Water, Who Needs It?

An Interdisciplinary Thematic Unit

Created by The Egret Group:

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Theme

As part of a yearlong exploration into the meaning of *interdependence*, the Egret group will study the some of the myriad ways in which **water** affects our lives and how we in turn affect our natural environment. The theme of "**paying it forward**," or passing on to others the importance of water conservation, is the lens through which we will consider interdependence in this unit. Water conservation is a topic rich theme through which students can access substantive content area knowledge while also deepening their sense of connection to their world. Students will study water from many different perspectives: how it is used, how it is wasted, how it is polluted, how it is part of a cycle, how it is a powerful symbol of our interdependence and vulnerability, and how it provides us with an opportunity to be responsible stewards of the natural world.

Overview

"*Water, Who Needs It*?" is designed as a three-week integrated thematic study for eighth grade students at Wamsutta Middle School in suburban Attleboro, MA. The inquiry toward which we are guiding students is prompted by the **essential question**: "When I take a 20 minute shower does this hurt other people in my town and around the world?" Such global thinking is encouraged in this unit by opportunity for local study and action at the many nearby water sources in Attleboro. There is a water tower within sight and walking distance of Wamsutta, the reservoir and water treatment facility is five miles away, and the bordering town of Rehoboth has many large crop farms that are dependent on a healthy and steady supply of water. These important local resources provide close

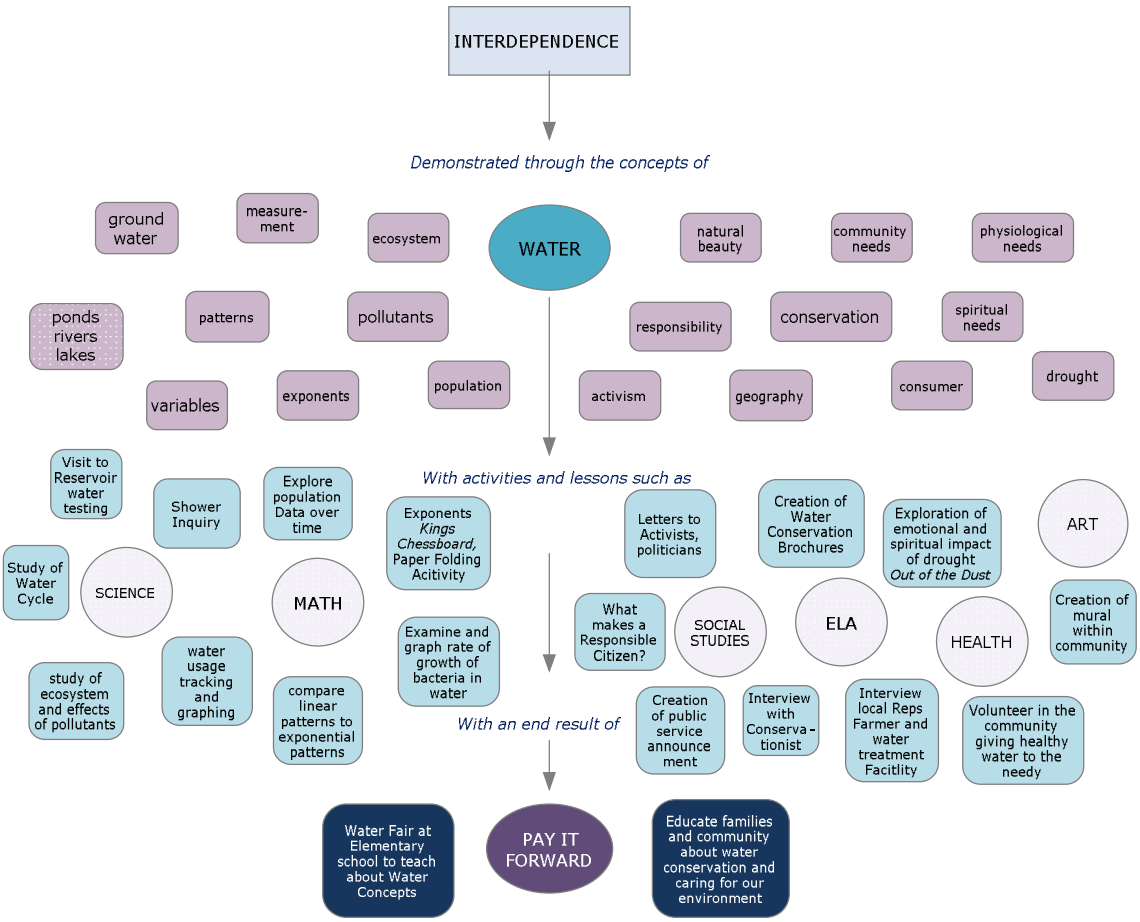
physical connection to our theme and will be tangible community examples for the many discussions, labs, and research that will be done during class. By relating our big ideas about conservation and interdependence to places that students can see and already know, we hope to deepen the relevance of the unit and help our students to see their community (and their role in it) in a new way.

At the end of this unit students should be able to:

- ✓ understand and articulate the importance of water conservation
- ✓ describe ways to use water and other natural resources more responsibly
- ✓ infer the cause and effect relationship between people and their environments
- ✓ predict the effects of irresponsible use of natural resources
- ✓ teach others about the responsibility to the environment that we all share

In addition to these general objectives, this unit will cognitively and affectively engage students in high level, standards based work through a wide variety of instructional methods in the content areas of science, math, social studies, health, art, and English language arts. The targeted level of interdisciplinarity is between III and IV. Students will participate in whole class instruction, working in pairs, and small group work. The unit will launch with two fun, hands on activities that graphically represent the delicate and interdependent relationship share with water. Students will also go on a walking field trip to the local reservoir, have two visiting speakers from the local water treatment facility commission and a nearby farm, and will produce audio and written materials to raise water conservation awareness. Their culminating activity of presenting a science fair to the younger grades will put them in the position of educating others. This demonstration of understanding will both showcase the student's learning as well as provide an opportunity to "pay the lessons forward" to their younger schoolmates, thus improving the odds for water conservation's success in the future.

Concept Map



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Parent Letter

Dear Parent/Guardian,

We are very excited to inform you of our upcoming unit called *Water, Who Needs It?* This unit will focus on the concept of **interdependence**; how within our environment we are all linked together and each link of the chain has an impact on another. We will explore this concept within the context of water conservation. Our guiding question for the students as we move forward with our inquiry of this topic is: *When I take a 20-minute shower does this hurt other people in my town and around the world?* The concepts behind this question which we are trying to answer are: *Throughout history, how has water affected our decisions and ability to live, work and survive; how have our life decisions in turn impacted our water supply, and how can we make a difference in our water resources going forward?*

In our effort to answer these questions we will examine the historical, geographical, physiological, environmental, social and even emotional impact that water has had on our lives. In each case we will examine and represent mathematical data that will help us in our explanations as well as guide us in our plans to conserve this precious resource in the future. Your children will learn that they can make a real difference not only in our community, but also in our world. Ask them about *Water, Who Needs It?* and mark your calendars for our **Water Fair** on April 21, 2008 so that you too will be able to share in our discoveries and participate in our conservation efforts during this significant time of year, Earth Day.

Sincerely,

The 8th Grade Egret Team
Mrs. Bishop
Mrs. Dunn
Mrs. Goldstein
Mr. Poulos
Mrs. Vastano

Engaging Activities

Rationale: In order for students to fully understand the three main components of the unit, **Interdependence, Water Conservation**, and "**Pay it Forward**", the "kickoff" will take place with the facilitation of three engaging activities to hook the students of the Egret team and spark their desire to learn more about these topics and how they relate to each other in *Water, Who Needs It*?

The first activity will consist of a web activity which introduces the content concepts presented and discussed in all subject areas throughout the unit. The second activity will demonstrate that water is an important resource and we therefore need to be responsible consumers and citizens in order to preserve this precious resource. The final activity of the kickoff is to watch the movie *Pay it Forward*. This is the very touching story of a young student who creates a plan as part of a Social Studies project to do good deeds for others, and as payback, the beneficiaries must pay forward these good deeds to other people. It is the hope that we will create a true sense of benevolence on the team as well as show the students that each individual person can make a significant difference on so many levels and to so many others through their actions; that we are all interdependent and everything we do matters.

WATER WEB

Objective: To demonstrate to students the concept of *Interdependence* within the context of the water unit.

Materials: 1 ball of string or yarn
Set of Water Concepts listed on individual cards
(see concept map for unit)

Procedure:

- Post the index cards with the water concepts on a wall or whiteboard.
- Team teachers will give overview of the water concepts as a preview to the unit.
- Each member of the team will select one of the concepts and stick it to the front of his/her shirt.
- Team will create a circle with each student standing next to each other so that everyone can read the concepts posted on each others' shirts.
- One person will start the web by reading his/her own concept, keeping the end of the string and then passing the ball of string to someone else to whom they have a connection/relation.
- That person will then hold the string and continue creating the web by passing the string to yet another person to whom their concept is related.
- Process repeats until everyone has received the ball of string at least once and a web is created.
- At the end of the activity Instructor will emphasize that all of us are interdependent and that the web is dependent upon each component; that when one piece of the web is missing the whole thing falls apart.

APPLE OCEAN

Materials needed for this demonstration:

1 apple for each student in class
1 apple for teacher to model
1 knife per student (sharp enough to cut, but not too sharp)
Paper napkins

Procedure:

Go over how to handle a knife (yes, even for middle school students)
Distribute napkins and apples to students
Follow below…

Imagine the apple in front of you represents the world. How much of the world is covered by water? (let students predict) Through discussion class can agree that 3/4th of the world is covered by water.

Cut the apple into 4 equal pieces. Take three of the pieces which represents the oceans and place them to one side.

You now have 1/4th of the world (the land) in front of you. Take this land piece and cut it into two equal pieces. One piece represents all the land that is uninhabitable…too dry, too wet, too cold, too hot. This could represent mountains, river basins, deserts, icebergs, etc.

You can now say that since 1/4th of the earth is land, 1/8th of this land is uninhabitable. Take the piece that represents uninhabitable land and set it aside.

Now take the 1/8th piece of habitable land and cut it into 4 equal pieces. Take three of these pieces and put them aside. The remaining one piece represents the portion of habitable land we grow food on (1/32th of the earth's land area) Take a slice off this piece.

This tiny slice represents 3/100th of 1% of the earth's surface. ALL OF OUR DRINKING WATER COMES FROM THIS AREA!!!!

Culminating Activity

Water we going to do about it???

Rationale: The students of the eighth grade Egret team will celebrate the completion of the unit, *Water Who needs it?,* by organizing and creating a Water Fair/Extravaganza for the students and families of a local elementary school as well as our own middle school.

Objective: Students will demonstrate what they have learned throughout the unit about our ***interdependence*** on water and why it is such an important resource by "paying forward" this knowledge to others.

Procedure: In groups of four, students will decide on and sign up for a water based theme or activity for their station at the fair. Students can develop their own ideas or choose from a list provided by the team's teachers. Each station must display valuable information or a "message" about water; its usefulness to all living things, the conservation of, its beauty as a natural resource, etc. Some ideas for a station are:

Coloring/Activity Table(s)
Conservation Strategies and Facts for Homeowners
Poetry display
Water Science Table(s):
    Water and the Human Body
    Display of a water Ecosystem
Graphic Display of Water Usage Data from Town or State
Political Activism Table
Pay it Forward Table (Brochures, buttons, etc)
Artistic Water Display
Puppet Show or Play
Water Quiz
Write and read a story about water
Design and play a Board Game about Water

Rubric for Water Display Station

	Novice	**Accomplished**	**Expert**
Knowledge of Subject	*Connection to content areas is limited with basic understanding of concepts.*	*Display incorporates at least one subject area with good understanding of topics.*	*Display incorporates multiple subject areas and demonstrates complete understanding of content concepts.*
Creative and Engaging Presentation	*Limited creativity. Oral and visual presentation average.*	*Display somewhat imaginative. Good oral and visual presentation*	*Display is thoughtful and creative and thoroughly captivates and teaches concepts to intended audience. Oral and visual presentation also portrays creativity, competence, and confidence.*
Quality Producer	*Limited evidence of check for content or grammatical accuracy.*	*Written work mostly accurate with few grammatical errors.*	*Written work is grammatically correct and content areas checked for complete accuracy*
Participation in Group	*Group members need prompting for cooperative work and completion of tasks.*	*Group members usually work together cooperatively; responsibilities evenly divided.*	*Group members have well defined roles and responsibilities and work cooperatively together.*

Math Overview

Objectives:

In this unit, students will understand the concept of ***Interdependence*** by examining historical events and trends for different variables, as well as the effects and patterns created by those variables. They will also collect and track their own data and discover that they can have an effect on these results by changing their own actions. Students will learn about exponential growth and the numerical and graphical patterns created by such growth, and they will compare these to linear patterns. Ultimately, they will make the connection that they can in fact affect significant changes, perhaps even global changes, by teaching others water conservation strategies and environmental awareness.

In an effort to forge a unit complete with authentic inquiry, students will engage in many *habits of mind*. They will ask good questions and will simplify questions and problems by first analyzing graphical representations of historical data, and then by evaluating a smaller problem such as one in their own home. As part of this, they will form hunches and then test those hunches by collecting and tracking data of their own. They will search for and evaluate patterns in nearly every activity that they participate in. They will also use models and metaphors and they will collaborate and cooperate in all of their daily activities including one in which they will simulate their own exponential growth pattern through a "rumor mill". In sum, the unit and activities will be rich in ways for students to construct and deepen their knowledge of, as well as generate and maintain interest in, the topic of water conservation.

Math Standards

8.P.1 Use tables and graphs to represent and compare linear growth patterns. In particular, compare rates of change and x- and y-intercepts of different linear patterns.

8.P.2 Extend, represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic expressions. Include arithmetic and geometric progressions, e.g., compounding.

8.N.7 Apply the rules of powers and roots to the solution of problems. Extend the Order of Operations to include positive integer exponents and square roots.

8.N.12 Select and use appropriate operations—addition, subtraction, multiplication, division, and positive integer exponents-to solve problems with rational numbers.

Activity 1: Introduction to Water Unit

Purpose: To give students background knowledge and begin to define vocabulary as an introduction to the water unit and subsequent investigations. To begin to quantify personal water usage versus global water usage in our quest to find answers to our essential question "*When I take a 20 minute shower does this hurt other people in my town and around the world?*".

Duration: One day

Day 1- *Scavenger Hunt*, US Geological Survey website

- ✓ In groups of four with each student assigned a specific role (Getter/Observer, Starter, Recorder, Reporter), students will research the USGS website in search of answers to the following questions.

1. *What is the total amount of water (in gallons per day) used by your state?*
2. *How much water per day is used by your state for irrigation?*
3. *Approximately how much water does each person use at home per day?*
4. *Is more water used each day by taking showers, taking baths, or flushing toilets?*
5. *How many gallons of water per year does 1 leaky faucet in 1 home waste if it drips 5 times/minute?*
6. *What is most of the freshwater in the United States used for?*
7. *Which state uses the most water?*
8. *What is surface water?*
9. *What is ground water?*
10. *What is a watershed?*
11. *What states are currently experiencing a drought?*
12. *What group or category of water use is the largest in the US from 1950- 2000?*
13. *What percent of the nation's power came from hydroelectric-power plants in 1995?*

- ✓ Reporter in each group will report the group's findings out to the class.
- ✓ Assign homework. Hand out water usage worksheet. Over the course of the next forty eight hours, each student will record the number of times they or their family use water in each of the following categories: baths, showers, teeth brushing, hand/face washing, shaving, dishwasher, laundry, toilet flushes, glasses of water, preparing/cooking food, cleaning.

Assessment: Assessment will come from informal observation of students as they work together in groups and report out to the rest of the class.

Sources: *Scavenger Hunt* adapted from National Park Service website http://www.nps.gov/archive/wica/HydrologyIntroductionWaterUseInternetSites.htm

US Geological Service Website http://ga.water.usgs.gov/edu/

***Activity 2*: Historical Trends and Water Usage Data**

Purpose: To give students a historical and geographic perspective of water usage and population data in the US. Students will evaluate and compare historical trends and characteristics of linear patterns displayed in the graphical representations for this data.

Duration: Two to three days

Day 2- Researching the Data

- ✓ Students will independently read the article *Trends in Water Use from 1950-2000* from the US Geological website.
- ✓ In a *Think Pair Share* activity, student pairs will discuss what each believes to be the most significant piece of data or information from this summary.
- ✓ Pairs will report back to the class, and class will engage in a discussion.
- ✓ Students will then independently read the summary *Estimated Use of Water in the US in 2000* from the US Geological website.
- ✓ In another *Think Pair Share* activity, student pairs will discuss which groups and states are having the biggest impact on our nation's water supply.
- ✓ Pairs will report back to the class, and class will engage in a discussion.
- ✓ For homework students will prepare a short summary of each of the graphs in both articles; Figures 1, 2, 3, 4 in *Estimated Use of Water in US* and Figures 13 and 14 in *Trends in Water Use.* Students will seek to answer the questions "What events in history or geographical characteristics have had an impact on the patterns in the graphs? What are the characteristics of these graphs?"

Day 3-4 Evaluating and Summarizing the Data, *Gallery Walk* (Baloche)

- ✓ Class will be divided into six groups of four students. Each group will be assigned one of the graphs. Students in each group will be responsible for sharing their summaries on their assigned graph, coming to a group consensus and then creating a final summary on poster paper to share with the rest of the class.
- ✓ Class will go on a Gallery Walk to view all of the posters.
- ✓ Class and instructor will ask questions and provide feedback on posters as needed.
- ✓ Instructor will facilitate discussion regarding patterns in graphs. What are the characteristics of the graphs in figures 13 and 14? How is the data changing over time? What are some events that have impacted history and the patterns in the graph? What might be some geographical characteristics that have had an impact on water supply in each region/state in the US? Can you predict any other events that could have a significant impact on population or water usage?

Assessment: Assessment will be informal from homework as well as class participation, mathematical summaries and presentations during *Gallery Walk*.

Sources: *Trends in Water Use From 1950-2000*, US Geological Survey website
http://pubs.usgs.gov/circ/2004/circ1268/htdocs/text-trends.html
Estimated Use of Water in the US in 2000
http://pubs.usgs.gov/circ/2004/circ1268/htdocs/text-total.html
Baloche, Lynda A. (1998). *Creating a Cooperative Classroom*. Prentiss Hall.

Activity 3: "Water we doing": Creating and analyzing our own data

Purpose: To collect, quantify and compare our personal water usage data. Students will realize just how widespread the differences in water usage totals are between individuals as well as families. The data from this lesson will be coordinated with the Science class.

Duration: Two days

Days 5-6

- ✓ Students will enter personal/family water data into Water Usage worksheet (on Excel).
- ✓ In groups of four students will compare results of each family.
- ✓ Students will also compare data from their Water Experiment (science class) to amounts pre-filled in worksheet and decide how many gallons should be used for each category.
- ✓ Students will compile group water data in a separate worksheet and develop an "average gallon per person" for their group.
- ✓ Students will brainstorm ways to conserve water in their homes.
- ✓ Class will develop a master list of ways that each individual can conserve water.
- ✓ Groups will quantify water conservation efforts by estimating how much water can be saved and add a new column to the group worksheet with the new water usage estimates. See NPS website for ideas for estimates (http://www.nps.gov/archive/wica/Hydrology_Introduction_Personal_Water_Use_Survey_Survey.htm)
- ✓ Students will implement changes in their daily lives.

Assessment: Assessment will be from formal review of Water Usage worksheets based on a check for accuracy and reasonability; also from informal observation of group work.

Sources: *Water Usage Worksheet.* Retrieved from Microsoft website. http://www.microsoft.com/education/wateruse.mspx, on November 1, 2007.
National Park Service website
http://www.nps.gov/archive/wica/Hydrology_Introduction_Personal Water_Use_Survey_Survey.htm

Activity 4: Introduction to Exponents

Purpose: To introduce students to the power and characteristics of exponents by engaging them in a hands on activity and teaching them effective methods of problem solving through creating a table and searching for patterns.

Duration: One day

Day 7- Paper folding Activity

- ✓ Review Key Concepts *Exponential Form, Exponent, Base, Standard Form*
- ✓ Students will fold a piece a paper in half and record the number of folds and layers within a chart:

Folds	Layers
1	2
2	
3	
4	
…8	
…12	
…50	

- ✓ Students will repeat process, fold paper in half again and record number of folds in chart and will continue until they see a pattern.
- ✓ Students will write a paragraph summarizing the patterns and will predict whether the pattern will continue.
- ✓ Students will label a third column "Powers of 2" and will express the number of layers as powers of 2 in this column.
- ✓ What number would be above the one in the number of folds column? (zero) How many layers does it have? (This is original paper, so answer is one). What is two to the zero power? Complete chart with this information.
- ✓ Students will continue working backwards and can change folds to "tears" in their charts. What number would you put above the zero? (Record -1 in first column in chart).
- ✓ Fold paper in half and tear. What does one of these papers represent? (1/2) Record in second column next to negative 1.
- ✓ After the tear, the layers should be stacked, then the stack should be halved and stacked again. What part of the whole is this? Record and complete chart.
- ✓ Discuss patterns found in the chart. What is noticed about the second column?
- ✓ For homework, students will complete worksheet evaluating exponential expressions (from *Edhelper* or *Connected Mathematics- Growing, Growing Growing* 1.2).

Assessment: Informal assessment done from collection of completed charts and homework, as well as from discussions in class.

Sources: This lesson adapted from West Virginia K12, The Power of Exponents, Paper Folding Activity http://reinvent.k12.wv.us/lt/ltipbp.nsf.

Activity 5: Linear versus Exponential patterns

Purpose: Students will apply and build on what they know about Linear and Exponential Patterns by creating, comparing, evaluating and explaining visual representations of each.

Duration: Two days

Days 8-9 *The King's Chessboard*

- ✓ Teacher and class will read aloud the folktale *The King's Chessboard.* After completing the reading the teacher will let the class know that the "King" has reconsidered; he has become business savvy and needs to evaluate several plans in order to make an informed decision before giving in to the wishes of the wise man. He is therefore going to review four alternate plans designed by his business managers, Plans A, B, C, D, before he decides how much rice to give the wise man.
- ✓ Students will be divided into four groups; group roles will be assigned to each member of the group (Getter, Observer, Starter, Recorder, Reporter, Rover).
- ✓ Each group will act as the "business manager" and will be given one of the following plans for dispersing rice to the wise man.

Plan A: *In this plan, the king would put 100 grains of rice on the first square, 125 on the second, 150 grains on the third, and so on. Complete the table using the same pattern up to sixty four squares.*

Plan B: *For this plan, the king would only fill sixteen squares. On the first square, there would be one grain of rice, on the second would be three, on the third there would be nine, and on the fourth twenty seven. Complete the pattern in a table up to sixteen squares.*

Plan C: *In this plan, the king would only fill twelve squares. On the first square would be one piece of rice. On the subsequent squares he would use the equation* $r = 4 \wedge (n-1)$ *with r being the number of grains of rice on each square. Complete the table for each square.*

Plan D: *For this plan, the king would place twenty grains of rice on the first square, 25 on the next, thirty on the next and so on for all sixty four squares. Complete the pattern and a table for the amount of rice in each square.*

- ✓ Students will create a table based on the details and patterns presented in the plan assigned to them.
- ✓ Students will create a graph representing the data from the table (square number on X axis, amount of rice on the Y axis).
- ✓ Each group will create a poster and pitch their plan and try to sell it as "the best" to the King.
- ✓ As the original four groups are creating their posters, the Rover from each group will meet to share and begin to discuss the merits of each plan and make predictions as to which one should be selected for the King.

- ✓ After the presentations, the Rover will evaluate each and choose the best plan to be considered by the King.
- ✓ Class and teacher will contribute their comments and opinions about the Rover's choice.
- ✓ Teacher and students will summarize and review characteristics of linear patterns and compare to exponential patterns in graphs. How did the "Rovers" decide which plan would be the "best"? What are the merits of each plan? What are the similarities and differences in each plan?

Assessment: Formal assessment done based on group presentations.
Assessments graded based on the following:

Group Criteria Checklist:
_____Cooperation and contribution of each group member
_____Plan mathematically accurate
_____Table and graph representative of data
_____Oral presentation convincing, clear, organized
_____ Participation in ensuing discussions

"Rover" Criteria Checklist:
_____Cooperation and contribution of each group member
_____Evaluation of each plan thoughtful and reasonable
_____Evaluation of each plan includes mathematical accuracy and reasoning
_____Oral presentation convincing, clear, organized
_____Participation in ensuing discussions

Sources: Birch, David. (1988) *The Kings Chessboard.* Penguin Group.

Lesson adapted from *CMP*
Lappan, Fey, Fitzgerald, Friel, Phillips. (2006). Connected Mathematics 2. *Growing, Growing, Growing; Exponential Relationships.* Pearson Prentice Hall.

Activity 6: Exponential Growth Patterns

Purpose: Students will apply what they have learned about exponential patterns by evaluating and recognizing components of real world problems, and by making connections between these problems and mathematical concepts. Students will then simulate their own exponential growth problem and will make further connections by realizing the significant impact that they can have in distributing information.

Duration: 2 days

Day 8- *Blind Hand* (Baloche)

- ✓ Each student in the class will be given a part of six different linear or exponential word problems (family tree, bacteria, spreading plant, growing investment, oil spill, etc). Parts will include the data, a labeled table, a graph, a diagram, etc.
- ✓ Once the students find the corresponding parts to the problem (without *looking* at each other's parts) they will meet as a group and try to determine the details of the original word problem.

Day 9- *Rumors*- PBS

- ✓ Teacher will share the following scenario with students:

> *Two students who were both born on December 21st, the date of the winter solstice, decide that it would be great not to have to attend school on that day. Therefore, they start a rumor that schools will be closed to celebrate the winter solstice. So, on December 1st, one of the students told two of her friends that school would be closed. On the next day, each of these students tells two students and on consecutive days, each of the new students tells two more students and so on. There are 8000 students in the school district.*

- ✓ Students will simulate in class a human triangle to help visualize how the rumor is spread.
- ✓ Students will generate their own questions about the situation (For example- was the rumor started early enough for all of the students to have heard it? On which day would all of the students have heard it? How many students would have heard it on the tenth day…)
- ✓ Students will work in groups to solve this problem.
- ✓ Class discussion will ensue regarding the power and impact that each individual can have in dispersing information; that each link in the "rumor chain" is crucial to the final results and success of the dispersal.

Assessment: Assessment informal based on observation of participation in activities.

Sources: Selected problems from

Lappan, Fey, Fitzgerald, Friel, Phillips. (2006). Connected Mathematics *Growing, Growing, Growing; Exponential Relationships*. Pearson Prentice Hall.

Rumors. Retrieved from *PBS Mathline* http://www.pbs.org/mathline on November 26, 2007.

Activity 7: Putting it all together- ***Pay it forward***

Purpose: Students will demonstrate evidence of concepts learned from each activity in the unit in this final assessment project. Specifically, students will gather their mathematical data and revisit their water usage worksheets to discuss their individual water conservation efforts over the past two weeks. Students will have made the connection from the Rumors activity to realize the impact they can actually have by teaching and perpetuating their plans with the community.

Duration: Two – Three days

- ✓ In groups, students will discuss how much water they saved each day since they implemented their conservation strategies. They can use their worksheets to quantify these estimates.
- ✓ Students will then create a formalized water conservation plan. They will describe in detail how they will teach conservation strategies to others and then convince participants to adopt and teach these strategies to still more people as well; paying forward their knowledge of responsible water conservation.
- ✓ They will quantify their results mathematically using the Excel Water Usage worksheet estimating who and how many people they will teach, how much water could be saved, etc adding more columns to the original worksheet to capture all of the necessary data. Students will then represent that data in a table as well as graphically. Their plan to teach others should have an "exponential" impact on the community!

Assessment: Assessment will be formal based on Rubric grading.

Rubric for Water Conservation Plan

	Novice	**Accomplished**	**Exceptional**
Mathematical Concepts	*Limited reasoning skills and evidence of mathematical concepts*	*Substantial reasoning skills used, with evidence of exponential component explained.*	*Evidence of superior reasoning skills used in developing estimates for plan. Exponential component evident and clearly explained*
Group Contribution	*Group members need prompting for cooperative work and completion of tasks.*	*Group members usually work together cooperatively; responsibilities evenly divided.*	*Group members have well defined roles and responsibilities and work cooperatively together.*
Organization	*Plan has some organization and includes table and graph that have limited information.*	*Plan is well organized and thought out. Tables and graphs meet requirements.*	*Written plan gives superior attention to detail and includes timeline and specifics for implementation. Tables and graphs properly labeled and clearly relevant to data.*

Science Overview

After learning how little of the earth's water is available for human consumption (apple activity), the Egrets are poised to answer the essential question "When I take a 20 minute shower does this hurt other people in my town and around the world?" For three weeks, students will become en-drenched in science as they investigate where we get our water (water cycle), why we need water (human body/living systems), and how we can conserve and protect our water supply. They will investigate how a water treatment plant works by visiting one in their community. Then, students will follow the Engineering Design Steps by designing and creating their own mini-version of a water-filtration system.

Although the focus will be on the water that we use directly, students will also learn how the affects of our actions interfere with the oceans and seas as well. Through the effects of pollution, the delicate balance between weather and living systems has gone astray in many areas of the world. Students will investigate some of these effects through readings from magazines such as National Geographic, books and videos. They will learn how to formulate educated conclusions by learning how to use reliable sources in order to detect reliable evidence, thereby exercising an important habit of mind.

The following lesson ideas are stated by the week, however, I reserve the right to adjust and tweak the length and scope and sequence by assessing my student's interests and understanding. The Egrets will be meeting to work on the culminating activity, therefore, blocks of time will be dedicated for those activities.

Massachusetts Science Standards

Earth and Space Science – Heat Transfer in the Earth's System

3. Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through the earth's system.

4. Explain the relationship among the energy provided by the sun, the global patterns of atmospheric movement, and the temperature differences among water, land, and atmosphere.

Physical Sciences – Heat Energy

14. Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system.

Life Science – Systems in Living Things

6. Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.

17. Identify ways in which ecosystems have changed throughout geologic time in response to physical conditions, interactions among organisms, and the actions of humans. Describe how changes may be catastrophes such as volcanic eruptions or ice storms.

Technology/Engineering

2. Engineering Design

2.1 Identify and explain the steps of the engineering design process, i.e., identify the need or problem, research the problem, develop possible solutions, select the best possible solutions(s), construct a prototype, test and evaluate, communicate the solutions(s), and redesign.

Promising Practices

Group/Partner Work: In order for them to maximize learning from each other, students will work in various teams and partnerships depending on the assignment. Base groups will be formed to establish a comfort level whereas other groupings will be based on student interest and choice.

Learning through Inquiry: Students are likely to become more invested in science concepts through discovery and investigation. As much as possible students will learn by doing and seeking rather than by reading and hearing.

Assessment Strategies: Students will be assessed through quizzes, observation of group dynamics, journal entries, projects, presentations, and self-evaluations.

Overarching Goals:

- Students will understand that the earth is a complex system.
- Students will understand that humans are part of the earth's complex system.
- Students will understand we can affect change in the system.

Classroom Environment/Materials: Books, magazines, textbooks, websites, materials needed for investigations and experiments, computers, printers, work tables, markers, various types of paper including graph paper, videos/DVD's,

Week One: What Can I Do At Home?

Experimenting

Objectives: Students will be able to

- choose and design an experiment that will measure how much water they consume at home.
- Students will be able to graph the data from their experiment.

Science Process Skills: Identifying and controlling variables, experimenting, graphing, interpreting data

Interdisciplinary Habit of Mind: Forming Hunches

Interpersonal and Small-Group Learning Skills: Predicting and measuring

In science, students will dive right into the team-wide unit on Water. This first week directly aligns with math as they learn to use tables and graphs to evaluate the data they collect in an experiment. While at school, students will design an experiment to determine how much water they consume. By investigating how much water they use to brush their teeth, wash the dishes, and take a shower, they help to answer the essential question, "When I take a 20 minute shower does this hurt other people in my town and around the world?" They will learn firsthand how much water a 20-minute shower vs. a 2-minute shower uses. The statistics that the Egrets are exposed to in math will be more meaningful by relating it to their own data from this experiment.

The experiment will be conducted in groups of three or four and will require the accumulative work of each member to produce one comprehensive study of water usage. They will review the scientific method so that they are "up to snuff" on how to construct a hypothesis, identify the variables, and determine how to measure and record the data. Students will work together to determine who will conduct which part of the experiment. One student might measure how much water he uses when he showers at particular time intervals. He will have to decide how he will measure the water and what the time intervals will be. Another students might measure how much she used to brush her teeth. Students may need the assistance of adults at home for calculating or researching how much water the family's dishwasher or washer consumes, therefore a letter will be sent home that informs the family about the assignment. Back at school they will be sharing the data and compiling a report and presentation for potential viewing at the Science Fair. Students will be given the opportunity to choose to create posters or community service ads to be placed in the school newsletter or hung on the school walls that promote water conservation.

Group Building Activities: This week will be an excellent time to revisit some group-building activities. Since they are involved in a parts-to-whole assignment, **Five Squares** will be presented on Monday. This will help them understand that sometimes it is important to give up what they have to help the group. At the end of the week and as a positive consequence my students will be happy to do the **Human Knot** again; this time in groups that I have determined since they have participated in this activity before. My students love the kinesthetic nature of this game and what better day to do it on then Friday?

Week Two: Where Does Water Come From?
Water Cycle/Heat Transfer

Objectives: Students will understand

- that the water on earth is recycled through the hydrologic process.
- how heat is transferred by conduction, convection, and radiation.
- that through the cause of human consumption come the effects of changes in the earth's systems such as the water cycle and heat transfer.

Process Skills/Habit of Mind: Predicting and inferring
Interpersonal and Small-Group Learning Skills: Sharing an idea

During the second week students will read about the hydrologic process and heat transfer in the earth's atmosphere. The depth of knowledge for this lesson serves as a review or benchmark lesson to introduce global warming and how it relates to the world's water supply.

Students view the film, *An Inconvenient Truth*. Prior to viewing the film, students will be given an anticipation guide to help them focus on the key points that relate to our unit. A post-viewing questionnaire will be given to assess what they understand.

They will then engage in an exercise designed to help students be open-minded, draw conclusions based on reliable evidence from reliable sources. Students will learn that our opinions come from what we choose to read and hear and that we might change our minds based on new evidence. The activity, called ***Cards in the Middle***, is similar to ***Academic Controversy***, (Baloche, 1998). This exercise is a adaptation/combination of ***Pens in the Middle***, (Baloche, 1998) and ***Reading Opposing Perspectives to Form an Opinion***, in *Strategies That Work*, (Harvey & Goudvis, 2000). Since students are required to use a writing implement, I decided to use index cards on which each student puts their name hence the name ***Cards in the Middle***.

Students are situated in groups of three or four. First they create a three-column diagram labeled EVIDENCE FOR/EVIDENCE AGAINST/PERSONAL OPINION. They are each given a excerpt, interview, or other text that clearly states a point of view related to global warming, water conservation, and /or climate change. Each group receives a different set of reading material, some of which contain evidence for global warming and others against global warming or at least skeptical. Each student reads their piece of text independently and decides whether the evidence if for or against and writes the evidence down in the appropriate column. After they have all read their selection, the first person shares the main gist of her text, and what she put down on her chart. She then puts her card in the middle of the table and the next person repeats the procedure until all the cards are in the middle. Next, the group discusses the results and concludes what their

personal opinion is. Members do not have to agree with each other. A class discussion follows by first having one member report the groups findings. Students might discover that opinions were based on the evidence in their reading materials. Asking appropriate questions at this point is key to an interesting discussion on formulating opinions and respecting another's point of view.

Extension: Students create closed mini-eco-systems and test how types of covers, adding heat, and incorporating the properties of color can affect the system.

Week Three: Part one: How Clean is Our Water?
Water Filtration

Objectives:

- Students will be able to relate the cause and effects of water pollution.
- Students will be able to design a filter for removing impurities in water.

Now that the students have gotten their feet wet by investigating their own water usage and where their water comes from, the first part of this week will focus on investigating water treatment facilities and designing a model of their own.

The Egrets will appreciate how our water travels from reservoir to faucet in a field trip to the local water treatment facility. Back in the classroom we will review and reinforce the concepts learned. First, I will assess understanding by conducting a KWL activity. Misconceptions will be addressed on the spot. Students will then be introduced to the design activity. In groups of three or four, they will be given a box of materials for creating a filter, such as 2-litre soda bottles, clear plastic cups, various types of cotton, gravel, and sand. In the box will also be substances for making the water dirty, such as soil, salt, vegetable matter, etc.

In a ***Pens in the Middle*** activity, students will be charged to individually brainstorm some questions that will help identify the problem they are going to solve. After each group member has come up with a question or two they put down their pens and share the questions they have written in their journals. Once a student has shared he puts his pen in the middle. When all the pens are in the middle they discuss which ones will help them identify the problem to solve. I will check-in to be sure the groups are asking appropriate

questions like, What materials will make the best filters? What can we use to make a filter? And What can we use to make dirty water?

Students will be required to record the procedure by which they will conduct their filter design. Once all members have recorded the intended procedure they can "get muddy" by using the materials to develop possible solutions such as creating polluted water and a system for filtering the dirty water. They continue through the design process until they have filtered their dirty water with positive results – a completed filtration system that filters water effectively. This activity will continue for three days if necessary. The final product – beside the filter system – will be a written report on the result. Prior to filtering the water, students will reserve some for comparing with the filtered water. The final determination will be made visually, however it would be ideal to chemically test the water.

The idea for the filtration system activity came from the website: http://www.teachersdomain.org/resources/ess05/sci/ess/earthsys/waterfilter/index.html retrieved December 3, 2007.

Week Three: Part two: Why Do We Need Water?

Human Body Functions

Students will uncover one of the patterns of the Universe by learning that the percentage of water in our bodies is similar to that on the earth. I will refer back to the apple activity early in the unit. About two class periods will be devoted to learning how every system in our body needs water to function healthfully. Students will learn what it means to be dehydrated and how we need water for energy. By answering the question, "How can I take care of my body?" students will discover that by drinking enough water every day will help them remain healthy. Absorbed by their own health concerns, students will be able to answer the question, "Water, Who Needs It?" with a resounding – I do!

Note: By introducing the human body at the end of the unit, it is possible to segue into a wider unit on the Human Body Systems.

Social Studies Overview

Week One
Day 1: Engaging activity (apple ocean activity).

Lesson One

The Role of Citizens in the United States

Lesson Overview:
Students will explain the idea of citizenship in the United States, describe the roles of United States citizens, and identify and explain the rights and responsibilities of United States citizens. They will also examine civic dispositions conductive to the maintenance and improvement of civil society and government, and describe and demonstrate how citizens can participate responsibly and effectively in the civic and political life of the United States.

Objectives:
Students will be able…

- Define the term representative democracy
- Explain how the government responds to the needs of its citizens
- Describe the role of citizens in a representative democracy
- Explain how citizens can influence public policy

Process skills/Habits of mind:

- Finding and keeping focus
- Asking good questions
- Simplifying questions and problems
- Being attentive
- Thinking fluently and flexibly

Study skills:

- Organizing materials and space
- Managing time
- Managing stress
- Getting help
- Listening and participation skills
- Note taking skills

Massachusetts State Standards:

USG.5.2 Describe roles of citizens in Massachusetts and the United States, including voting in public elections, participating in voluntary associations to promote the common good, and participating in political activities to influence public policy decisions of government.

USG.5.3 Describe how citizens can monitor and influence local, state, and national government as individuals and members of interest groups.

USG.5.6 Identify specific ways for individuals to serve their communities and participate responsibly in civil society and the political process at local, state, and national levels of government.

USG.5.9 Together with other students, identify a significant public policy issue in the community, gather information about that issue, fairly evaluate the various points of view and competing interests, examine ways of participating in the decision making process about the issue, and draft a position paper on how the issue should be resolved.

Classroom environment: Daily morning meetings will occur to build community and use peer negotiation/mediation to resolve conflicts that may occur.

Purpose:
This lesson analyzes the roles of government and citizens in a representative democracy. Students will examine how political solutions to public policy problems are generated through interactions of individual citizens and groups with their government.

Duration: two 50 minute class periods

Content integration: Social Studies and English Language Arts

Materials:
- Use of computer to view E-learning module: An Ordinary Day @http://congress.indiana.edu/lesson_plans/od_lesson_plans. php
- Internet connection with Macromedia FLASH enabled
- Projection device
- Paper and pencil

Procedure:
Day 2
- Review the term government with students. Make sure students understand that different nations have different kinds of governments but all governments have some system of leadership and laws. (Brainstorm student knowledge on large pieces of paper and display for all students to see).
- Explain to students that the United States government is a representative democracy. In a representative democracy people choose a small number of people to represent their interests and negotiate differences on their behalf.
- Tell students that in a representative democracy the government must be responsive to the needs and collective ideas of its citizens. Explain that he U.S. government responds to the needs of its citizens by creating public policies that promote the general welfare

Day 3
- Use a projection device to show students the An Ordinary Day E-Learning module. Talk about the impact of public policies and laws on our everyday lives and how they improve our quality of life.
- Discuss the role of a citizen in a representative democracy. Tell students that in the United States, citizens have a first amendment right to say what they think

government should do about problems in the local community, state, and nation. Citizens also have a right to try to influence the decisions government officials make about addressing these problems

Assessment:
Students will respond to the following questions in writing teacher will assess their knowledge using rubric.

Questions:

1. Define the term representative democracy
2. Explain how the government responds to the needs of its citizens
3. Describe the role of citizens in a representative democracy
4. Explain how citizens can influence public policy

Rubric:

Correct spelling	_____/5
Good beginning, middle, and end	_____/5
Identifies a policy or law from E-Learning Module as seen in class	_____/10
Describes the issue the policy or law addresses	_____/20
Explains how legislatures passed the law or how Government officials developed a policy	_____/30
Describes how individuals and groups Influenced the policy or law	_____/30
Total	_____/100

This lesson was adapted from:

(2004). *Roles of citizens in the United States*. Retrieved October 10, 2007, from the Indiana University Center for Congress website at http://congress.indiana.edu/lesson_plans/od_lesson_plans.php.

Week One
Lesson 2

Writing for Action

Lesson Overview:
Purpose:

Students will identify causes that they care about and use writing as a tool to make a difference, using persuasive writing techniques that they identified in previous lessons, by either writing to a lawmaker or a letter to the editor of a newspaper.

Objectives:
Students will be able to…

- Use a variety of resources to research an issue about which he/she cares deeply.
- Use the techniques of persuasive writing to write a letter to a lawmaker or the editor of a newspaper advocating change regarding the issue that he/she researched.
- Work with peers to revise and edit letters.

Experiential Component:
Students will write well researched, persuasive letters to their lawmakers, or letter to the editor concerning issues that need to be changed.

Process skills/Habits of mind:

- Finding and keeping focus
- Asking good questions
- Simplifying questions and problems
- Being attentive
- Seeing anomalies
- Thinking fluently and flexibly
- Forming hunches
- Finding elegant solutions
- Taking risks
- Cooperating and collaborating
- Persevering and having self-discipline

Study skills:

- Organizing materials and space
- Managing time
- Managing stress
- Getting help
- Listening and participation skills
- Note-taking skills

Massachusetts standards:

Roles of Citizens in the United States

Students will explain the idea of citizenship in the United States, describe the roles of United States citizens, and identify and explain the rights and responsibilities of United States citizens. They will also examine civic dispositions conducive to the maintenance and improvement of civil society and government, and describe and demonstrate how citizens can participate responsibly and effectively in the civic and political life of the United States.

USG.5.1 Explain the meaning and responsibilities of citizenship in the United States and Massachusetts.

USG.5.2 Describe roles of citizens in Massachusetts and the United States, including voting in public elections, participating in voluntary associations to promote the common good, and participating in political activities to influence public policy decisions of government.

USG.5.3 Describe how citizens can monitor and influence local, state, and national government as individuals and members of interest groups.

USG.5.4 Research the platforms of political parties and candidates for state or local government and explain how citizens in the United States participate in public elections as voters and supporters of candidates for public office.

USG.5.5 Identify and explain the meaning and importance of civic dispositions or virtues that contribute to the preservation and improvement of civil society and government.

USG.5.6 Identify specific ways for individuals to serve their communities and participate responsibly in civil society and the political process at local, state, and national levels of government.

USG.5.9 Together with other students, identify a significant public policy issue in the community, gather information about that issue, fairly evaluate the various points of view and competing interests, examine ways of participating in the decision making process about the issue, and draft a position paper on how the issue should be resolved.

Classroom environment: Daily morning meeting will continue with conflict resolution activities and community building games

Content integration: Social Studies, English Language Arts, Technology

Duration: three to five 50 minute class periods

Materials:

- Library for research
- Computer for word processing and research
- Writers INC (or another writing resource book)

Procedure:

As a class brainstorm a list of social issues that students feel need attention. Lead students to discover their role in public advocacy. Share/explain that a long term project students will be exploring is the use and misuse of water. What other issues are there? What can be done? Do students have a responsibility or are they just "adult problems?"

Day 4

- Tell students that they will be writing letters to the editor of a local newspaper or to lawmakers, advocating change regarding an issue that they care about.
- Brainstorm ideas. Homework-- choose an issue
- Identify how they can find out the web address or office location of their state, local, federal elected Representatives or Senators.

Day 5

- Review persuasive writing techniques, using Writers INC or another resource.

Day 6

- Give student's time to research their issue in the library, making sure that they pay attentions to opposing view points, and that they get information from a variety of sources. (Make note that while a bibliography is not necessary, if they use specific information from a source, they must cite it within the letter). As they research the issue, students should begin thinking about the most effective person to whom the letter could be sent.
- Once students have decided where their letters are going, they should get addresses. Look in the "Letters to the Editor section for the newspaper for the protocol for sending those, and names and addresses of lawmakers can be found on-line. (Look up state Assembly, State Senate, US Senate, House of Representatives, etc.).

Week 2

Day 7-8

- Review business letter style, and have students write their letters, going through all stages of the writing process. This is especially important since the letters will be used for a purpose.

Assessment:

See attached rubric

Rubric for Letters

Position on issue is clearly stated	_____/10
Letter contains specific facts/detail to support opinion	_____/20
The opposing viewpoint is considered and refuted	_____/10
Maintains a clear, consistent stand from start to finish	_____/10
Speaks in an original, engaging voice, using appropriate tone	_____/10
Is convincing	_____/10
There are no mechanical/grammatical problems	_____/10
Business letter format is followed	_____/10
Total	_____/100

Writers as Activists

Week 2
Lesson 3

Lesson overview:
Purpose:
Students will understand and demonstrate their knowledge of the enormous impact that one woman writer had on the world and our environment by reading Part I of Rachel Carson's *Silent Spring* and Al Gore's 1994 introduction to the latest printing of the book.

Objectives:

- Use strategies for reading non-fiction to read and comprehend Rachel Carson's first chapter and Al Gore's 1994 introduction to Silent Spring.
- Through reading, identify and clarify his or her personal beliefs about the environment
- Articulate those beliefs though class discussion and writing
- Understand the impact that one person, through writing can have on the world.

Materials:

- Silent Spring by Rachel Carson with an introduction by Al Gore, 1994

- Homework questions (attached).

Process skills/Habits of mind:

- Finding and keeping focus
- Asking good questions
- Simplifying questions and problems
- Being attentive
- Seeing anomalies
- Thinking fluently and flexibly
- Forming hunches
- Searching for patterns
- Using models and metaphors by analogy
- Finding elegant solutions
- Taking risks
- Cooperating and collaborating
- Persevering and having self-discipline

Study skills:

- Managing time
- Managing stress
- Getting help
- Listening and participation skills
- Note taking skills

Massachusetts Standards:

The Relationship of the United States to Other Nations in World Affairs

Students will analyze the interactions between the United States and other nations and evaluate the role of the United States in world affairs.

USG.4.8 Use a variety of sources, including newspapers, magazines, and the internet to identify significant world political, demographic, and environmental developments. Analyze ways that these developments may affect United States foreign policy in specific regions of the world.

Classroom environment: Continue with morning meeting utilizing the time to continue learning and growing as a group.

Content integration: Social Studies, English Language Arts

Duration: three 50 minute classes

Procedure:
Day 9

- Display the following quotes, which are found at the beginning of the "Silent Spring"

"Man has lost the capacity to forsee and to forestall. He will end by destroying the earth." (Albert Schweitzer)

"I am pessimistic about the human race because it is too ingenious for its own good. Our approach to nature is to beat it into submission. We would stand a better chance of survival if we accommodated ourselves to this planet and viewed it appreciatively instead of skeptically and dictatorially." (E.B. White)

Ask students to explain what they think the quotes mean and react to them. Ask students to discuss how they feel about environmental issues.

Alternate reflection: Divide the class in half. Assign the Schweitzer quote to the first half and the E.B. White to the second half. Pair students in each half, allowing 5 minutes to react and write their reflections of the quotes. Write their reactions on large sheets of paper around the room. Share their reflections orally.

Day 10:

- Read "A Fable for Tomorrow," the first chapter of *Silent Spring*.
- Discuss student's reactions to the piece. (You may want to have them write down first and then discuss).
- Explain to students that the rest of the book explains in scientific detail what Carson discusses in " A Fable for Tomorrow" and invite them to read the rest of the book (possible extension activity)
- Have students guess the year it was published.
- When you tell them if was first published in 19962, have them speculate on how successful it has been in effecting change since 1962.

Day 11:

- Read Al Gore's introduction to the 1994 printing of *Silent Spring* to find answers to the question of how effective Rachel Carson's book was in influencing important environmental issues.
- Have students point out specific passages in the book that refer to Carson's effectiveness.
- Ask students if Carson's actions make her a good citizen in a democracy. brought to light, the science and research she inspired, stand not only as powerful
- Bring closure by pointing out Gore's last sentence: "Her work, the truth she arguments for limiting the use of pesticides but as powerful proof of the difference that one individual can make." Also make note that her medium was writing.
- For homework have students respond in writing to the questions (attached)
- Continue discussion based on student responses (next day)

Assessment:
Evaluate student's written responses to homework questions
You can assess class participation

Extension: Read the rest of Silent Spring. This could be effective as an interdisciplinary assignment with a biology class.

Silent Spring
Homework Questions

1. When *Silent Spring* first came out, Carson faced fierce opposition. Why, according to Al Gore, would people try to refute her research, and how did they try to do it?
2. Contrast Rachel Carson and Al Gore's view of humans' relationship with nature with the views of Carson's opponents. With whom do you agree and to what degree?
3. Using specific passages for support, explain what Al Gore thinks of the impact that Carson's book had on the world.
4. What did you learn about pesticide use, politics, and food growth from reading Gore's introduction?
5. How did Carson's actions make her a good citizen in our democracy?
6. What did this lesson teach you about the power of writing?
7. Obviously the issues that Carson raised in *Silent Spring* have not gone away. What do you feel you can do as a citizen to become part of the solution to these problems?

Are You A River Keeper

Week 3
Lesson 4

Lesson overview:
Purpose:

This lesson explores the roles of government, nonprofits, businesses/farms and households in responding to water quality issues. Students will review why water is a scarce natural resource, human causes of water pollution, and possible agents of change in water quality. Students will then identify what it is that each sector can do to be an agent of change. Finally, students will investigate nonprofit organizations involved in safeguarding waterways and become proactive in efforts to act as stewards.

Objectives:
The student will be able to…

- Define "***scarcity***" and demonstrate through his/her acquired knowledge base water as a scarce ***natural resource***.
- Identify ways that water meets a basic need in all sectors.
- Identify causes of water pollution, its effects, and how the ***four sectors*** (households, government, nonprofits, business/farms) act as agents of change.
- Relate solutions to water pollution.
- Complete his/her portfolio titled "Healthy Water."
- Design a presentation which summarizes his/her findings.
- Identify a nonprofit public interest group in his/her community or nearby communities involved in environmental improvement.
- Compose a grammatical and structurally correct letter to an individual in government or industry, who can act as an agent for change, seeking support of improving water quality.
- Design and participate in a service learning activity demonstrating effective service, reflection and evaluation.

Process skills/Habits of mind:

- Finding and keeping focus
- Asking good questions
- Simplifying questions and problems
- Being attentive
- Seeing anomalies
- Thinking fluently and flexibly
- Forming hunches
- Searching for patterns
- Using models and metaphors by analogy
- Finding elegant solutions

- Taking risks
- Cooperating and collaborating
- Persevering and having self-discipline

Study skills:

- Managing time
- Managing stress
- Getting help
- Listening and participation skills
- Note taking skills

Massachusetts Standards:

The Nature of Citizenship, Politics, and Government
Students will identify, define, compare, and contrast ideas regarding the nature of government, politics, and civic life, and explain how these ideas have influenced contemporary political and legal systems. They will also explain the importance of government, politics, and civic engagement in a democratic republic, and demonstrate how citizens participate in civic and political life in their own communities.

USG.1.1 Distinguish among civic, political, and private life.

USG.2.8 Evaluate, take, and defend positions on issues concerning foundational ideas or values in tension or conflict.

Roles of Citizens in the United States
Students will explain the idea of citizenship in the United States, describe the roles of United States citizens, and identify and explain the rights and responsibilities of United States citizens. They will also examine civic dispositions conducive to the maintenance and improvement of civil society and government, and describe and demonstrate how citizens can participate responsibly and effectively in the civic and political life of the United States.

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USG.5.6 Identify specific ways for individuals to serve their communities and participate responsibly in civil society and the political process at local, state, and national levels of government.

USG.5.9 Together with other students, identify a significant public policy issue in the community, gather information about that issue, fairly evaluate the various points of view and competing interests, examine ways of participating in the decision making process about the issue, and draft a position paper on how the issue should be resolved.

Classroom environment:
Students are now running the morning meeting where they will continue with group building activities and dealing with conflict issues as they occur.

Content integration: Social Studies, English Language Arts, Science, Technology

Day 12

- On the board, project a picture of the water basin in which you live. Tell students that each team will receive a symbol that represents a problem our rivers face. Students should try to identify the symbol, and then look on the back for its name, as well as a question they must answer about the symbol. Then, hand out a symbol to each student and read the directions on the back. Teacher instructions for the cutouts are found on ***Problems Facing Our Rivers***. Allow 25 minutes for partner discussion/research, during which teams will need access to the Internet. Guide learners to research a river watershed closest to them. Ask each team to come forward and place their symbol on the river's edge. Before presenting, remind students that they will be asked to recall one of these presentations in front of the class tomorrow. Student One will explain what the symbol represents and one impact this symbol has on waterways; Student Two will explain a second impact on our waterways. Five minutes before the end of the class session, have the learners reflect in writing or drawing with caption what they learned and what they felt this day. This activity will complete **Day Eleven**

Day 13

- To review, teams are assigned a symbol other than their own to reflect on and report back to the class. Allow the original team to critique their review. Teams who recall well receive an award of your choice. Then, hand out ***A Common Natural Resource—Improving Our Water Quality***. Discuss the four sectors of society and generate examples of each. Assign each team a category; tell them they have 15 minutes to search (on the web) and find any examples of how each sector of society has or might influence waterway quality. When 15 minutes are up, allow five more minutes for students to prepare to explain their findings to the class. Post four charts on which each presenter will write. Instruct students to have one student present while the other writes notes that the class will copy. Allow five minutes of reflection for this session. Add it to **Day Eleven** reflection.

Day 14-15

Give each student a 5" x 8" paper as they enter class. Tell them to draw one thing that a sector from yesterday (*government, business & farms, nonprofits and families*) can do to improve waterway quality. Have them then post their picture next to one sector name and explain to begin class.

Form peer groups of three to four learners. Explain that each peer group will now be designing a computer-generated presentation, which will convince peers to pledge to do one or more of these positive actions toward improved water quality. They must identify one public interest nonprofit or grassroots organization that works to preserve the environment. Encourage them to emphasize water quality. Explain criteria for the slides. Have students save their presentations to the network.

Day 16

Explain criteria for evaluating student presentations. Present the criteria for assessing their presentation. Have teams practice delivering a three-minute presentation of their findings. Then, allow each team to present their findings. Evaluate them and select the best one for class presentation to their peers.

Additional Scheduled Activity:

Assembly: Schedule a grade level assembly. Have your learners make their presentation. When the presenters complete the last slide explaining the pledge, thank your presenters. Then, explain to the students that they will receive a pledge card. Ask them to fill it out honestly. Collect copies, and then post one copy in the hallway. Send the second home with a challenge to parents to join in their commitment to water quality

Assessment:

Rubric:

4 points: Identified specific nonprofit public interest group and its programs for improving environment, is grammatically and structurally sound with 90% accuracy, and content specific to water quality, sedimentation, erosion. Identified public interest group that impacts local community or river/lake. Relates opportunity costs and scarcity. Demonstrates competencies in scientific concepts and processes from Lessons One to Three. The presentation is attractive and creative. Student uses active voice and communication. Asks

for pledge support and demonstrates personal commitment and stewardship to improving waterways.

3 points: Identifies a nonprofit public interest group but may not be in the local community or in close proximity. Discusses needs for personal involvement and stewardship need. Learners demonstrate 80% accuracy in English Language Arts skills and competencies: may not relate to science learnings from previous lessons. Presentation is attractive and active voice and communication is used. Demonstrates scientific knowledge of processes from Lessons One to Three.

2 points: While a public interest group is identified, it may not be specific to rivers, waterways, and watershed. The presentation is within 70% demonstrated objectives in English Language Arts. Presentation asks for support of water stewardship and commitment.

1 point: An attempt is made to identify a nonprofit. Presentation is below 50% English Language Arts components. No connection is made to scarcity, opportunity costs or related scientific concepts and processes.

0 points: No attempt is made.

School/Home Connection:

Interactive Parent / Student Homework: Students will bring the "*River Keeper's Pledge Card*" home to inform parents of the commitment students have made.

Extension:

- Students could also collect information on water usage over the last year in their home and/or in their school. This data could be graphed. Then, students could record usage for the month ahead and set goals for lowering consumption.

- Students might also be encouraged to research the River Keeper's organization, a grassroots watchdog group who recognizes the need to protect our rivers.

Lessons 2, 3, and 4 have been adapted from
Learning to Give. (2007). Retrieved October 10, 2007 from
<http://www.learningtogive.org>

Health Overview

Grade Level: 8
Subject: Health/ Life Skills
Duration: Every Friday for the whole year
Lesson: "Helping Others"

Goal: Students will learn the importance of helping others by participating in different charitable events.

Objectives: -Students will participate in a variety of philanthropic events as part of a life skills curriculum.
- Students will complete journal entries.
- Students will understand the positive social implications of helping others.
- Students will participate in group activities.

Essential Question: Why is it important to help others?

Health Curriculum Frameworks and Instructional Practices

Standard 7: Students will understand that relationships with others are an integral part of the human life experience and the factors that contribute to healthy interpersonal relationships, and will acquire skills to enhance and make many of these relationships more fulfilling through communication and commitment.

Standard 14: Students will understand the influence of social factors on health and the contribution of public health, and will gain skills to promote health and to collaborate with others to facilitate healthy, safe and supportive communities.

Introduction: This unit will focus on why it is important for people to help others. This unit will be implemented every Friday throughout the school year. Students will visit different charitable organizations throughout the city while documenting there perspectives in a journal. Each week's lesson plan will be similar as students go to different places and reflect on their experiences through classroom activities. Below is an example of a day's lesson plan.

Sample Lesson Plan:

Objective: Students will visit a soup kitchen and reflect on their experience by completing a journal entry in a group format.

Lesson : Reflecting on a Visit to a Soup Kitchen

Warm Up: students will complete an anticipation guide about their knowledge and expectations of what a soup kitchen is. When completed, the instructor will discuss with the class the answers they have developed.

Engaging Activity: Visit the soup kitchen as a class during a Friday afternoon. Students will be responsible for preparing meals, dispensing food and maintaining a clean kitchen. As this is happening, students will be responsible for observing their experiences in preparation for a group reflection in class.

Wrap Up: Students will work in groups of 4 and complete a journal entry addressing the following questions:

- *What did we learn from this visit?*
- *How does this visit demonstrate the importance of helping others?*
- *What did we like/ dislike about this visit?*
- *What was a valuable lesson we learned while visiting?*

Assessment- Students will be evaluated on class participation and active group participation in completing the journals and final project.

Modifications- Students who are physically unable to perform at the soup kitchen will be allowed to work with another student.

Culminating Activity: Students will contact a local newspaper. Students will share their experiences of helping others. This will provide students with affective engagement and inspire community involvement,

Art Overview

Grade Level: 8
Subject: Art
Duration: 3 Weeks
Lesson: "Drink Water"

Goal: Students will create a video that promotes water and its importance to the human body.

Objectives: -Students will use art as a means of communicating a message.
-Students will understand technological elements of creating, editing and displaying a video.
-Students will understand the positive social implications of helping others.
-Students will participate in group activities.

Essential Question: Why is water important to the human body?

Art Curriculum Frameworks and Instructional Practices:

Standard 6- Purposes and Meanings in the Arts
Students will describe the purposes for which works of dance, music, theatre, visual arts, and architecture were and are created, and, when appropriate, interpret their meanings.

Standard 8- Concepts of Style, Stylistic Influence and Stylistic Change
Students will demonstrate their understanding of styles, stylistic influence, and stylistic change by identifying when and where art works were created, and by analyzing characteristic features of art works from various historical periods, cultures, and genres.

Introduction: As the unit focuses on the theme of water, students in this section will create a video that promotes water and its benefits to the human body. The video will be meant to serve as a commercial which will attempt to persuade the viewer to drink more water. Students will work in pairs and will be responsible to brainstorm ideas, write a script and film the video. As the process is completed, students will view all the classes' videos and judge which one is the most effective.
Students will then have their videos aired on cable access television to promote the idea of community awareness.

Lesson Plan-
Section 1: Students will be assigned a partner and will be responsible for researching important facts on water, including:

- **why humans need to drink water**
- **the benefits of drinking water**
- **the amount of after humans need to drink**

The research should take between 2-3 days.

Section 2: Students will brainstorm ideas for the content of their commercial. Emphasis on creativity and uniqueness will be encouraged. This process should take 2-3 days.

Section 3: Students will begin writing a script for their commercial. Students will incorporate development of writing skills as well as examine the process of writing a script.

Section 4: Once the script is finished, students will film their commercial. Students will have access to the resources of the school, including cameras and editing machines. When the filming process is complete, students will edit their video into a one minute presentation.

Culminating Activity: Students will present their video to the class. A small introduction of the project will be followed by the presentation of the video. After all videos have been viewed, the class will judge the best video. The following questions will be considered in picking a winner:

- **Does the video persuade me to drink water?**
- **Is the video informative?**
- **Is the video creative & unique?**

As the unit concludes, students will have their videos featured on cable access television.

English Language Arts Overview

Summary of Activities:

There are 4 main activities that will be run in ELA during the course of *Water, Who Needs It?* These are:

- Creating an informational brochure to spread awareness of the need for water conservation
- Researching, writing, and presenting a public service announcement over the school PA system as well as the local school cable channel
- Crafting questions and interviewing visiting speakers after their presentations to our team
- Studying theme and context in the novel *Out of the Dust* by Karen Hesse

These scope and sequence of these activities are outlined later in this overview.

ELA Objectives:

This unit supports a wide range of ELA standards and incorporates all four of the communication domains. *Reading* both expository and fictional texts provides a foundation of understanding for both the topic of water conservation as well as the underlying themes of balance, interdependence, and metaphor. *Written* work in the form of creating an informational brochure has a heavy emphasis on purpose, selectivity, editing, and consideration of audience. *Listening* skills are practiced through learning how to prepare for and implement interview questions for visiting classroom speakers. *Speaking* in front of an audience is addressed through the creation and performance of a public service announcement.

Process Skills & Habits of Mind:

A wide variety of process skills and habits of mind are also touched upon in the ELA component of *Water, Who Needs It?* Skimming , highlighting, analyzing, interpreting, labeling, drafting, and concluding are all involved in accessing the various expository nonfiction that students will need to research and read in order to create their informational brochures, interview questions, and public service announcements. Valuing the author's point of view, inferring, reflecting, and summarizing are required to explore the thematic overlaps in the Karen Hesse's young adult novel *Out of the Dust.*

The habits of mind embedded in this study are also numerous. **Asking good questions** and **being attentive** are strongly supported in the presentation/interview activity. In order to glean as much new and relevant information as possible to help them answer their essential question, students must prepare questions that elicit substantive responses from the visiting speakers. **Finding and keeping focus** along with **simplifying questions and problems** directly relate to the processes involved in creating an informational brochure about water conservation as well as a public service announcement. The space and/or limits imposed by such communication require students to really hone in on their essential message and present it in a direct yet complete manner. Editing and refining a message in this way is very challenging.

Finally, **thinking by analogy** and **thinking fluidly and flexibly** are tasks embedded in the thematic study of *Out of the Dust*. This novel, which is written in free verse and set in the 1930's Dust Bowl during the Great Depression in America, speaks to the devastating physical, emotional, spiritual, and familial effects that imbalance in nature (over-farming, soil erosion, drought) can cause in people. In order to access the

metaphor, layers of meaning, and perspective of the author, students will need to engage in highly abstract considerations of meaning and intent.

The MA standards to which the ELA content of this unit relates are:

Oral Presentation 3.12 Give oral presentations to different audiences for different purposes, showing appropriate changes in delivery and using language for dramatic effect.

Making Connections 9.5 Relate a literary work to artifacts, artistic creations, or historical sites of the period of its setting.

Genre 10.4 Identify and analyze the characteristics of various genres as forms chosen by an author to accomplish a purpose.

Nonfiction 13.18 Identify and use knowledge of common textual features (paragraphs, topic sentences, concluding sentences, introduction, conclusion, footnotes, index, bibliography).

Nonfiction 13.19 Identify and use knowledge of common graphic features (charts, maps, diagrams).

Nonfiction 13.21 Recognize use of arguments for and against an issue.

Nonfiction 13.22 Identify evidence used to support an argument.

Writing 19.23 Write and justify a personal interpretation of literary, informational, or expository reading that includes a topic statement, supporting details from the literature, and a conclusion.

Consideration of Audience and Purpose 20.4 Select and use appropriate rhetorical techniques for a variety of purposes, such as to convince or entertain the reader.

Week One

Activity: *Out of the Dust* prereading research and context preparation

Purpose: To launch reading of this fiction and to investigate the author, narrative style, historical context, and use of theme in relation to the writing.

Rationale: Having a sense of the context and some background knowledge matter a great deal in accessing this novel. The story is set in the Oklahoma dust bowl during the Great Depression. The soil exhaustion and erosion caused by over-farming and drought shows very graphically how dependent we are upon our water and agricultural resources. We are also faced with how easily we can cause devastating effects to our environment and ultimately to ourselves (interdependence).

Duration: 2 days (Following this, the reading is ongoing as homework. Daily discussion and interaction with text happens during class time)

Content Area Integration: ELA, Social Studies

Procedure:

Day One

Step 1. Announce to the class that we are going to begin a new novel. State the 4 areas of concentration: genre, author, context, and theme.
Step 2. Hand out graphic organizer with blocks for each one of the four concentration areas.
Step 3. Direct the students to the text sets at each table. Each table will have an assortment of texts (including expository nonfiction, biography, historical journals, and photographic records) about one of the areas of concentration. Working in groups of 3, students will share these text sets while researching the particular concentration.
Step 4. After 12-15 minutes, groups switch to another table and students will begin the process again. All groups will cycle through each of the tables.
Step 5. This completed organizer will be taped to the inside of a reading journal that students will keep while reading this novel.
Step 6. As homework students will be assigned to read the first section of the novel (30 pages). They will discuss and relate their reading to our context/ background work during the next class.

Day Two

Step 1. Students will report out by groups the content of their organizers to insure the class has similar working information.

Step 2. Groups discuss the previous night's reading using the focus questions supplied by the teacher. These questions would address the author's use of genre, the context of the Dust Bowl, and how theme was emerging.
Step 3. Groups again report out to the class their first reactions to the novel based upon the background information they gathered yesterday.

Assessment:

This activity would be assessed by informal observation of students reporting for groups, and by formal reading of individual graphic organizers for understanding of categories and completeness of information.

Activity: Public Service Announcement

Purpose: This announcement activity is designed to increase student's awareness of the need for water conservation while utilizing their research, writing, and public speaking skills.

Duration: 3 days

Content Area Integration: ELA, Science, Health

Procedure:

Day One

Step1. As a whole class students, will read and listen to pre-written public service announcements gathered from a variety of local conservation sources. Then, working in groups of 3-4 students will discuss and decide which announcements were most effective and why. They will also describe what makes a good PSA and what features they would include if they were to create their own. Groups present out on their findings. Class comes to a consensus as to criteria for effective PSA. Class creates rubric for PSA writing and presenting. They must adhere to a three-minute time limit and must provide a finalized script as part of the project. Each group member is also responsible for broadcasting the PSA at least once during the presentation cycle.

Step 2. Students are presented with the task of researching and creating their own group PSAs to read over the school PA system to generate awareness of the importance of water conservation to the community and world. These PSAs will be broadcast to the school community via the school PA system as well as the local school cable channel during the last week of the unit. Groups divide roles/tasks and begin brainstorm.

Day Two

Step 1. Students research and gather information for their PSA from materials gathered by teacher and displayed throughout classroom. They must pool their findings and then discuss and decide upon the best information for their purpose. They can consult textbooks, trade books, journals, videotapes, and audiotapes and must cite quotations and include these sources in a bibliography. They must also adhere to all standard writing conventions in their scripts. They may be creative and incorporate sound effects or dramatic readings if they choose to do so. Following the rubric and meeting the time limit is necessary, however.

Step 2. Students begin rough drafts of scripts.

Day Three

Step 1. Students edit and revise their scripts. Practice readings are done to check for length requirement. Students also work on final reflections based upon a teacher provided organizer.

Step 2. Groups submit a final copy of their script and reflections to the teacher and present their work to the class. Each member is responsible for presenting a portion to the class. First, an overview of their message, research, and writing processes is delivered. Next, the actual announcement is read in "mock" PA conditions (a stand up microphone in front of the class). Finally, a summary of their group's understanding of this communication tool as well as of the need for water conservation is presented.

Step 3. Other groups respond/comment to the presentation.

Step 4. Groups receive their schedules from the teacher for the days and times when they will be airing their PSAs to the school. They will also record their PSAs for airing on the local school cable channel.

Assessment:

The below rubrics would assess understanding for this activity.

PSA Group Rubric

Criteria	Done Completely	Done Partially	Not Done
Stayed within 3 minute time limit			
Submitted a script which followed spelling,			

punctuation, and syntax standards			
Included bibliography (APA style) with list of sources used and quoted (at least 4 total)			
Each group member presented a portion			
Include a one paragraph group summary of experience			

PSA Individual Rubric

Submitted a three paragraph summary of understanding and reflection about the topic of writing a PSA and working in a group on a project like this	Three paragraphs with summary of main ideas learned and supporting details or examples.	Partial work – fewer than three paragraphs or unsupported ideas	Incomplete work – no paragraph organization and no summary of learning or experience

Week Two

Activity: Informational Brochure

Purpose: To spread awareness of need for water conservation to benefit community and the environment.

Duration: 4 days

Content Area Integration: ELA, Health, Math, Science

Procedure:

Day One

Step 1. A variety of informational brochures will be given to each group of 3-4 students. After looking these pieces over, students will be asked to do individual quick writes on the purpose and quality of each brochure. What was each about? Were they easy to read? Attention getting? Informative? Students will share their ideas with their groups and then each group will report out on which brochure was their top pick and why.

Step 2. The class will then brainstorm a set of criteria for a good informational brochure that could be distributed to raise awareness of the importance of water conservation within the school and community (our audiences). What type of research will be involved to find credible, attention grabbing, and convincing information to include in the write up? What design would be best for the purpose? What type of template would be better to work with – a booklet, tri-fold, or zigzag? Would graphics, maps, or charts support the message? These suggestions are listed on a white board for easy reference. Finally, a class generated brochure rubric is set up to insure that each group clearly states their message, that their brochure supports that message, and that research sources are credited in a bibliography on the back page. Also, all standard-writing conventions must be followed in the brochure text.

Step 3. Groups discuss and decide upon their particular message and the way they are going to convey it. A question- and -answer format? Bullets? Graphics? They decide upon their brochure type, design, and format.

Day Two

Step 1. Groups research their messages using resources available in the classroom, the library, and online.

Step 2. Groups start to narrow down text, charts, pictures and other research and make choices about what to include and what to leave out (editing). Mock- ups of the brochures are begun on the classroom and library computers.

Day Three

Step 1. Mock- ups go through final editing. Layout, design, and content are checked against rubric and class suggestion list.

Step 2. Some group members prepare brochures for publication while others begin the documentation and reflection phase of the project. These write ups are part of the project and include a bibliography of sources used.

Day Four

Step 1. Groups present their brochures to the class. Included in the presentation are reflections on the decision making process, the research process, and the editing process. Each group member actively presents a portion of the project.

Step 2. The class responds to each presentation with questions or comments.

Step 3 Notes are taken for final adjustments to be made based on the class feedback. These final adjustments will be done before copies are run off for distribution at the unit's *Water Fair* culminating activity.

Assessment:
Group Water Conservation Brochure

Clearly stated message	Completely	Somewhat	Not at all
Details to support message			
Sources credited in bibliography (APA format) on back page			
Standard writing conventions followed: correct spelling, punctuation, and syntax.			
Attention getting/interesting design elements			

Group Brochure Presentation Rubric

Each group member presents a portion	Completely	Somewhat	Not at all
Includes reflection on the decision making process			
Includes reflection on the research process			
Includes reflection oh the editing process			

Activity: Interview visiting speakers from the local conservation commission and farm.

Purpose: To prepare questions for the visiting speakers to answer. To focus student attention on the issue of water conservation. To help them frame the presentations in a meaningful context.

Duration: 3 days – one day for research and prep, one day for speakers to present, one day for reformatting and thank you notes

Content Area Integration: ELA, Social Studies

Procedure:

Day One

Step 1. Students watch a brief video clip of a local water conservation activist at a town meeting. Discuss this person's knowledge statements as a class. Have students do an individual quick write of one question they might have asked the activist if they had been at the meeting. Have groups share their thoughts and do a quick whip around the room for a few examples of student questions.

Step 2. Explain that this person along with a local area farmer will be visiting the class tomorrow to discuss water conservation and the unit that the team is studying. To enrich the experience for both the students and the speakers, each group will need to create 6 questions (3 per speaker). Each group will be given a dimension of conservation to avoid question overlap. The type of questions the students ask must be open ended. These questions must be connected to the unit and our guiding concept. They must also gather new information for the team. Students will be given a variety of print resources to read and compare to help focus their thinking. These would include news stories about water conservation, textbook excerpts about the water cycle, and nonfiction books about water and the environment from the library. The questions must adhere to standard writing conventions and a final edited copy must be submitted to the teacher.

Step3. Some sample question stems from inquiry learning textbooks will be posted for students to use. The teacher will be circulating throughout the class to help clarify questions.

Step 4. Groups will exchange their questions with other groups. Feedback and comments will be indicated on a separate sheet and both will be returned to original groups. Groups will refine their questions based upon this feedback.

Day Two

Step 1. Introduce speakers.

Step 2. Question and answer time. Students pose their group generated questions to the speakers. Students take notes during the presentation.

Day Three

Step 1. Students reformat or rephrase the speaker's answers to their questions and compile this information, along with their original questions in an organizer. All groups sheets will be bound, labeled and a copy will be sent to each of the speakers as well as being on display at their culminating activity day.

Step 2. Groups will write thank you notes to the speakers to send along with an invitation to the culminating activity.

Assessment:

Group Interview Questions Rubric

Criteria	Completely	Somewhat	Not at all
Questions were open ended			
Questions were connected to the unit and the essential understanding			
Writing adhered to standard writing conventions for spelling, punctuation, and grammar.			
An edited, final copy was submitted to teacher prior to presentation.			

Individual Interview Questions Rubric

Criteria	Yes, with all writing conventions followed and clear connection to topic	Yes, but convention errors or unclear connection to topic	No, neither content or conventions requirements followed

Original questions included			
Notes from answers to questions transcripted			

Week Three

Activity: *Out of the Dust* theme presentations

Purpose: To demonstrate understanding of the use and effect of theme in this novel after completing a reading of it.

Duration: 5 days

Content Area Integration: ELA, Social Studies

Procedure:

Day One:

"Decision making day." After reading, discussing, and journaling about this novel, the class will compile a master list of themes that the author weaves into her writing. These may include:

> interdependence, despair versus hope, historical elements in fiction, water as a symbol, physical needs versus emotional needs, people in relation to their environment: caretakers or careless users

Next the students will be divided into small groups of three to discuss and select one of the themes to orally present to the class. Students are encouraged to be creative in their presentations, but they *must* use textual evidence to back up their assertions. They may incorporate role- play, props, artifacts, photos, audio, or costumes to convey their understanding of the purpose and contribution that the theme made to the novel for them. In their presentations, students must clearly state what theme they explored, how it connects to our unit of study, and how this theme affected their understanding of the topic of interdependence. Presentations have a time limit of 10 minutes. Students must inform teacher about theme choice, presentation mode, and plan of action by the end of class. Students are also required to submit individual written overviews (3-5 paragraphs minimum) of their themes upon completion of presentations.

Day Two:

"Putting it together day." Groups work together to pull textual evidence and gather other resources as necessary to support their demonstration. A group recorder makes sure members are making notes for their written overviews as well.

Day Three:

"Fine tuning and practicing day." Groups put the finishing touches on their presentations and their individual write-ups. Schedule for presenting is posted.

Days Four and Five:

"Presentations and Commentary." Students watch and respond to each other's creative interpretations of the many themes incorporated into *Out of the Dust*. Given a sixty-five minute class period, 4 groups may present per day with additional time left for brief discussion after each.

Assessment:

Theme in *Out of the Dust* presentation Rubric

Criteria	Completely	Somewhat	Not at all
All members contributed –be clear as to how			
Theme choice clearly stated			
State reason why this theme was chosen			
State how this theme is relevant to the unit			
Discuss how your understanding of the novel was influenced by this theme			
Presentation had creative elements: props, drama, motion			
Textual evidence cited			
Individual 3-5 paragraph summaries submitted			
Time limit adhered to			