

POLAR BEAR RESEARCH UNIT: Teacher Introduction



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This unit incorporates science, social studies and mathematics

standards by using current polar bear research as an integrating context for learning. The target age is upper middle school.

Polar Bears International (PBI) is a non-profit organization that supports research projects that benefit the world's polar bears. One of PBI's goals is to be a key educational resource for polar bears worldwide.

PBI's headquarters are in Winnipeg, Manitoba, Canada, the gateway to seeing polar bears in the wild. Polar Bears International supports and encourages respectful ecotourism. Such tourism helps local people earn vital income while simultaneously protecting the polar bears and their habitat. Tourism also helps create an enlightened constituency of people interested in the future of the bears and the Arctic wilderness.

The annual gathering of polar bears on the shores of Hudson Bay draws thousands of nature enthusiasts to the remote outpost of Churchill each fall. The visitors depart with a deep appreciation of polar bears and their ability to survive in the Arctic. **But what effect, if any, does the northward migration of tourists have on the bears?**

To answer these questions, PBI funded a two-year study in which scientists measured the bears' responses to both vehicles and human sounds and documented how those responses might change over time.

In this investigation, students will use the data collected from this study to role-play and make a decision regarding ecotourism policies for the town of Churchill.

This unit can be taught as an environmental issue or can be expanded in a number of different directions to integrate Social Studies, Mathematics, English/Language Arts, and Fine and Performing Arts. A complete lesson sequence map is shown below. Activities can be added, deleted or substituted as desired depending on instructional time and curricular goals. Lessons addressing the sciences, social studies and mathematics are integrated within the unit. Links to the fine arts are included as well.

The Content Standards referenced are the Maryland State Voluntary Curriculum Standards that can be found at <http://mdk12.org/instruction/curriculum/index.html>. Although the lessons were created for Maryland teachers, these Content Standards are based upon national standards and should be similar for other school districts. (The lessons draw on the resources on the PBI website at www.polarbearsinternational.org and collected activities and lessons from other sources. Excerpts from the PBI website are incorporated within the text of the unit. For full articles, please visit the PBI website.)



IEEIA Lesson Sequence¹

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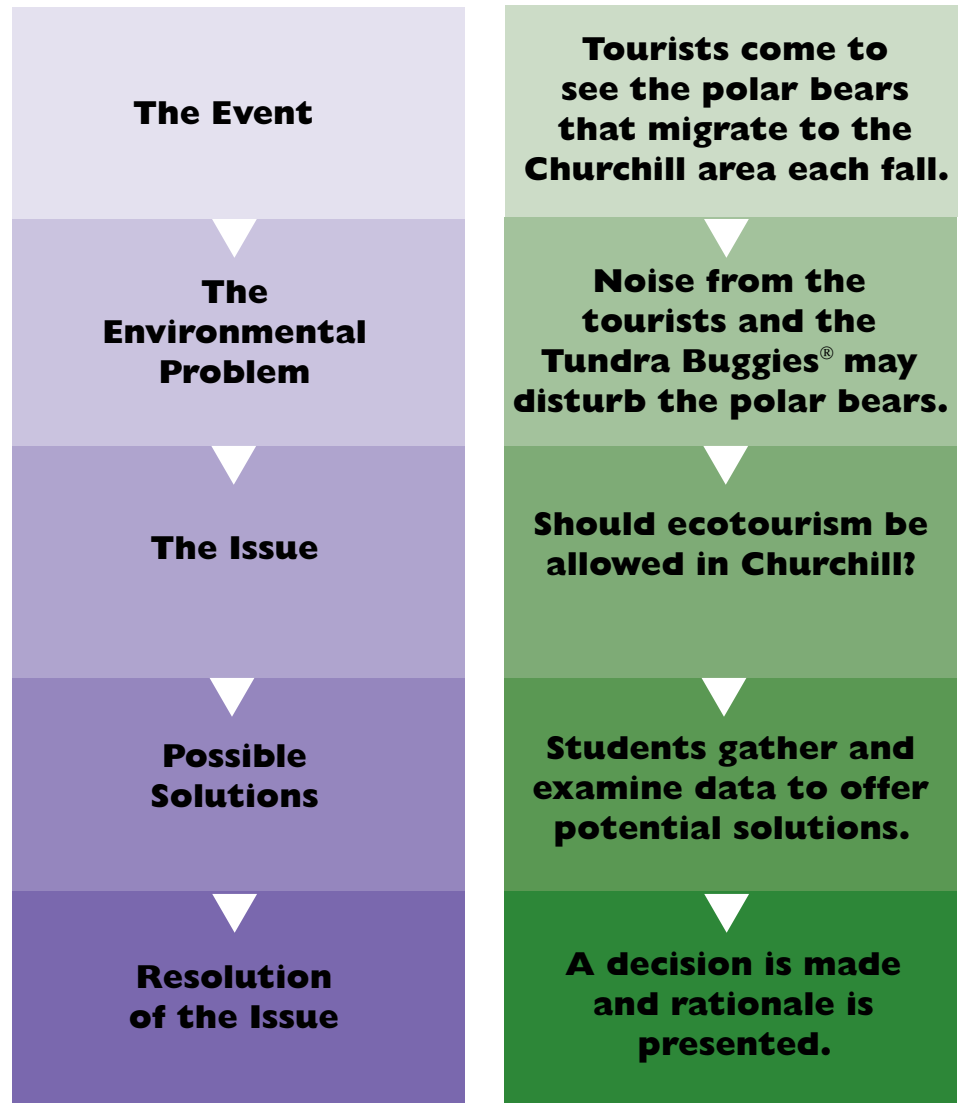
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Make recommendations to the Churchill City Council about:

- Whether Tundra Buggies® should be allowed for tourism.
- If allowed, how close can the buggies get to the bears?
- Are there any other rules you would recommend?
- Explain how you used the data to come to your decisions.
- Support your decisions with data and specific information from the experiments and from your observations.

¹ *Investigating and Evaluating Environmental Issues and Actions (2003)*; Hungerford, Harold R.; Volk, Trudi L.; Ramsey, John M.; Litherland, Ralph A.; Peyton, Ben R.; Stipes Publishing L.L.C., Champaign, Illinois.

Title	Description	Lessons In Brief
Introduction of task and project for unit I	Task introduced	Project Introduction for Teachers
Introduction to the Arctic and Churchill	Prediction of Arctic conditions; information gained by examining maps and reading a journal article written by children who live in Churchill.	Lesson Two: Introduction to the Arctic and Churchill for Teachers <ul style="list-style-type: none"> • Draw a prediction of Arctic life by creating a gallery walk • Examine maps and pictures • Revise prediction of Arctic life • Locate Churchill on a map • Read and respond to article by Churchill children in PBI newsletter • PowerPoint introduction. See resources available.
Introduction to the Issue	Students will look more closely at the event, the environmental problem and the issue. Opening video explains the issue of ecotourism versus bear protection. Reading materials describe the bears coming to Churchill. Activity: "Four Corners" Issues Analysis	Lesson Three: Where Do You Stand? <ul style="list-style-type: none"> • Video to introduce concept • Reading about bears in Churchill • Introduction of the term "ecotourism" • Students display their current position on ecotourism • PBI "Sound Experiments" PowerPoint
The Experiment	Students complete a series of activities to gather data. The data will help them answer the question about the effect of tourist noise on polar bears.	Lesson Four: Recognizing Polar Bear Behaviors <ul style="list-style-type: none"> • "How Can You Tell One Polar Bear from Another?" (PowerPoint) • Recognizing Polar Bear Behaviors - Activity 1, PowerPoint • Recognizing Polar Bear Behaviors - Activity 2, video clips of experiment being conducted • Data analysis • Conclusion
Policy Making	Student teams use the data to decide if ecotourism will be allowed, and if so, whether there are rules that must be followed.	Lesson Five: Data Analysis <ul style="list-style-type: none"> • Students use data to create a graph • Students analyze data and make decisions
Town Meeting	Student teams present their positions and arguments to the class. Class votes on policy. "Four Corners" reprise.	Lesson Six: Where Do You Stand Now? for Teachers <ul style="list-style-type: none"> • Student teams develop their position and arguments and present them to the class • Students write about their current position on ecotourism, compare it with their preliminary position and note the reasons for changing—or not changing—their position