bag to shield

their *illegal* drug from prying curious eyes. *Note:* This has the side benefit of creating noise which invites curious looks and inquiries, which requires cover up, as they may not reveal their *illegal* addiction for fear of being caught. The students will need to visit their suppliers (the nurse/classroom) to maintain their ice supply as it is used up (melts). No beverages may be consumed without containing ice. This addition of *illegal* ice to the beverage must not be seen by non addicts.

The experience will last 48 hours, a Friday and Saturday, ending Sunday morning. This gives the student a school experience, usually a Friday night out with friends experience, and a day with family to test out various environment and the difficulties with the addiction.

**Follow up:** Collection of reports and a discussion.

The discussion can be done in the format of a self-help recovery group having the student introduce themselves as “Hi, I’m \_\_\_\_\_ and I’m an ice cube addict”. Students usually love to fall into this role very dramatically and this makes it fun. During this time, students share their experiences with each other as well as insights gained from the exercise. The dynamics involved in maintaining an addiction usually come as quite a surprise.

**Business Partner: Betts Industries**  
**Curriculum Relationship: Chemistry**  
**Grade Level: 10-12**

Elizabeth Howe  
 Warren High School

**Objective:** Show the importance of accuracy and precision in measurement.

**Materials:** Balance, graduated cylinder, metric rulers, wooden blocks

**Procedure:**

1. Define accuracy and precision.
2. Explain differences between accuracy and precision using a target as an example.
3. Discuss why a measurement can be precise but not accurate. Ask students for ideas.
4. Explain uncertainty in measurements and how to determine. Relate to significant figures.
5. Relate to blueprint measurements used at Betts Ind.
6. Ask students for possible consequences of a measurement being too large? Too Small?
7. Laboratory Activity:
  - a. Using the balance, measure the mass of a wooden block
  - b. Using a metric ruler, measure the length, height, and width of the wooden block.
  - c. Read the volume of a premeasured amount of water using three different sized graduated cylinders. (Coloring the water will make it easier to see.)

**Business Partner: Ivy Vine Quilt Shop**  
**Curriculum Relationships: Math**  
**Grade Level: K-4**

Sally Hyde

**Objective:** Using Fox and Geese pattern, arrange three different color combinations, each appears different from the other two.

**Materials:**

1.  $\Delta$  - medium color – 2
2.  $\Delta$  - medium color – 6
3.  $\Delta$  - dark color – 10
4.  $\Delta$  - dark color – 4
5. large white paper
6. scissors
7. paste
8. variety of colored paper

**Procedure:**

1. Arrange shapes in different combinations.
2. Notice how color changes optical illusion of pattern.
3. Everyone should do the same pattern.

**Activity:** Show an actual quilt with Fox & Geese pattern.

**Business Partner: Ivy Vine Quilt Shop**

**Curriculum Relationship: Math**

**Grade Level: K-4**

Sally Hyde

**Objective:** Develop an understanding of mixing primary colors to create a new combination of light to dark shades.

**Materials:** Primary paints, small paint dishes, paint brushes, and white paper

**Procedure:**

1. Combine two primary colors to create light and dark combinations of a new color. Emphasize using small amounts of the two colors to create different shades.
2. Paint on white paper from light to dark.

**Activity:** Match scraps of materials to newly created colors.

**Business Partner: Ivy Vine Quilt Shop**

**Curriculum Relationship: Math**

**Grade Level: K-4**

Sally Hyde

**Objective:** Create a sequential pattern of colored shapes.

**Materials:** Colored paper, shapes of square, circle, triangle to trace; scissors; paste or glue; and white paper

**Procedure:**

1. Present a sample of sequential order.
2. Cut colored paper into a variety of shapes (□, Δ, O, octagon).
3. Place shapes in a sequential order, creating a new pattern.

**Activity:**

1. Show simple quilt patterns and repetition of shapes.

**Business Partner: Ivy Vine Quilt Shop**

**Curriculum Relationship: Math**

**Grade Level: K-4**

Sally Hyde

**Objective:** Create a simple pattern with 3" squares. □ - dark □ - light □ - dark

**Materials:** Variety of colored paper pieces, 1 large white paper, scissors, and paste or glue

**Procedure:**

1. Present a sample of a □ repetition.
2. Cut a 3" square of light and dark colors
3. Create a pattern of squares
4. Draw a design on squares to create the effect of different materials
5. Use few or many colors

**Activity:** Show a nine patch quilt pattern.

**Business Partner: Germaine & Pappalardo Music Shoppe, Jamestown NY****Curriculum Relationship: Choral/Instrumental/General Music****Grade Level: 5-8**

Sarah Korchak

Beaty Warren Middle School

**Objective:**

Students will observe and then demonstrate proper daily care and maintenance of their string instruments.

**Materials:**

String instrument, case and accessories; polish and polish cloth; soft dry cloth; pipe cleaners; chin rest tool. Following the lesson, students should be provided with a copy of the procedure list for future reference.

**Procedure:** \*\*\*In all steps of lesson, students will first observe teacher as she completes the step. Teacher will explain the details of this process at each step. Teacher will then observe and assist, if necessary, as students complete the step with their own instruments. Students will be given ample opportunities to not only demonstrate, but also communicate their understanding of each step of this process.

1. Gather polish and cloths on flat workspace such as a table or desk. Students should have two cloths -- one for use with polish and one to remain dry. Both cloths should be soft and free from dirt particles that could scratch the instruments.
2. Remove instrument from case, showing care not to bump pegs and bridge.
3. Remove bow from case, showing care not to catch and pull hairs.
4. Inspect instrument:
  - a. Make sure strings are not beginning to fray.
  - b. Check position and condition of pegs, sound post, endpin and bridge.
  - c. Check body of instrument for cleanliness and condition.
5. Inspect bow:
  - a. Make sure frog moves smoothly when tightened/loosened.
  - b. Make sure hairs can be tightened adequately.
  - c. Check for proper bowing of stick.
  - d. Check entire bow for cleanliness and condition.
6. Make decision regarding next course of action. If inspection of instrument or bow revealed that repairs might be required, student should inform teacher immediately and follow any instructions provided. If inspection revealed that instrument and bow are in good playing condition, proceed with routine cleaning.
7. Bow cleaning - to be completed today, and then occasionally as necessary:
  - a. Dampen polish cloth with a very small amount of polish and clean dirt and rosin from stick and frog only. Buff wood surfaces with dry cloth until shiny. (Bow hair cleaning is a process in itself, and can be covered in another lesson.)
8. Instrument cleaning - to be completed today, and then occasionally as necessary :
  - a. Using pipe cleaner, gently remove dust and debris from peg box and under fingerboard, tailpiece and chin rest.
  - b. If area under chin rest is extremely dirty, remove chin rest with tool, complete cleaning, and replace.
  - c. Dampen polish cloth with a small amount of polish and clean scroll and ribs, back and lastly, the front of the instrument. Make sure pressure is not placed on bridge, fingerboard or pegs when cleaning.
  - d. Wipe strings with dry cloth to remove rosin and finger oils.
  - e. Gently slide dry cloth between strings and fingerboard to remove rosin residue and dirt from fingerboard surface.
  - a. Buff wood surfaces with dry cloth until shiny.
9. Tighten bow hairs as instructed and apply rosin.
10. Play instrument briefly to simulate practice session.
11. Bow maintenance - to be completed following every use:
  - a. Buff wood surfaces with dry cloth.
  - b. Loosen hairs before returning bow to case.
12. Instrument maintenance - to be completed following every use:
  - a. Using a dry cloth, remove rosin residue from strings and fingerboard.
  - b. Buff wood surfaces with dry cloth to remove remaining rosin and fingerprints.
13. Carefully return instrument and bow to case.
14. Store cleaning materials as appropriate for style of case.

**Business Partner: Blair Corporation****Curriculum Relationship: English****Grade Level: 7-8**

Lindy Lydic

Beaty Middle school

**Rationale:** A common theme observed during my visit to Blair corporation was the need for good written and oral communication skills at every level of the business. whether an executive in the corporate office, or a entry level worker, good communication skills are a must.

**Objective:** The student will be able to understand the importance of clear, concise, grammatically correct writing in any level of employment. The student will be able to produce a business document free of spelling and grammar errors using the spelling and grammar checking tools of their word processing program.

**Materials:** Computer with word processing program and spelling/grammar checking tools.

**Procedure:**

1. Discuss with students the different types of written communication that are used in businesses and other places of employment. Some topics may include business letters (full and modified block), memos, or email.
2. Next, discuss the importance of writing clear messages that are free of spelling and grammar errors. Be sure to include topics such as correct spelling of words, alternate spellings of certain words (their, there, and they're, for example), sentence and paragraph structure, etc.
4. Demonstrate to students how to create one of the types of communication discussed earlier. (A full block business letter will be the simplest to create on a word processor.)
5. Once students know the components of the type of communication chosen, ask them to each write a letter to a business of their choosing and type it in the word processing program on their computer. At this point, students should be most concerned with writing their letters and developing what it is they want to say.
6. When all letters are typed in the word processing program, students should then begin the process of proofreading their documents. To do this, students should be shown how to use the spelling and grammar checking tools on their word page 1 Blair lesson plan processors. This tool will search their document for incorrect spelling and grammar and suggest alternate spellings or grammatically correct phrases. Students will use this tool to correct any errors they may have made. (Note to teachers: Emphasize to students that the computer does not always make the correct suggestions. Students have a tendency to use the spelling and grammar check tool and accept all the changes that the computer suggests, thereby creating a document that makes little or no sense whatsoever!)
7. When all letters have been checked for spelling and grammar accuracy, print copy of each students' letter and give them the opportunity to mail them if they wish.
8. Teachers who wish to grade such an assignment could grade based on the district writing rubrics, paying close attention to the number of spelling and grammar errors.

**Business Partner: Warren Public Library****Curriculum Relationship: Community Based Instruction Support Early Literacy Skills****Grade Level: K-4**

Erica Madigan

Russell Elementary School

**Objective:** To provide an opportunity for community based instruction in using a public library and to support early literacy skills in primary Learning Support or Life Skills students.

**Materials:** Several Age/Ability Level Books, transportation, and chaperones

**Procedure:** Introduce and expose the students to the appropriate social language skills, rules, and expectations of using a library, vocabulary needed to understand library signs and procedures, ABC order, and the importance of caring for borrowed books. Practice these skills in the classroom and with several trips to the school library. Talk about the similarities and differences between public and school libraries.

Before you schedule your trip to the library, contact the Children's Department at the Warren Public Library to set up a special "story-time", complete with an age/ability appropriate story and follow-up reinforcement activities. Try to choose a story that is seasonal or relevant to the student's curriculum. Then make the necessary contacts and arrangements necessary for transporting the students and chaperones to the library.

While at the library, show the students around the various sections of the library, paying close attention to community signs. Practice using the social language skills, learned earlier, and allow the students to observe the other patrons' activities and behavior while using the library. Encourage the students to browse through the books and choose one to check out. This will automatically establish a follow-up experience at the library, as they will have to return the book. Don't forget to stress the importance of caring for borrowed books and returning them on time!

**Business Partner: Ivy Vine Quilt Shop**

**Curriculum Relationship: Geometry**

**Grade Level: 6**

Bonnie F. Mayes

Youngsville Elementary Middle School

**Objective:** TSWBAT explore using graph paper to make a pattern for a quilt block.  
TSWBAT construct an actual quilt block using their pattern.  
TSWBAT create a classroom quilt by combining their quilt blocks.

**Materials:** graph paper, pencil, glue, scissors, wall paper extras, construction paper

**Procedures:** \*Note: Drawing straight lines, measuring accurately, cutting straight lines, and gluing perfectly are very important to the success of this project.

1. Combine students in groups of 2 or 3. (You will need 8 groups if you want your class quilt to be 4'x4', or 16 blocks.
2. Give each group a piece of graph paper, cut exactly 7'x7', square.
3. Each group is to draw lines to make their quilt block unique. (Integrate concepts already covered such as measuring, spatial reasoning, shapes, motion, symmetry, etc.)
4. Cut along the lines to make individual pieces that form the quilt block.
5. Using different colors and patterns of wallpaper extras, cut to make exact pieces.
6. Then glue wallpaper pieces onto square construction paper to piece the quilt block back together. (The square construction paper can be pre-cut by the teacher measuring 7'x7'.)
7. Each group needs to complete a second block. (The class may decide ahead of time whether everyone will make an exact duplicate block, or another unique one.)
8. All blocks are combined in a large quilt to be displayed in a special place.

**Activities:**

1. View PBS video, [Hidden in Plain View](#), to see how specific designs were used to give clues to the Underground Railroad stops.
2. The students could model their patterns after actual patterns used by the slaves.
3. Websites: <http://www.womenfolk.com/historyofquilts/lafam.htm>, <http://www.quiltethnic.com/lessonplans.htm>

**Business Partner: American Red Cross**

**Curriculum Relationship: Health and Phys Ed.**

**Grade Level: 9-12**

Kay McKinney

Youngsville High School

**Objective:** The student will create a folder/notebook, and keep the contents in order, of notes they have taken, homework assignments, worksheets, tests, and quizzes. Work can be done by hand by use of the computer.

**Materials:** Notebooks or folders provided by the student. (Teacher will have some available for purchase, at cost, by students.) A three-hole paper punch would be nice to have available for student use.

**Procedure:** This will be an on-going project throughout the semester. It will be graded on neatness and content at mid-term and at each nine week marking period.

**Activities:** Students will be given some class time to compile these notebooks. However, some personal time will be required by the student to produce a high quality product.

**Business Partner: National Hardwood Lumber Association****Curriculum: Woodworking****Grade Level: 9-12**

Robert McKelvy  
Warren High School

**Objective:** Make students aware of these fundamentals and the real possibility of developing within themselves, marketable skills that the lumbering industry needs badly.

**Materials:** Scaling stick, and National Hardwood video - 60 min. in length (Discusses and demonstrates the fundamentals of lumber scaling and the sorting by quality).

**Procedure:**

1. Students will learn how to measure lumber by the board feet.
2. Begin with learning the formula  $\frac{L \times W \times T}{144}$
3. After viewing the video and practicing examples on various sizes of wood found in the shop for 2 periods.
4. Students will demonstrate skills by taking and passing a 50 point quiz.

**Business Partner: Allegheny National Forest****Curriculum Relationship: Environmental Science****Grade Level: 9**

Robert A. Musi  
Eisenhower Middle High School  
Lesson Plan #1:

**Lesson Topic:** Drilling for Oil and Natural Gas on the Allegheny National Forest

**Corresponding section in textbook:** Chapter 6: Section 2

**Performance Objectives: (Standards Addressed)**

1. ASWBAT analyze the factors affecting the availability of natural resources. (4.2.10.B)
2. ASWBAT analyze how man-made systems have impacted the management of natural resources. (4.2.10.C)
3. ASWBAT evaluate the factors affecting the availability of natural resources. (4.2.12.B)
4. ASWBAT evaluate how man-made systems have impacted the management of natural resources. (4.2.12.C)
5. ASWBAT explain why environmental laws are developed and enacted (4.9.10.A)
6. ASWBAT analyze laws and regulations as they relate to environmental issues (4.9.12.A)

**Lesson Content:****1. Land ownership and Mineral Rights**

- a. Most “land owners” only own the surface of the land. The oil, natural gas, coal, and other mineral resources under the surface of the land belong to whoever owns the **mineral rights**. The Allegheny National Forest owns less than 1% of the mineral rights. In Pennsylvania, the landowner cannot prevent the holder of the mineral rights from getting top the minerals beneath the land.

**2. Regulation of oil and gas drilling**

- a. The extraction of oil, natural gas, coal and other resources from the environment are regulated by various state agencies in Pennsylvania. Although drilling for oil and natural gas occurs on land that is owned by the Federal Government (ANF), the drilling activities are regulated by various Pennsylvania State agencies. The environmental conditions at a particular drilling site determine which state agencies get involved.
- b. If the drilling impacts habitat for a species on the Federal Endangered Species list then the federal government will play a role in the regulation of that drilling site.

**Procedures:** The content will be presented in a lecture/discussion format that is accompanied by slides of drilling sites on the ANF.

**Technology Activity:** Students will be given scenarios of conditions at several drilling sites. The students will go to the official web site for the State of Pennsylvania and determine which state agencies may have a role in regulating each site.

**Assessment:**

1. Technology activity
2. Quiz/Test questions

**Business Partner: Allegheny National Forest**  
**Curriculum Relationship: Environmental Science**  
**Grade Level: 9**

Robert A. Musi  
 Eisenhower Middle High School

**Lesson plans:** 2A, B, C, D, E

**Lesson Topics:** The uses and management of the Kinzua Dam and the Allegheny Reservoir

**Background:** The U.S. Army Corp of Engineers constructed Kinzua dam in 1965 for the purpose of flood control on the Allegheny and Ohio Rivers. Kinzua Dam and the Allegheny Reservoir can be used as a case study for many different topics that are covered in the in the Environmental Science class. These topics are too numerous and varied to be included in the same lesson or even the same unit plan and cover many different standards. Below is an outline of 6 lesson plans and the topics to be covered, the standards that each lesson addresses.

**Lesson Topics:**

1. Topics that can be addressed by using Kinzua Dam and the Allegheny Reservoir as a case study
  - a. Major watersheds of Pennsylvania
    1. The Ohio River watershed
  - b. Navigation and Flood control
    1. The primary purpose of the Allegheny Reservoir is to control flooding and regulate the water level on the Ohio River for navigation.
  - c. Hydro-electric Power
    1. Kinzua Power Station is a pump-storage hydroelectric plant that is on the downstream side of Kinzua Dam. The Allegheny Reservoir is the source of water for this power station.
  - d. Sources of potable water
    1. The Allegheny and Ohio Rivers are a source of drinking water for many of the towns and cities along their banks.
  - e. Multi-use management
    1. There are many Federal and State agencies the play a role in the management of Kinzua Dam, the Allegheny Reservoir and the land that surrounds them
      - a. The U.S. Army Corp of Engineers
        1. Built the dam and regulates water levels
        2. Contributes to the management of the fisheries resources in the Allegheny reservoir
      - b. The U.S.D.A. Forest Service
        1. Owns the land surrounding the Allegheny Reservoir
          - a. Regulates camping on the shores of the reservoir
          - b. Contributes to the management of the fisheries resources in the Allegheny reservoir
        - c. Pennsylvania Fish and Boat Commission
          1. Enforces fishing and boating laws on the reservoir
          2. Contributes to the management of the fisheries resources in the Allegheny reservoir
2. **Major watersheds of Pennsylvania**
  - A. Standards Addressed: 1) 4.1.10 & 12
    - a. ASWBAT trace the flow of the Allegheny and Ohio River watershed from the source the Allegheny River to the Mouth of the Ohio River.
    - b. ASWBAT describe the changes that occur in the aquatic ecosystem of the Allegheny and Ohio River watershed.
3. **Navigation and Flood Control**
  - A. Standards Addressed:
    - 1) 4.6.10 & 12
      - a. ASWBAT analyze the impacts of dams built for navigation and flood control on river ecosystems.
    - 2) 4.8.10 & 12
      - a. ASWBAT analyze the ecological and economic costs and benefits of controlling the flow of rivers.
4. **Hydro-electric Power**
  - A. Standards Addressed
    - 1) 4.2.10 & 12

- a. ASWBAT explain how water is used to make electricity in a pump-storage hydroelectric plant.
- b. ASWBAT explain how water is used to make electricity in a nuclear or coal fired thermoelectricity plant.

2) 4.8.10 &12

- a. ASWBAT compare the costs and benefits to society of hydroelectric and thermoelectric power plants in terms of economics and environmental health.

**5. Sources of potable water**

A. Standards Addressed

1) 3.5.10 & 12

- a. ASWBAT assess the value of the Allegheny and Ohio River watershed as a source of potable water.

**6. Multi-use management**

A. Standards Addressed

1) 4.9.10 & 12

- a. ASWBAT identify the various state and federal government agencies that play a role in managing our natural resources and enforce environmental laws.

**Business Partner: Allegheny National Forest**  
**Curriculum Relationship: Environmental Science**  
**Grade Level: 9**

Robert A. Musi  
 Eisenhower Middle High School

Lesson Plan #3

**Lesson Topic:** Abiotic factors in aquatic ecosystems

**Lesson Content:** Many abiotic factors affect the habitat in aquatic ecosystems. Some of these factors are part of the natural environment and others are caused by human activities. Some of these factors are pH, sedimentation, and water temperature.

**I. pH (acidity)**

- A. Most aquatic organisms thrive when the pH of the water is near 7. As the pH drops, those species that are least tolerant of low pH are absent from the ecosystem.
  - 1. Natural factors affecting pH
    - a. Type of rock in the watershed
    - b. Types of wetlands that are found in the watershed
  - 2. Human factors
    - a. Air pollution that causes acid rain
    - b. Acid mine drainage
    - c. Exposure of acidic rocks during road building
- B. Standards Addressed:
  - 1) 3.5.10 &12
    - a. ASWBAT interpret the pH scale
    - b. ASWBAT identify and explain the natural and human caused factors that affect the pH of an aquatic ecosystem.
    - c. ASWBAT explain the effects of pH on the organisms that live in aquatic ecosystems.
  - 2) 4.8.10 & 12
    - a. ASWBAT explain how technology can create as well as solve environmental problems.

**2. Sedimentation**

- A. Human activities such as agriculture, road building, logging, oil and gas drilling, and construction, expose the soil to runoff that can cause sedimentation of streams. The sediment destroys the habitat for aquatic organisms that depend on gravel streambeds for reproduction and cover.
  - 1. Reduction of sedimentation
    - a. Use of barriers that trap sediment in runoff before it reaches the stream.
    - b. Plating vegetation, such as willows, along sections of stream banks where the soil has been exposed to flowing water
    - c. No-till farming, cover crops and contour plowing reduce sedimentation from agricultural fields.
- B. Standards Addressed
  - 1) 4.8.10 & 12
    - a. ASWBAT identify sedimentation as a type of water pollution
  - 2) 4.4.10 &12

- a. ASWBAT identify agricultural practices that reduce sedimentation from crop fields.
- b. ASWBAT analyze the cost and benefits of common agricultural practices on humans and the environment

### 3. Water Temperature

- A. Human activities can alter the temperature of an aquatic ecosystem making it unsuitable for the native species.
  1. Activities that increase water temperature
    - a. Destruction of streamside vegetation that provides shade
      1. Logging
      2. Road building
      3. Fire
      4. Construction
      5. Agriculture
    - b. Thermoelectricity production discharging warm water into rivers and lakes
  2. Activities that decrease water temperature
    - a. Dam building
      1. Dams that discharge water from many feet below the surface convert warm-water fisheries into cold water fisheries.
        - a. Allegheny River (PA)
        - b. Green River (UT)
        - c. Colorado River (AZ)
- B. Standards Addressed
  - 1) 4.8.10 & 12
    - a. ASWBAT analyze the impacts of logging practices on aquatic ecosystem habitat.
    - b. ASWBAT identify the discharge of warm water into aquatic ecosystems as a form of pollution.
    - c. ASWBAT analyze the environmental costs and benefits of hydroelectric power generation on aquatic ecosystems.

### **Business Partner: High Country Flowers and Gifts**

#### **Curriculum Relationship: Science, Art, English**

#### **Grade Level: K-4**

Susan A. Nelson

#### **Objectives:** The students will:

1. Listen to a story about various plant life while observing a visual display of specific plants in story to develop the child's power of observation.
2. Make an artistic print using Baker Fern to reinforce rudimentary grasp of scientific classification.
3. Write a short poem about plants to incorporate writing and creativity.

#### **Materials:**

1. Book: A First Look At The World of Plants, by Millicent E. Selsam and Joyce Hunt
2. tray
3. plants-glowing plant with stems and roots-liverwort plant
4. plant spore cases (acorn, maple seed, and string bean)
5. mushrooms
6. Bracket Fungi
7. bread with mold
8. Baker fern with spores for class (from florist)
9. evergreen branch
10. small tree
11. moss, pine cone
12. Maple leaf
13. white paper/construction paper
14. fixative for art projects

**Procedure:** warm up activity (5 min.) Display tray with various plant life and have students discuss.

#### **Main Activity:**

1. Read story about plants showing plants discussed.
2. Ask students to classify them again after story.
3. Pass out, Baker fern to each child and have them make a pattern on white paper using the side with spores. Press, the spore side on the paper to achieve a pattern. Spray, with fixative. Mat on construction paper.
4. Write a short poem or story to go along with the picture.

**Business Partner: Warren County Historical Society**  
**Curriculum Relationship: Social Studies, Reading, Art**  
**Grade Level: K-4**

Susan A, Nelson

**Objectives;** The students will;

1. Listen to story about immigration to be familiarized with its meaning, and to appreciate the valuable differences in people.
2. Play game, "How would you feel?" to relate more closely to the feelings of others.
3. Create a drawing of items they would pack on an immigration trip.

**Materials:**

1. Book - Immigrant Kids by Russell Freedman
2. Two sets of " How would you feel?" questions - cut into strips.
3. Paper bag
4. Sheet " What would you bring?"
5. Drawing paper and crayons

**Procedure;** Warm up activity (10 minutes) ; List different ethnic backgrounds of students on chalkboard and discuss :

1. countries
2. location on map
3. how ancestors got here?

**Main Activity:**

1. Read story about immigration. (15 minutes)
2. Play "how would you feel?" game, using attached sheets (5-10 minutes)
3. Read "What would you bring?" personal stories

Follow directions for art project on sheet.(as time allows)

**HOW WOULD YOU FEEL?** After you have discussed immigrant situations and information, use this expressive writing activity , activating prior knowledge. Make one or two copies of the questions on this page. Cut out the cards and place them in a paper bag. Have each student draw a card from the bag and read it silently. Then have him write an answer to the question. Ask each child to read his question and answer aloud. Invite other students to add their thoughts adapted from The Education Center,

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1. How would you feel if you had to say good-bye to all of your family and friends, knowing you'd never see them again?
2. How would you feel if you weren't able to bathe or shower for two whole months while you were on the ship?
3. How would you feel if you only owned one or two outfits to wear?
4. How would you feel if you spent more time doing chores than you did being with friend, going to school, or playing?
5. How would you feel about working for someone for five to seven
6. year without being paid?
7. How would you feel about living with your entire family in a one-
8. room apartment or house ?
9. How would your feel if your family had run out of food?
10. How would you feel if you spoke a different language than the other students in your school?
11. How would you feel being in the crowded section of an immigrant ship crossing the ocean?
12. How would you feel going through the examinations on Ellis Island?
- 13.

**WHAT WOULD YOU BRING?** Decide what you would bring with you when you immigrate to Warren County. What would you pack your belongings in? It might be a trunk, a suitcase, a pillowcase, or just a tied bundle. It would depend on the wealth of your family. Maybe you could afford to travel first class. Maybe you can afford only the cheapest ticket and will be crammed into the bottom of the ship. Read these true stories about what people remember carrying with them to America. Then draw two pictures. One should show how you would carry your belongings. The other picture will show the inside of your luggage with the packed items. You might want to use a shoebox and make it into a trunk in which to show the items you would bring to your new home.

**Business Partner: PA Fish & Boat Commission**  
**Curriculum Relationship: Science**  
**Grade Level: Middle Level**

Phil Pompilio  
Youngsville Elementary Middle School

**Objective:** The student should be able to identify the job of the Waterway Conservation officer and how it relates to the people of the Commonwealth of PA. (ex. – Land – water – fish – wildlife)

**Materials:** Hand out – ex. Water testing kits/Pollution, and videos

**Procedure/Activities:** To invite a Wildlife Conservation Officer to discuss the PA Fish and Boat Commission and its function and how it works.

- (Ex.) Fish Stocking  
Fish hatchery (how fish are raised?)  
Land management  
Conservation of natural resources  
Clean water  
Boating

Students would attend field trips to gain more information on topics. I would try to limit topics to Spring and Fall (6 wk unit)

**Business Partner: US Army Corps of Engineers**  
**Curriculum Relationship: Science**  
**Grade Level: Middle Level**

Phil Pompilio  
Youngsville Elementary Middle School

**Objective:** The student should be able to identify the role of a Park Ranger, and his duties that relate to the Corps of Engineers.

1. Management and protection of park resources.
2. Informing the public of recreation rules/regulations and to enforce them.
3. Accident prevention – campground and picnic area operation.
4. Visitor information
5. Patrolling of boundary lines.
6. Security of Gov't. building and property.
7. Collect and records information such as water quality, wildlife, and fish population, erosion control.

**Procedure/Activities:**

1. I would invite a Park Ranger to assist with the lesson plan.
2. Students will be able to take a field trip to the Project – and for some functions do hand out activities.
3. This lesson plan would be a 6 week unit plan. Students would keep a journal for all activities and accomplishments.

**Business Partner: Warren Public Library**  
**Curriculum Relationship: Occupational/Career English**  
**Grade Level: 11**

Karl M Rieger  
Warren High School

Approximate 2 week Unit Plan and Daily Plans: Library and Researching Skills and Careers in Library Occupations.

**Objectives:**

1. Students will be aware of The READERS' GUIDE TO PERIODICAL LITERATURE and POWER LIBRARY, and will be able to proficiently use these sources to obtain timely information.
2. Students will display proficient computer, keyboarding, and researching skills.
3. Students will make informed career decisions, and be aware of the numerous job opportunities in libraries.
4. Students will demonstrate knowledge of the Dewey Decimal System and acquire books in a timely fashion, overcoming availability and access obstacles that may arise.

5. Students will successfully complete WAHS requirements for their Senior Projects, and will consider libraries for fulfilling their Community Service and Job Shadowing mandates.
6. Students will develop and display proficient note-taking skills.
7. Students will demonstrate proficient sentence writing skills by citing highlights of a researched article in their own words. (As opposed to simply printing or photocopying relevant articles.)

**Procedures/Activities** (These will be utilized in various daily lessons within the 2 week unit.)

1. a. Lecture / guided questions / discussion on how to find up-to-date information on a variety of subjects. b. Introduction to Library Careers.
2. Introduction to “The Readers’ Guide”. / Practice using recent editions. / “Translating entries from “The Readers’ Guide”.
3. Introduction to POWER LIBRARY: Easy ways to access it.
4. POWER LIBRARY CHALLENGE: Answering teacher-generated questions on topics relevant to students’ interests / lives. (i.e. sports, teen issues, music and movies, teen lifestyle in the U.S. and around the world.
5. INFORMATION SEARCHES on topics chosen by class members and approved by instructor.
6. HIGHLIGHTS on information gathered, written in complete sentences.
7. Sentence structure and / or note-taking review if results indicate a need exists.
8. BULLETIN BOARD DESIGN using items of interest that are discovered.
9. DEWEY DECIMAL SYSTEM REVIEW ( to assist students with obtaining books to meet their required independent reading. )
10. TOUR OF WARREN PUBLIC LIBRARY ( if possible.)
11. Lecture / discussion with classes on SENIOR PROJECT activities that may be performed in a library setting, including job shadowing and community service.
12. Written exams and quizzes, Q & A sessions, classroom games in finding information, etc.

**Materials:**

1. WCSO SENIOR PROJECT MANUAL.
2. Assorted editions of “THE READERS’ GUIDE.
3. LAP-TOP COMPUTERS in classroom and library computers.
4. O/C ENGLISH 11 VOCABULARY PACKET.

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

**Curriculum Relationship: Science**

**Grade Level: 4-5**

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 it's 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: Warren County Chapter American Red Cross**

**Curriculum Relationship: Spanish**

**Grade Level: 9-12**

Cynthia Walker

Eisenhower Middle/High School

**Objective:** The students will role play the parts of a natural disaster victim and a Red Cross Disaster Services volunteer. Students will use correct Spanish vocabulary to ask and answer questions.

**Materials:** Computers with Internet access

**Procedure:**

1. Assign partners and give each pair a name of a Spanish speaking country.
2. Student pairs, using the computer, will research natural disasters which are common to their country.
3. Students will research the Red Cross disaster services in the country that they have been assigned.
4. The class will develop a list of vocabulary words and expressions used to obtain information from a victim of a natural disaster.

**Activity:** Student pairs will prepare and present a two minute conversation, playing the roles of a natural disaster victim and a Red Cross volunteer.

**Business Partner: Kinzua Broadcasting**

**Curriculum Relationship: Music**

**Grade Level: K-12**

Lisa Yoder

**Objective:** To have students learn how to write a 30 second commercial and record it for broadcasting.

**Materials:** Sample commercial, Hand out with information about a business to organize into a 30 second commercial, paper, and pencil.

**Procedure:**

1. Pass out sample commercial read out loud and discuss what is included in the commercial.
2. Pass out hand out with business and information, paper and pencils.
1. 3. Students should read through the information on the hand out and organize the information.
3. Students should write their commercial using only 5 lines to start with.
4. After writing the commercial, read it and time yourself with the classroom clock. If it is too long rewrite it taking out words like IT, AND; and BUT. The commercial has to be exactly 30 seconds long!

5. 1. Once the commercial is the right length then it can be recorded on to a cassette tape.

**Sample Commercial:** Jennifer's Scented Candles has a variety of candle burning pots on sale for 19.99 each. Jennifer also has a sale on her scented candles, \$1.00 each or 3 pack for \$2.00. Her candles come in a variety of scents. Vanilla, cinnamon and peach are a few of her many scents. Stop by the store at 352 Second Ave. in downtown Warren to pick out your favorite scent. Again, that is 352 Second Ave. in downtown Warren.