Ecological Impacts - using place-based stewardship to engage students as citizens of their environment

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Alternative High School

The mission of Bay-Arenac Community High School is to provide a positive community for up to 150 students each semester in learning the skills necessary for attaining personally meaningful lives, which are economically productive and socially responsible.
The Community

General Characteristics

- Primarily residential community of commuters
- Over 85% single family homes owner occupied
- Woodside Ave Business District
  - convenience and specialty stores
- Saginaw River waterfront utilized for bulk storage of petroleum products, cement, stone, and agricultural products
- Closest port to Saginaw Bay

Source: https://essexville.org/
The Community

Demographics

- Area: 1.41 sq. miles (1.3 land, 0.11 water)
- Population: 3,478 (2010 US Census)
- Housing: 1,527 housing units
- Median Housing Value: ~$84,084 (2011)
- Median Housing Income: ~$48,535 (2011)

Source: https://essexville.org/
The Community

Community Calendar

2018:
- Feb 13 - city council meeting
- Feb-Dec - recycling schedule

Community Events

August 2018:
- Curb Appeal Contest

Source: https://essexville.org/
The Community

Resources to Protect the Environment

Saginaw River Cleanup

Regional Collaboration to Protect and Cleanup the Saginaw River

A partnership that included the City of Essexville, Hampton Charter Township and the Road Commission for Bay County which represented all municipal owners of the West Bay County Regional Wastewater Treatment Plant (WBCRTP) completed a multi-year $32 million environmental improvement project in 2011 that encompassed:

Resources to Learn More About Protecting our Environment

The Michigan Department of Environmental Quality, Bay County Drain Office and the Bay Area Storm Water Authority (BASWA) publish and make available to the public literature and guidance regarding environmental stewardship.

- Environmental Assistance Bulletin
- Materials Banned From Landfills
- How To Keep Our Rivers Clean
- Teaching About the Environment (BASWA)
- How to Report an Illicit Discharge
- Recycling And Composting

Source: https://essexville.org/
Proposed Ecology Course

- Nature journaling & Reading
  - “A Sand County Almanac”, Aldo Leopold

- Existing Programs
  - Adopt a Beach, Alliance for the Great Lakes
  - Sturgeon and/or Salmon in the Classroom, DNR

- Expand on classroom discussions
  - Tragedy of the Commons
  - water quality and use
  - Habitat and food webs
Summer PD, 2018

“Advanced Methodology: All Write, All Right, Alright!!”

“Rain Garden Workshop for Educators” & “Summer Institute: Fisheries”

“Fish and Wildlife Management Week”
Curriculum

MEECS

Leopold Education Project

Community as a Context for Learning

Northwest Center for Sustainable Resources Education for a Sustainable Future

Chemeketa Community College
Salem, Oregon
DUE #0101498
Where to Start?!

- Using “Community as a Context for Learning”

Community Project

Contacting potential partners - script draft

Type out a script for what we might say when we start contacting possible community partners. Include the following items:

1) who we are
2) what we are trying to do
3) why are we contacting them

Phone Call Script - Rough...
Where to Start?!

Community Organizations

- Contacted 30 organizations, such as:
  - The Humane Society
  - Habitat for Humanity
  - First Ward Community Center
  - Mission City Rescue
  - United Ways
  - Michigan DNR parks and recreation
  - Michigan Community Service
  - Knights Of Columbus
  - Amazing Grace Animal Rescue
  - Good Samaritan
  - Linwood Bay Sportsman Club
  - Bay County Animal Shelter and Care Center
  - Bay County Community Center
  - Polish Falcons Club
  - Bay City State Park
  - Thomas Township
  - Big Brother Big Sister
  - American Legion
  - Bay Arenac Behavioral Health
  - Camp Fishtales
  - Bay City State Park
  - Loyal Order Moose Lodge
  - Boys & Girls Club of Saginaw
After Community Needs “Assessment”

- Ask the kids to vote on projects!
  - What does our community need?
  - What do YOU want to work on?

- Their response:
  - Haunted hayride
  - Stray cat wintering boxes
Nature Journaling and Eco-Reading

Page 1 - "Nature Journal #1" 9/17:

Spend 15 minutes in a natural setting (outside) and make your observations. Whatever "nature journaling" means to you...do that on page 1. If you need to see an example, check out my first journal entry.
Nature Journaling and Eco-Reading

- Using “LEP” with A Sand Co. Almanac
  - Reflection
  - Vocabulary and Context
  - Sketches
  - Conservation

A Sand County Almanac
With Essays on Conservation from Round River

Aldo Leopold

“We can place this book on the shelf that holds the writings of Thoreau and John Muir.”
San Francisco Chronicle
Nature Journaling and Eco-Reading

“He who searches for spring with his knees in the mud, finds it in abundance.”
Nature Journaling and Eco-Reading

“Draba”, p. 28 - Look, See, and Discover

Discussion Questions:

1. What’s the difference between seeing and observing?
2. How do we become better observers of nature?
3. What does Leopold mean when he says, “it is no spring flower, but only a postscript to a hope”? 
Nature Journaling and Eco-Reading

- Species ID cards
  - Common and scientific name
  - Image
  - Key identification markers
  - Overall description
  - Fun facts
  - Range map
Lake Sturgeon, *Salvelinus fontinalis*

**Overall Description:**
- The most notable feature of a Lake Sturgeon is its five plates of bony plates (most noticeable in young lake sturgeon)
- Female Lake Sturgeon lay about 4,000 to 7,000 eggs per pound of fish
- As of right now, efforts are underway to restore the lake sturgeon population.

**Fun Facts:**
- The lake sturgeon is the largest fish in the Great Lakes and is considered a living fossil because it has survived—virtually unchanged—for more than 150 million years.
- Female lake sturgeon are 21-39 years old before they first spawn, an event they repeat only once every three to five years.
- Lake sturgeon can grow to be more than 300 pounds and live to be more than 100 years old. They can reach a length of 9 feet.

**Key Identification Markers:**
- Large sucker-like mouth
- A single dorsal fin back towards the tail.
- Adults tend to be olive-brown to grey with white underneath.
- Flattened spade shaped head
- Four barbels on the underside of snout
- Ancient looking
RP Essex Park Plans

- Needs Assessment
  - Walk the park - what’s good, what needs improvement?
  - Discuss with city council - plans?
  - Students develop plans
  - Select students present to city council
Ransom P. Essex Park:

- City Council plans:
  - 25 trees
  - Walking loop
  - Dog park
  - Sports field
  - Small parking lot

- Our Proposal:
  - Native trees
  - Native pollinator garden
  - Community garden
Endangered Species

Endangered Vs. Threatened Species

Create a poster that points out the differences and similarities between threatened and endangered species and ecosystems.

Be sure to the following:
1) the difference between endangered and threatened
2) facts with numbers (statistics)
3) examples of plants and animals that are endangered/threatened
4) picture/sketch of an example or a graph of a statistic
5) implications of loss of biodiversity (why do we care?!)
6) location of example (habitat type and where on Earth)
7) in color
8) Source(s) of information
Other Projects and Assignments

- Current Events
  - What’s on NPR that week?
  - Use Annotation guide & Metacognitive Bookmark (reading apprenticeship)
  - NewsELA
- Habitats and Endangered Species Research Project
- My Dream Vacation
- Review of Ecology Topics
- Ecology Careers and Specialties Children’s Book
Struggles

- Lazy students
  - Can’t hand-pick my students - duh.

- Time constraints
  - Shortened school year
  - 55 min class period
  - Student attendance
  - Movement of government - city council

- Anxious students
Current Direction

- Cross-curricular Unit Planning
  - Aquatic ecology background
  - Fisheries background, history, economics, etc.
  - Contact partners
  - Lesson/activity plan
Spring 2018

Whole School (mini cross-curricular unit):

- Bay City State Park (DNR, Little Forks, Consumer’s, naturalists)
- nature hike, macroinvertebrates, water chemistry, shoreline habitat assessment, natural history museum exploration, lagoon turbidity, invasive species hunt
- Major participating classes: chemistry, math, env. science, biology, journalism
Student Survey

1. Did you attend the Whole School Trip? (if no, answer why you declined):
2. Which session was most informative? (circle one)
3. List 2 new things you learned on this trip:
4. What would you change about this trip? (be specific)
5. Aside from the icecream...what was your favorite part of the day?
Frustrations

Staff:
- Miscommunication between park and us
- Not as much hands-on as expected
- Bussing issues
- Not enough help from others

Kids:
- Not enough choice
  - Sessions
  - Groups
- Temperature
Missed Connections: Reuniting alternative students with their environment through a cross-curricular day in the field

Join me tomorrow at 10AM in Berkey Room!

"Gateway to the Bay"
Future Direction

- **Community Garden Space**
  - Paired with food nutrition program
  - Partnering with superintendent and local food programs

- **Native pollinator (rain??) garden**
  - Need to assess our school yard if rain garden is needed

- **Writing grants and applications**
  - MI Green Schools
  - Bay Community Foundation
Sustainability

- Summer Programming 2019!
  - Botany
    - **Topics:** Plant A&P, ID and taxonomy, Food nutrition, Gardening
    - **Skills:** microscope use, dissecting technique, field ID, horticulture, ID of nutritious foods, cooking with plants and herbs
  - Sustainable Gardening and Food Nutrition
    - **Topics:** science of food nutrition, selecting and growing nutritious foods, cooking with nutritious foods
    - **Field Trip:** The Farm at St. Joseph’s in Ann Arbor
Sustainability

- 2019 PD
  - Great Lakes Conference | Lansing, MI
  - Project FISH Workshop | Iosco County, MI
  - Sturgeon and Biodiversity Workshop | Onaway, MI
  - Academy of Natural Resources Classic | RAM Center on Higgins Lake
  - 2019 Lake Huron Place-Based Stewardship Education Summer Institute | Grayling, MI
  - 2019 State of the Bay Conference | Bay City, MI
  - 2019 MAEOE Annual Conference | Ketunnen Center in Tustin, MI
Sustainability

- DOW Teacher Innovation Fellowship
  - Applying for program to start summer 2019
  - Paired with community partner
  - Develop 1-2 week lesson plan around “sustainability” topics
  - Encourage fellow teachers (math, social studies) to participate
  - Teacher stipend and materials funding
Sustainability

- Continuing the “Ecology” class
  - Build on prior years’ work
  - Continue existing projects
  - Develop more community relationships
  - Begin new projects in the community
Questions?

Thanks for Attending!

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SCHECHs Code:

FUNCTION

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