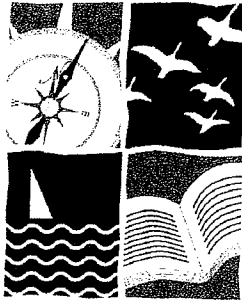




N^orthBay



North Bay



This notebook represents a cooperative effort in education between the North Bay Environmental Learning Center and Cecil County Public Schools. Many thanks to the following people who helped to develop the pre and post lessons.

Language Arts:	Susan Zimmer Melissa Goble
Mathematics:	Erin Sawyer Trisha Holmes
Physical Education:	Lisa Delcollo Tom Payne
Science:	Kim Dernowski Lori Hrinko Beth Remillard
Social Studies:	Julie Scott Wilson Robert Gaylord
North Bay:	Keith Williams
MSDE:	Rebecca Bell
CCPS:	Dr. Peter McCallum Richard Lonie Beth Cronin Rose Greer

**North Bay Focus Group
2005-2006**

The following people served on a focus group to review the North Bay experience after the first season and to present suggestions for the future. Building assignments, job titles, etc. represent the 2005-2006 school year. We thank them all for their continued efforts.

CCPS Related Members:

Pete McCallum, Executive Director for Middle School Education
Rose Greer, Science Resource Teacher
Laura Young, Nurse Supervisor
Diana Rudolph, Principal, Perryville Middle
Robert Gerard, Principal, Elkton Middle
Bruce Connors, principal, Rising Sun High
Justin Zimmerman, Assistant Principal, Bohemia Manor Middle
Rebecca Varlas, Counselor, Elkton High
Jill Cowan, Counselor, Perryville High
Wendy Evans, Counselor, Rising Sun High
Dionne Harris-White, Counselor, Cherry Hill Middle
Leon Alexander, Counselor, Perryville Middle
Amy Smith, Teacher, North East Middle
Steve Burke, Teacher, Rising Sun Middle
Penny Boas, Teacher, Bo Manor Middle
Joan Swanson, Pupil Personnel Worker
Rebecca Bell, MSDE
Chris Sopa, Parent
Ed Blankenship, Parent
Rex Sheets, Parent
Matthew Rando, Student, Elkton High
Amber Granger, Student, Rising Sun High
Matt Eller, Student, Rising Sun High
Tom Wesley, Coordinator of Guidance and Psychological Services

North Bay Staff Members:

Pete Albert, Executive Director
Keith Williams, Dean of Education
Cory Barnes, Dean of Students
Bob Bingham, Managing Director

North Bay Curriculum

Introduction:

Specializing in sixth graders from around Maryland, North Bay will present every school week a two part program focusing on:

1. delivering a state of the art environmental education program, and
2. messaging students in the most compelling manner possible regarding issues of character, healthy choices, and their future.

350 sixth graders each week , 11,000 each school year, and 100,000+ over the next decade will come face to face with the North Bay experience.

The IEEIA Model:

Investigating and Evaluating Environmental Issues and Action (IEEIA) was developed by Drs. Hungerford and Volk in the late 70's and has been used by teachers with great success in the classroom for a few decades. It goes beyond a science curriculum model. In fact, the student instructional objectives are 40% math/science/30% social studies, and 30% language arts. The goal of the model is to use **environmental issues as integrating contexts to teach students critical thinking skills**, to have students investigate issues without bias and come to their own conclusions. Unlike many programs the teacher/leader does not communicate a pre-conceived message regarding a particular issue, but leads students to derive their own conclusions and actions. **This method is applicable to all issues, not just environmental issues.**

IEEIA and Environmental Education at North Bay:

The academic curriculum reflects the latest science, an emphasis on technology, and a hands-on, outdoor classroom approach. 5 distinct ecosystems are available for study in this bayfront location, and every piece is designed to meet the mandates of a "meaningful bay experience", along with MSDE requirements for each grade level. (Sixth grade is the core audience). North Bay's curriculum has been developed by MSDE authors and is endorsed by the Maryland State Department of Education.

Character Education at North Bay:

The program and message here is designed to convince students that education and life-long learning is the key to having the finest options and choices for a life well lived. Throughout the week, North Bay will address in persuasive formats the issues which can kill a student's future, e.g. dropping out, drugs, and early pregnancy. These are symptoms of a way of thinking characterized by loss of hope, and a belief that "my choices do not impact my life". The entire focus of the week will deliver a new way of thinking which features the power of choices that lead to healthy life options, and how the commitment to education is their key to the future.

Integration of the Message:

The IEEIA model and the Academic focus on environmental education are easily linked to the character development message and drive home both spheres of learning. For example, the subject of erosion in the environment is complementary to the message about erosion of character; invasive species lends a discussion point to drugs and consequences; restoration = healing; buffer zones = appropriate personal boundaries; pollution = toxic life choices, etc.

Why Sixth Grade?

From a human development perspective, 6th graders are for the first time at an age where they will be able to step outside of their current reality and ask more abstract questions such as "Where am I headed?", "Who do I want to be?", or "What part do I play in our world and environment which makes a difference?" ...so it is crucial to not only give them the opportunity to ask such questions, but to teach them substantive skills to fill in the blanks. This critical age presents a child who is able to think abstractly about the future, before they might have made seriously toxic choices which might limit their future.

THE ISSUE ANALYSIS PROCESS

An environmental issue includes humans, the environment and interactions between the two. Issues involve differing beliefs and values which lead to differing positions regarding the solutions to the issue.

In this packet there are newspaper articles about current environmental issues in the Chesapeake Bay region. As you read the articles, think about the people involved in the story. When people have opinions and influence on an issue, they become Players. Use the Issue Analysis Worksheet to record the Players, their position on the issue, their values, and their belief statements about the issue. For most of these issues, there are Players with very different beliefs and values to consider; filling out the Issue Analysis Worksheet can help you think about your own position.

Players: The individuals or groups having opinions on the issue.

Players' Positions: Where the different individuals "stand" on the issue; and/or what the different individuals think should be done to resolve the issue.

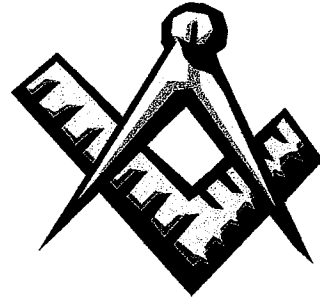
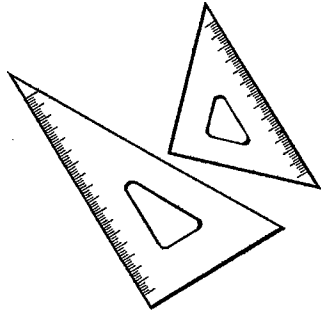
Players' Beliefs: Ideas held by individuals that are believed to be true. Often beliefs are strongly related to an individual's values.

Players' Values: The important ideas which help an individual decide what is important and worthy. Everyone has personal values which are based on past experiences. These values might involve money, status, beauty, religion, or a number of other things.

Value Descriptors

There are many different kinds of values, and they can be very hard to name. Listed below are several of types of values and their descriptions, which may be helpful as you analyze the issue. This list is not complete. These definitions are simply provided to help you with a rather complex task.

Aesthetic:	the appreciation of form, composition, and beauty.
Economic:	the use and exchange of money, materials, and/or services
Ecological:	the characteristics of natural biological systems; the self-regulation of naturally existing ecosystems without human intervention.
Egocentric:	a focus on self-centered individual needs and fulfillment.
Environmental:	human activities as they relate to quality of natural resources, e.g., plant and animal species, air, water, soil, etc.
Ethical/Moral:	present and future human responsibilities, rights and wrongs, and ethical standards.
Legal:	relating to regulations, laws, law enforcement, law suits
Religious:	the use of belief systems based on faith.



MATH



NORTH BAY FOLLOW UP ACTIVITIES
MATH
TREES

Objectives:

- 3.6.02 Select and use appropriate tools and units
- 6.6.13 Use ratios and unit rates to solve problems

Materials/Resources:

North Bay Journal
1 Meter stick per pair
Trees

Assessment:

The results of the activity (how high the tree really is)

Teacher-To-Teacher Tips:

- This lesson should be taught after students are introduced to proportions and ratios.
- This is an outdoor lesson.
- If trees are unavailable this lesson can also be done using a flagpole, building, or another large object casting a shadow.
- This lesson could be extended into technology through the use of Geometer's Sketchpad. Students can take their proportional information on the meter stick and tree and draw a representation. The students can use Geometer's Sketchpad to actually find the height of the tree and use that to check their calculations they did outside.

Warm-Up: (Whole group - 10 minutes)

The warm-up should including solving proportions and ratios.

Launch: (Individual and Whole Group - 15 minutes)

Teacher will lead a discussion on the zip line activity including the dimensions and speed of the zip line structure. Students will predict the height of the tower and offer suggestions on how they could determine the height without actually measuring the height of the tower since that would be difficult. Teacher will then review measuring the length of objects.

Explore: (Pairs and Whole Group – 40 minutes)

Students would be paired to complete this activity. Each pair will be given one meter stick. Each pair will measure the shadow that is cast from the meter stick and set up a proportion. Then the students will measure the shadow that each student casts and use a proportion to determine their height. Teacher will discuss the results from the activity. Students should be able to know if they performed the activity correctly since they should be able to measure their actual height. Teacher will ask students how they could apply this procedure to measuring larger objects such as the zip line tower.

Then the pair will measure the shadow cast from a designated object (tree, flag pole, building, etc) Using proportions, the pair will determine the actual height of the large object.

Summarize: (Whole Group and Individual – 15 minutes)

Students will share their results by posting them on a whiteboard. Teacher will lead a discussion on the comparison of the students' results. The discussion should include the factors that affect the accuracy of the activity such as how the students measured, or the direction of the shadow, etc.

<p>Enrichment:</p> <p>Students could find the actual height of a large object and using proportions, determine what the shadow should be.</p>	<p>Special Needs:</p> <p>Before using the tree, students could use another object that they can actually measure the height of to better understand the activity.</p>
--	--

Closure: (Individual – 5 minutes)

List 5 objects for which you could use this activity to measure the actual height.

NORTH BAY FOLLOW UP ACTIVITIES MATH

Objectives:

- 3.6.02 Select and use appropriate tools and units
- 6.6.13 Use ratios and unit rates to solve problems

Materials/Resources:

North Bay Journals
If You Hopped Like a Frog by David Schwartz
Chart paper
Ruler
Markers
Calculator

Assessment:

Student representations of height and wingspan

Teacher-To-Teacher Tips:

- This lesson could extend into a technology class in which students will use Geometer's Sketchpad to draw the representations of the buzzard and themselves, as well as to solve the proportions.
- This lesson should be taught after students have been introduced to proportions and ratios.

Warm-Up: (Whole group - 10 minutes)

The warm-up should include solving proportions.

Launch: (Whole Group - 15 minutes)

Teacher will lead a discussion on the Vultures lesson from North Bay. The students will refer to their North Bay Journals. That discussion should include the height of a buzzard, 25 – 32 inches and wingspan, 67 – 70 inches. Student volunteers will use a meter stick to draw a representation of the height and wingspan of a buzzard on large chart paper to be displayed for student reference.

Explore: (Whole Group and Individual – 35 minutes)

Teacher will read If You Hopped Like a Frog by David Schwartz to the students. Throughout the reading, the teacher will discuss the various ratios presented in the book. (for example, a frog can jump 20 times its height) The student will use the information

presented to apply the statistics to their own height and discover how long they could jump if they were a frog. They will continue applying the various proportions to their body's dimensions.

Summarize: (Individually and whole group – 20 minutes)

Teacher will revisit the information on buzzards presented in the launch. Students will use that information to find their own wingspan based on their height. Students will then draw their own representation on rolling chart paper of their height and corresponding wingspan. On their representation they should include their work on how they found their wingspan.

Enrichment: Use Geometer's Sketchpad to solve proportions and draw representations.	Special Needs: Use Geometer's Sketchpad to solve proportions and draw representations.
---	--

Closure: (Individual – 5 minutes)

Students will display their representations and participate in a gallery walk to observe their classmates results. Then students will return to their seats and write one thing they would like to know the proportion of to relate to themselves.

NORTH BAY FOLLOW UP ACTIVITIES
MATH
CLAMS I

Objectives:

- 3.6.02 Select and use appropriate tools and units
- 3.6.01, 3.6.04 Estimate and determine the area of polygons
- 6.6.13 Use ratios and unit rates to solve problems

Materials/Resources:

North Bay Journals
4 Meter sticks per group
Calculator
Field of dandelions, clovers, or rocks

Assessment:

Group collection of data

Teacher-To-Teacher Tips:

- This is an outdoor lesson. You will need a field with dandelions to complete this lesson.
- This lesson should be done after the students have been introduced to proportions and ratios as well as estimating and calculating area of polygons.
- If you do not have grass with dandelions you could use the special needs activity or something similar (clovers) found in a grassy field.

Warm-Up: (Whole group - 10 minutes)

The warm-up should include solving proportions and estimating and calculating the area of polygons.

Launch: (Individual and Whole Group - 15 minutes)

Teacher will discuss the Clams lesson from North Bay in which the students marked off a square meter and collected clams within that meter. Students will refer to their North Bay Journals. In that lesson the students recorded how many of each of the three types of clams they found in their square meter section. Teacher will discuss how you could estimate how many clams were in a larger section of the water. Teacher will then inform the students that they will be performing a similar activity and taking it one step further to find the total amount of dandelions in a large field.

Explore: (Small Groups – 35 minutes)

***** Before beginning this activity, the teacher should show students an example of a dandelion to make sure they know what one looks like. Teachers should also show students what to use as a standard of a dandelion plant as opposed to individual leaves.**

Each group will be given four meter sticks. The students will use the meter sticks to mark off a section of the field into 1 square meter. Then the students will count how many dandelions are within their square meter and record the number. Students will then estimate the area of the entire field. Using their information on how many dandelions were in their square meter, they will set up a proportion to estimate how many dandelions are in the entire field.

Summarize: (Whole Group and Individual – 20 minutes)

Each group will enter their data onto a white board and use that information to compare their total with the other groups' totals. Teacher will lead a discussion on whether this was an effective method for determining the total number of dandelions in the field and ask if the students have any suggestions on what might be a better method to determine the total.

<p>Enrichment:</p> <p>Use what they learned in this activity to create their own activity related to a real world situation.</p>	<p>Special Needs:</p> <p>Students can perform this activity again on a playground (a cement area) by counting the amount of rocks in a square meter and determining the total amount of rocks on the playground.</p>
---	---

Closure: (Individual – 5 minutes)

Students will explain how they could use the dandelion activity to determine the total amount of each type of clam found in the Chesapeake Bay.

