



NorthBay

NorthBay Curriculum Summary
Issues Investigation
Environmental Science
& Character Education

December 2005

SUMMARY

Introduction:

Specializing in sixth-graders from around Maryland, NorthBay will present every school week a two part program focused 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 NorthBay experience.

The IEEIA Model:

Investigating and Evaluating Environmental Issues and Actions (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 NorthBay:

The academic curriculum reflects the latest science, an emphasis on technology, and a hands-on, outdoor classroom approach. Five 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). NorthBay's curriculum has been developed by MSDE authors and is endorsed by the Maryland State Department of Education.

Character Education at NorthBay:

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, NorthBay 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 are 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.

Parents Note:

Parents are children's primary moral educators. NorthBay helps support the home by fostering a love for education along with critical thinking skills which lead to positive choices and great futures. The NorthBay program features the family as the best and foremost place for a child to gain knowledge and wisdom for making great choices, and growing up well.

ENVIRONMENTAL EDUCATION AT NORTHBAY: PROGRAM SPECIFICS**Investigating and Evaluating Environmental Issues and Actions:**

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 is not just 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 have students come to their own conclusion. Unlike many programs, the teacher/leader does not communicate a pre-conceived message regarding what is good or bad environmentally, but leads students to derive their own conclusions and actions.

This method is applicable to all issues, not just environmental issues. The implementation of the IEEIA model has changed and formed school culture in a number of classrooms where it has been implemented, and has changed the culture of an entire school in Molokai where it has been implemented school wide.

How IEEIA works:

IEEIA teaches students the skills they need to evaluate issues and make informed decisions. It teaches students critical thinking skills and how to be citizens. It empowers students to take action. Students learn the difference between events, problems and issues. They select an environmental issue they are interested in. They learn how to identify players in the issue, and their beliefs and values. They learn how to write research questions, how to do background research and identify credible information. They learn how to conduct research in the form of questionnaires, and physical surveys, and they conduct one or both of these as part of their investigation.

How IEEIA works (continued):

They learn how to organize their data, draw conclusions, inferences and recommendations and convey these in writing and through oral presentations. Finally students develop an action plan that details what they can do to help with the issue. Examples of student action include sixth grade students providing expert testimony in front of the Hawaii legislature concerning a bottle bill (which passed thanks to their efforts). High school students in Illinois directly influenced Forest Service policy concerning logging at Shawnee National Forest by conducting physical surveys to fill data gaps. Other student groups launched impressive educational campaigns concerning their issues. Again, the goal of IEEIA is not to preach a biased environmental agenda to students. It is to teach them critical thinking and citizenship skills and empower them to take action.

Application of IEEIA at NorthBay:

Full implementation of IEEIA takes at least a semester, so we are doing a case study modification at NorthBay. Since we have a short time with students, student choice in the issue they investigate will be limited. Our large scale guiding question which we lead kids to ask is, "How do the choices I make affect the environment, and more broadly, my own future?" The specific overall Issue we will take on is "To what extent does habitat modification impact native communities of plants and animals?" Again the goal of IEEIA is to have students evaluate the issue and make up their own minds as to what they want to do. There is much more power when students decide for themselves.

We will also apply the IEEIA framework to our evening character education program for this reason. In this powerful program ("2B"), students will identify the characters which are introduced throughout the week and the values and beliefs that motivate them, in the character education portion of the NorthBay program. They will also identify the issue each of the characters is struggling with.

WEEKLY SCHEDULE ("ACOCA"):

Teachers will be provided read ahead materials for their students concerning NorthBay habitat impact issues including exotic species, deer, wetlands, etc. Below is a schedule for a typical week at NorthBay:

Monday:

Skill: ASSESSMENT - Problems, Players, Values, Beliefs, Issues and Research Questions.

Activity: Habitat Impact Survey at NorthBay - Students are led on a scavenger hunt competition through the site by their NorthBay educator to identify different habitat impacts, both positive and negative. These impacts are listed and the impacts we will investigate during the week (Exotic Species) are selected. Team initiative games will be conducted as part of this activity. The concept of having either a positive or negative impact on natural communities is extended to the concept of having either a positive or negative impact on your life, school and community. Students will develop research questions on the exotic species observed.

Evening Program Tie In: Students identify players, values and beliefs in the "2B" program through a facilitated discussion. You can have either a positive or negative impact on your life, school, and on your community. The choice is yours.

Monday (continued):

Outcomes: Trust and relationship establishment between the NorthBay educator and students; concept of positive or negative impacts on habitats, self, school and community; player, value and belief identification in the "2B" program; concept of players, values, beliefs, issues, and research questions. Assessment of background knowledge by NorthBay educator to determine level of background info needed. Products: NorthBay positive and negative habitat impact list; Exotic species issues we will evaluate this week list; research questions on those issues.

Tuesday:

Skill: COLLECTION - Data Collection Strategies

Activity: Re visit issue list developed on Monday. Make link to Monday night evening program "Environmental issues also have players, values and beliefs..." Show 15 minute Bambi video as example. Introduce students to data collection as a way to investigate the issue. Start physical survey activities (Mapping Our School Site, clams, fishing, etc). Provide students with questionnaire/opinionaire (Ideally students design their own instruments, however we will provide this instrument due to time constraints) that they will administer to fellow NorthBay participants. (i.e. each student needs to give questionnaire to three of their fellow students as "homework" on Tuesday night).

Evening Program Tie In: "Today you did a survey/inventory of some of the habitats at NorthBay to get information about issues here.....You can do a survey/inventory of your self, your class and your school to get information about issues there....."

Outcomes: basic understanding of data collection strategies, physical data generation, questionnaire administration, understanding of how physical survey data and questionnaire data link to overall issue question (To what extent are exotic species impacting native communities of plants and animals?)
Products: Physical data from lessons, data from questionnaire, list of personal/school/community issues.

Wednesday:

Skill: ORGANIZATION - Data Organization

Activity: Have students compile data from questionnaires and present it graphically. Have students organize data from physical surveys and present it graphically. Continue physical surveys. Adventure free time, data compilation free time, depending on where students are.

Evening Program Tie in: "Now that you've organized some of your data and seen some trends, you can see how exotic species effect native plants and animals. We choose to cause habitat modifications, good or bad. We often choose to introduce exotic species. How do the choices you make in your life have a positive or negative impact on yourself, your school and your community?"

Wednesday (continued):

Outcomes: Basic understanding of data organization strategies.

Products: Tables/graphs/charts of physical and questionnaire survey data for investigation presentations. Journal answer to: "How do the choices you make in your life have a positive or negative impact on yourself, your school and your community?"

Thursday:

Skill: CONCLUSION - Data Interpretation (conclusions, inferences, recommendations)

Activity: Continue physical surveys/adventure free time. Data interpretation and presentation prep time, depending on where students are. Investigation presentations in the afternoon.

Evening Program Tie In: Time to decide and act. Make a decision to make a difference in your life, your future, and in your school/community.

Outcomes: Understanding of data interpretation, conclusion, inference, recommendation. Presentation and public speaking skills.

Products: Oral investigation presentations, written presentation outlines, "taking the brick".

Friday:

Skill: ACTION - Action Planning

Activity: "Yesterday you concluded and recommended... (relating to both the environmental issues they investigated and the evening program)... "Now, how are you going to make that happen?" Students write an action plan for both their environmental issue and personal/school issue. They share these lists with their small groups. They then participate in ecosystem management activities (exotics removal, tree planting, bay grass planting, duck box maintenance...)

Evening Program Tie In: Made a conclusion to make right choices, made recommendation to improve.....Today we'll put these together and develop an action strategy for both.

Outcomes: Empowerment to make a difference in the students' personal lives, a difference in their school, and a difference in the environment.

Products: Written action plan for environmental and personal/school issues.

SPECIFIC LESSONS RELATED TO THE ISSUES:

In Mapping Our School Site Plants and Soil, students will compare plant diversity and different soil parameters such as temperature, pH, moisture, texture and leaf litter depth between sites with and without exotic species to help answer the question "To what extent do exotic species impact plant diversity and soil conditions?"

SPECIFIC LESSONS RELATED TO THE ISSUES (continued):

In **Mapping Our School Site Wildlife**, students will compare the insect and small mammal diversity between sites with and without exotic species to help answer the question "To what extent do exotic species impact animal diversity?"

In **Mapping Our School Site Trees**, students will calculate the current environmental and economic value of trees in their study grids and they will calculate the future value of trees in their study grids based on the number of seedlings they find. They will compare the current and future tree values between sites with and without exotics to answer the question "To what extent do exotic species impact tree value?"

A number of fish we consider beneficial and part of the natural Chesapeake Bay Ecosystem are exotic species. In the **Fish Survey** students get into the Chesapeake Bay to explore the relative abundance of exotic and native fish species. They use their data to conclude whether the non-native fish they captured are beneficial or harmful to the native community of plants and animals.

There are three species of bivalve (clams and mussels) living in our part of the Chesapeake. One of the species is native, but all filter feed. The **Bivalve (Clam and Mussel) survey** determines the relative abundance of bivalves at NorthBay and provides data as to whether they are having a positive or negative effect on Susquehanna Flats water conditions.

The Susquehanna Flats are known for the diversity and density of Bay grasses. Many of these species are non-native. However all perform critical water quality functions. The Bay Grass Survey evaluates bay grass diversity and density and provides data to help determine the effect non-native Bay grasses have on native plant and animal communities.

Students learn about facing their fears and team work in the hour and a half **Ropes Course**. The second hour of the ropes course session is spent reflecting on the ropes activity or exploring the group's favorite ecosystem.

Exotic species have invaded our **wetlands**. Students survey and map NorthBay wetlands to determine the extent of exotic species invasion. The information they gather will be used to construct an action plan for exotic species control.

Populations of American **Eels** are declining. No one is sure of the reasons for the declines, but over fishing and sedimentation have been listed as possible causes. A small worm called a nematode has been found infecting the swim bladders of some eels and this can lead to poor health for these fish. The nematodes that infect American eel swim bladders are exotic species from Asia. In this lab, students survey the eel population of the Susquehanna Flats to determine if their numbers are stable, and to determine if nematodes are infecting their swim bladders.

Red eared sliders, a non-native turtle is known to occur in Harford and Baltimore Counties, right across the Bay from NorthBay. However, they have not been documented from Cecil County. In the **Turtle Survey**, students check live catch turtle traps for red eared sliders, and they generate population data on other captured turtle species.

SPECIFIC LESSONS RELATED TO THE ISSUES (*continued*):

A number of bird species are non native including starlings, house sparrows, and cow birds. The **Bird Laboratory** explores whether these non-native bird species are having a negative effect on native species.

I. CHARACTER EDUCATION AT NORTHBAY: PROGRAM SPECIFICS

A. NorthBay and Character Education in Maryland Public Schools:

The Maryland State Department of Education released a fact sheet informing readers of character education's purpose, methods, and benefits. It is reprinted in the box. NorthBay's Character Education program fully ascribes to and supports this entire statement. The bolded sentences apply directly to NorthBay's content and format. Underlined statements are NorthBay comments.

MSDE Fact Sheet

What is Character Education?

Parents are children's primary moral educators. Character education helps schools support the home by fostering personal and civic virtues such as caring, respect, responsibility, and trust. Character education is not a quick fix program, nor does it teach views on religion, politics, current events, or other ideologically charged issues. **What the program does is help young people be the best they can be by creating a school (camp) environment where civic virtues are expected, modeled, taught, celebrated, and continually practiced.**

What are the benefits of Character Education?

Character education has proven to be a **positive force in reducing disruptive behavior, alcohol and drug abuse, and teen pregnancy. It reasserts the responsibility of schools, parents, and community members to be as concerned with the development of character as we are with the education of the intellect.** Character education contributes to parental and community involvement, safe and orderly schools, reduced discipline problems, greater academic achievement, and higher student and staff morale.

Who decides what virtues will be taught at my child's school?

In collaboration with parents, teachers, and community members, each school will tailor character education to meet the unique needs of the school and local community. In general, character education **will focus on the core ethical values which form the foundation of a democratic society: respect, responsibility, trustworthiness, caring, justice and fairness, and citizenship.**

How will children learn about character in school (NorthBay)?

Character education will come in a variety of forms. Some schools may provide character education through civics and social studies courses that emphasize basic constitutional principles and the responsibilities of citizenship. Character education may include specific class sessions on ethics and values. **Another approach is to infuse character education into all aspects of the curriculum and extracurricular activities. Some schools may develop their own character**

education materials; others may use materials developed by other schools or organizations, depending on the needs and goals of the community.

In addition, **the good character consistently modeled by (camp staff), teachers, principals, and other school staff members is among the most powerful means of developing good character in students.**

Are all school systems participating?

Since 1983, when Maryland's Values Education Commission defined character and citizenship goals that Marylanders wanted to see fostered in schools, all 24 local school systems have been working to integrate character education into the curriculum.

B. NorthBay Character Education Content:

NorthBay's character education program is infused in all aspects of the NorthBay week. The entire focus of the week will deliver a way of thinking which features the power of choices that lead to healthy life options, and how a student's commitment to education is their key to the future. Under the standard of caring, respect, responsibility, and trust, which are duly reinforced at NorthBay; the NorthBay message contains one major focus, with appropriate corollary lessons.

I. **Education and life-long learning is the key to having the finest options and choices for a life well lived.** This educational career is marked by caring, respect, responsibility, and trust.

A. Corollaries: Dropping out, drugs and early pregnancy are the most common toxic choices students make, and these choices will short-circuit their education and their future options. This content will build on the core ethical values of respect, responsibility, caring, trustworthiness, justice, fairness, effective personal boundaries, decision -making, and citizenship.

C. NorthBay Character Education Presentation:

NorthBay has spent considerable resources to develop new and compelling material which will effectively communicate the character message outlined above, to a sixth grade audience. Additionally, staff have been carefully selected for their ability to relate to this audience, and who also model the positive choices which are being presented throughout the week.

Format:

1. Create a 4 night live "television studio" style program using all potential resources, including the use of media tools to positively impact our 6th grade audience regarding education and their future. Help kids to "practice their future" with...
 - a. current, hip delivery of live presentations and video content which reinforce the message.
 - b. presentation of unconventional success stories.
 - c. reinforcement of current positive influences (families and schools and neighborhood heroes).

d. creation of a coherent, flowing, integrated presentation that starts and ends the week and serves as a springboard for questions, discussion and problem-solving.

Method:

1. Real Life Stories of normal, admirable people that kids know, who have made choices toward life-long learning, and health (no drugs, no pregnancy)...and stories of those who chose poorly, and sabotaged their future.
 - a. Filmed in ESPN/MTV style to enhance their story and compete with the media glamour.
 - b. Including teachers from home, NB staff, neighbors from home.
2. Enlist the support/endorsement of celebrities who will lift up the stories and heroic qualities of the folks from # 1 above, and the absolute attainability of the same stories for the kids listening.
3. Emphasize that success is in creating options by the pursuit of life long learning, and making excellent decisions about the "killers" of their future, namely drugs, early pregnancy, violence and dropping out.
4. Employ the finest materials, information, and presentation in each sphere to persuasively engage students regarding drugs, pregnancy, violence and dropping out; and conversely lift up character and leadership as the alternative choices that are attractive and attainable.
5. Integration across the NorthBay academic and social schedule of the character driven content.

Principles:

1. Kids will feel successful at NorthBay
2. Teachers/Staff and Neighbors will be the heroes.
3. Fun and Adventure all the time.
4. "Good questions" will be the outcome (e.g. "What if I went to college?")
5. Issues investigation wherein kids figure out the problems, and the solution.
6. The academic curriculum will seamlessly integrate with the evening programs and message.

Engaged Learning at NorthBay

Additionally in recent years, researchers have formed a strong consensus on the importance of engaged learning in schools and classrooms. This consensus, together with a recognition of the changing needs of the 21st century, has stimulated the development of specific indicators of engaged learning. Jones, Valdez, Nowakowski, and Rasmussen (1994) developed the indicators described below. These indicators of engaged learning can act as a "compass" for reform instruction, helping educators chart an instructional course and maintain an orientation based on a vision of engaged learning and what it looks like for students.

1. Indicator: Vision of Engaged Learning

What does engaged learning look like? Successful, engaged learners are responsible for their own learning. These students are self-regulated and able to define their own learning goals and evaluate their own achievement. They are also energized by their learning; their joy of learning leads to a lifelong passion for solving problems, understanding, and taking the next step in their thinking. These learners are strategic in that they know how to learn and are able to transfer knowledge to solve problems creatively. Engaged learning also involves being collaborative--that is, valuing and having the skills to work with others.

2. Indicator: Tasks for Engaged Learning

In order to have engaged learning, tasks need to be challenging, authentic, and multidisciplinary. Such tasks are typically complex and involve sustained amounts of time. They are authentic in that they correspond to the tasks in the home and workplaces of today and tomorrow. Collaboration around authentic tasks often takes place with peers and mentors within school as well as with family members and others in the real world outside of school.

These tasks often require integrated instruction that incorporates problem-based learning and curriculum by project.

3. Indicator: Assessment of Engaged Learning

Assessment of engaged learning involves presenting students with an authentic task, project, or investigation, and then observing, interviewing, and examining their presentations and artifacts to assess what they actually know and can do. This assessment, often called performance-based assessment, is generative in that it involves students in generating their own performance criteria and playing a key role in the overall design, evaluation, and reporting of their assessment. The best performance-based assessment has a seamless connection to curriculum and instruction so that it is ongoing. Assessment should represent all meaningful aspects of performance and should have equitable standards that apply to all students.

4. Indicator: Instructional Models & Strategies for Engaged Learning

The most powerful models of instruction are interactive. Instruction actively engages the learner, and is generative. Instruction encourages the learner to construct and produce knowledge in meaningful ways. Students teach others interactively and interact generatively with their teacher and peers. This allows for co-construction of knowledge, which promotes engaged learning that is problem-, project-, and goal-based. Some common strategies included in engaged learning models of instruction are individual and group summarizing, means of exploring multiple perspectives, techniques for building upon prior knowledge, brainstorming, socratic dialogue, problem-solving processes, and team teaching.

5. Indicator: Learning Context of Engaged Learning

For engaged learning to happen, the classroom must be conceived of as a knowledge-building learning community. Such communities not only develop shared understandings collaboratively but also create empathetic learning environments that value diversity and multiple perspectives. These communities search for strategies to build on the strengths of all of its members. Truly collaborative classrooms, schools, and communities encourage students to ask hard questions, define problems, lead conversations, set goals, have work-related conversations with family members and other adults in and out of school, and engage in entrepreneurial activities.

6. Indicator: Grouping for Engaged Learning

Collaborative work that is learning-centered often involves small groups or teams of two or more students within a classroom or across classroom boundaries. Heterogeneous groups (including different sexes, cultures, abilities, ages, and socioeconomic backgrounds) offer a wealth of background knowledge and perspectives to different tasks. Flexible grouping, which allows teachers to reconfigure small groups according to the purposes of instruction and incorporates frequent heterogeneous groups, is one of the most equitable means of grouping and ensuring increased learning opportunities.

7. Indicator: Teacher Roles for Engaged Learning

The role of the teacher in the classroom has shifted from the primary role of information giver to that of facilitator, guide, and learner. As a facilitator, the teacher provides the rich environments and learning experiences needed for collaborative study. The teacher also is required to act as a guide--a role that incorporates mediation, modeling, and coaching. Often the teacher also is a co-learner and co-investigator with the students.

8. Indicator: Student Roles for Engaged Learning

One important student role is that of explorer. Interaction with the physical world and with other people allows students to discover concepts and apply skills. Students are then encouraged to reflect upon their discoveries, which is essential for the student as a cognitive apprentice. Apprenticeship takes place when students observe and apply the thinking processes used by practitioners. Students also become teachers themselves by integrating what they've learned. Hence, they become producers of knowledge, capable of making significant contributions to the world's knowledge.