Bridging the Poles Workshop Packet

NASA

http://quest.arc.nasa.gov/arctic/

NASA Quest's goal is to provide resources to students, educators, and the general public about space. Working with the United States Coast Guard, NASA created an interactive website allowing its audience to explore the Arctic region, as well as experience it through a select group of people living in that region.

http://www.usra.edu/esse/essonline/)

The Universities Space Research Association's Earth System Science Education (ESSE) Program connects environmental educators of various universities to the general public who desire to learn more about Earth. In addition, it provides dozens of news-related, scientific, and educational links for educators and students alike to learn more about all of the components of Earth, from space science to life science to everything in between.

NOAA

http://www.arctic.noaa.gov/index.shtml

The National Oceanic and Atmospheric Administration (NOAA) created an Arctic theme page that provides information about all things Arctic. It includes current events in the Arctic, laboratory and science links, as well as educational links for educators, students, and the general community. The links range from facts about glaciers to the activities about the Arctic flora.

Databases/General Resources

DLESE

http://www.dlese.org/

The Digital Library for Earth System Education, DLESE, is a resource dedicated to Earth system education for the entire community, ranging from educators to developers. For undergraduate and K-12 teachers, DLESE features a variety of information, including data (factual information) and tools (interactive and collaborative), in efforts to integrate research and education about the various components of the Earth.

MMAB Sea Ice Analysis History Page

http://polar.wwb.noaa.gov/seaice/Historical.html

This Sea Ice Analysis History Page pictorially shows the development and reduction of sea ice of the past decade in both the North and South Poles. Students and educators may use this website to track their personal expeditions through the North and South Pole.

National Geographic

http://www.nationalgeographic.com/

National Geographic provides concise articles and maps about all components of society, including people, culture, environment, animals, and nature, in all different parts of the earth. Educators may be able to use National Geographic as a source of current events for their students.

Colorado Center for Astrodynamics Research (CCAR)

http://www-ccar.colorado.edu

The Colorado Center for Astrodynamics Research is a space science program dedicated to research astrodynamics, satellite meteorology, oceanography, geodesy, and terrestrial vegetation studies. Educators may use this resource to contacts various scientists, as well as guide students interested in astrodynamics to further their education.

Aerospace Engineering Sciences

http://snowwhite.colorado.edu/

Part of the University of Colorado at Boulder, the Aerospace Engineering Sciences program combines both research and education for undergraduate and graduate students interested in the various components of aerospace engineering.

University of Colorado
http://polarbear.colorado.edu

Part of the Colorado Center for Astrodynamics Research at the University of Colorado, this site provides an in-depth look into various Polar research projects currently being conducted, as well as those conducted in the past. Higher level educators may find this site useful to demonstrate the components of a research project, as well as to use the projects as educational tools.

Satellite imagery of Antarctica
http://TerraWeb.wr.usgs.gov/TRS/projects/Antarctica/AVHRR.html

Using advanced technological sources, the United States Geological Survey displays current satellite images of the Antarctic landscape. Educators may use this website as an interactive tool for which students may observe the Antarctic continent in various resolutions and sizes to attain a better understanding of the continent's true landscape.

http://www.south-pole.com/homepage.html

The primary aim of this website is to provide information about the history of that Antarctic continent, especially concerning the polar heroes who dared to explore the area and its surroundings. Because the website contains tools such as detailed timelines, maps, and biographies, educators of all levels will find this website helpful when teaching about the Antarctic history.

Antarctic Images
http://www.nsf.gov/od/opp/antarct/imageset/start.htm

The National Science Foundation provides updated, detailed pictures of various geographical and scientific components of Antarctica, from its size in comparison to that on the United States to the microorganisms found in the waters surrounding Antarctica to the different satellite communications' technology. These pictures may help students, as well as the public at large, better understand the various physical concepts of Antarctica.

Alaska Native Knowledge Network
http://www.ankn.uaf.edu/

The Alaska Native Knowledge Network is a resource created to share knowledge about the cultural experiences of Alaska Natives, including a section designated to Science and Mathematics Education. The section contains Alaskan and non-Alaskan links, such as to Alaska Science Forum, which provide both pictures and written explanations of various components of Alaska's environment.

Arctic Environmental Atlas
http://maps.grida.no/arctic/

An interactive map of the various landcovers (forest, grassland, permafrost) of all regions of the world is one of the key features of the Arctic Environemtal Atlas. Students and educators will find this site useful because it provides good visual representations of the world at various views and depths.

Arctic Region Climate System Model (ARCSyM)
http://cires.colorado.edu/arcsym/

The Polar Climate and Meteorology group studies the climate and meteorology Arctic and Antarctic using various system models. The site also provides various

projects, published and current, that educators may find this site useful when teaching.

Sea Ice Page NCEP Ocean Modeling Branch
http://polar.wwb.noaa.gov/seaice/

The NCEP MMAB Sea Ice Page provides various sources displaying the sea ice formations throughout various time periods, as well as mathematical data analyzing it. Educators and students alike may find this site useful because it provides pictorial representations of how the sea ice forms and alters.

Elementary and General Education

"Antarctica: The Farthest Place Close to Home" developed and produced by the American Museum of Natural History in collaboration with GLACIER
http://www.amnh.org/education/resources/antarctica/credits.php

The American Museum of Natural History created an educational resource about the Antarctic continent that contains information about geography, organisms, maps, meteorology, and explorers of Antarctica. It also provides activities and curriculum materials targeted to a specific (and listed) audience that educators may find educational and entertaining.

ARCUS Education Project
http://www.arcus.org/Education/index.html

The Arctic Research Consortium of the United States, ARCUS, is a non-profit organization that consists of and connects various educational, professional, and scientific institutions dedicated to the purposes of Arctic research. A recent addition to ARCUS's commitment to education is TREC, Teachers and Researchers Exploring and Collaborating. A network between the science and education fields is further created by this program, improving and strengthening science education. TREC allows kindergarten through twelfth grade teachers to participate in Arctic research by working closely with scientists. It is an interactive program for students as well, providing links educational games and interactive programs that explore the Arctic.

GLACIER
http://www.glacier.rice.edu/

Rice University has created a detailed curriculum for educators, students, and the community to learn more about the Antarctic glacier and its components, specifically the expeditions, weather, ice, oceans, and global connections. Educators may find the curriculum targeted towards educators, called the Teachers Experience Antarctica and the Arctic (TEA), helpful. The Teachers Experience Antarctica and the Arctic is a program that allows K12 teachers to participate in a polar expedition, where he/she works closely with scientists and researchers. The objective is to bring increased knowledge and experience into classrooms.

Antarctica: ITASE
http://www.secretsoftheice.org/

The Secrets of the Ice is an organization sponsored by the Museum of Science, National Science Foundation, and the Institute for Quaternary and Climate Studies. It displays information about the exploration of Antarctica, the ice core research being conducted there, and the scientific expeditions of the past. In addition, learning resources such as books, laboratory activities, and videos are provided to help students and the community discover the Antarctica.

AMNH Shackelton Exhibition
http://www.amnh.org/exhibitions/shackleton/

The American Museum of Natural History has created an exhibit and expedition guide celebrating Shackleton's legendary Antarctic expedition. For educators, this detailed guide of the expedition may be the perfect, concise substitute to the expedition's detailed biographies. Visits to the exhibit at the Museum of Natural History may also be a great educational and entertaining addition.

Smithsonian Arctic Exhibits
http://www.mnh.si.edu/arctic/

The Smithsonian National Museum of Natural History has created an Arctic Studies Center in which eduvators, students, and the public can explore the history of the people, the envinronment, issues, and culture of the Arctic. Educators and students alike will learn more about the Arctic by reading the detailed explanations and observing the vibrant photographs the center provides.

Polar Bear Tracking
http://www.panda.org/polarbears/

The WWF Conservation Organization created the Polar Bear Tracker to educate the entire community about preservation of all living things, and in this case, polar bears. Two polar bears, Samantha and Marianne, were tagged so that the public can track the polar bears' movements and lifestyle. Other information about their habitat and diet is also provided to create a fun, interactive method of learning.

Polar Education Listserve
http://adelie.harvard.edu/ed/index.html

This site includes a journal about living in the South Pole, as well as activities for students to participate in, in order to learn more about Antarctica. These activities integrate experience and education by providing hands-on activities for students to learn the basics of science.

Polar Expeditions
http://school.discovery.com/lessonplans/programs/polarexpeditions/

The Discovery Channel provides a resource for educators of all levels to engage in polar education. By creating lesson plans, with specific objectives, materials, procedures, and evaluations, students and teachers can engage in micro-research experiments in their own classrooms.

Into the Arctic
http://arcss.colorado.edu/data/arcss069.html

Into the Arctic is a CD-ROM, which contains educational material about the historical climate of the Arctic, that educators may order. In addition, it contains activities that educators may incorporate into their daily lessons to help the students understand the Arctic more clearly.

Undergraduate Education

U Conn: Arctic Circle
http://arcticcircle.uconn.edu/

The goal of the Arctic Circle program is to expand knowledge about the circumpolar North to other parts of the community, including students, educators, and policy makers. A virtual classroom with syllabi, problems, and activities provides a method of integrating polar education into the science curriculum for educators.

Ohio State: ASPIRE
http://polarmet.mps.ohio-state.edu/ASPIRE_99/introasp/aspmenu.htm

The goal of this site is to science into education to encourage and strengthen critical thinking, creative, and problem-solving skills in students, thus enabling

students to approach situations in various ways. The site provides links to various science-based programs that promote education.

Solar-Terrestrial Physics
http://www.polar.umd.edu/~allanw/

Allan T. Weatherwax of the University of Maryland has created this site to present much of the research he has been conducting on upper atmospheric physics. The information includes explanations on various components of atmospheric physics, as well as detailed pictures, that are geared towards individuals with an intense (and high) educational background in physics.

North2North
http://www.uarctic.org/north2north/index.html

North2North is a student mobility (student exchange) program sponsored by the University of the Arctic that gives students the opportunity to live, study, and research in the Arctic.

Into the Arctic
http://arcss.colorado.edu/data/arcss069.html

Into the Arctic is a CD-ROM, which contains educational material about the historical climate of the Arctic, that educators may order. In addition, it contains activities that educators may incorporate into their daily lessons to help the students understand the Arctic more clearly.

General Compilations

70South
http://www.70south.com/links/edu_links

70South is a resource that provides articles, as well as other resources, about everything concerning Antarctica, from its birds to stations to maps. Educators of all levels will find this site useful because it provides articles *and* pictures of its components.

Utah Education Network
http://www.uen.org/themepark/html/exploration/polar.html

This resource provides a variety of information about the Polar Regions, from links to places, people, and things, as well as resources educators can use to engage their students in physical activities. These activities range from building igloos to taking a virtual tour to observe the animals of the Arctic.

The Online Learning Center
http://www.geometry.net/earth_sciences/polar_regions_education_and_research.html

This online educational center includes earth science education and research on the Polar Regions. The site provides numerous links for individuals to learn about the research conducted at specific sites and the technology being used.

Reference.com
http://www.reference.com/Dir/Regional/Polar_Regions/Education_and_Research/

This online reference web directory provides a list of sources that integrate education and research of the Polar Regions. Educators can use these sources to teach about the various explorers that explored the regions or the different types of research projects being conducted in the region today.

DMOZ- The Open Directory Project
http://dmoz.org/Regional/Polar_Regions/Science_and_Environment/

This directory provides a list of sources that the community may browse in order to learn more about science and the environment. Educators may use this directory as a preliminary source to learn about the Polar Regions.

Maritime Information

PORT- Maritime Information Gateway
http://www.port.nmm.ac.uk/ROADS/subject-listing/trav.html

This travel and exploration directory provides a list of topics that educators may observe to determine what topics are most suitable in their classroom. Each topic provides an alternative title, the author, and a brief description of the article. It also provides a URL for educators and students to gain access to additional information.

Naval History
http://www.history.navy.mil/branches/teach/ends/poles.htm

The Naval Historical Center in conjunction with the Navy Museum provides a brief background of the Navy's travels to the Polar Regions. Additionally, educators may find the links to timelines, maps, and activities useful in the classroom.

How Icebreakers Break Ice
http://ourworld.compuserve.com/homepages/mnpowers/howicebr.htm

This site provides both pictorial and verbal explanations of how icebreaking ships are able to crush the ice. Students who are new to the field of Polar Science will find this site very useful.

Franklin (1849)

http://www.ric.edu/rpotter/SJFranklin.html

This website is dedicated to Sir John Franklin. It provides links to various components of Franklin's expedition, from his research to the search for him. Students will find this mystery intriguing and educational.

Nansen (1896)

Farthest North, Nansen

The Life of Fridtjof Nansen
http://www.mnc.net/norway/Frit-nan.htm

This website provides four sources that detail the life of Fridtjof Nansen. Educators may use this source to attain both detailed and concise biographies of the explorer.

http://www.ub.uit.no/northernlights/eng/nansen.htm

This site gives a short, concise biography of Nansen's expedition to the North Pole. It also includes an expandable map of Nansen's route that educators will find helpful to track Nansen's journey.

http://members.aol.com/jstuster/boldendeavors/fnansen.htm

This site contains a brief biography of Nansen's life, as well as a concise background on the author's life.

Nansen's oceanographic data
http://www.nsidc.org/data/docs/noaa/g02120_fram_hydro

This website provides the oceanographic data collected by Nansen's crew. Educators will find this resource useful because it provides both the actual data and analysis of the data collected, which supplies a model for students to better understand the impact of critical thinking and analysis skills.

Meteorological data
http://www.nsidc.org/data/g01938.html

This resource is part of the Arctic Climatology Project, which created this Arctic Meteorology and Climate Atlas. The atlas includes a brief summary of the

research, as well as all of the data used to provide the analysis. Educators will find this source useful in order to display the steps of data analysis and documentation.

Franz Josef Land
http://www.visibleearth.nasa.gov/data/ev160/ev16007_FranzJosef.A2002120.1010.1km.jpg

This link provides an enlargeable image of Franz Josef Land. Educators and students alike will be able to better observe its landscape.

http://chemsrv0.pph.univie.ac.at/ska/fjl.htm

This image is of the map of the Franz Josef Land and its surrounding Northern Europe countries. Educators may use this image to display the size of the lands in comparison to countries that are more familiar.

http://www-bprc.mps.ohio-state.edu/Icecore/FranzJosefLand.html

This source provides a topographical map of Franz Josef Land. Earth Science educators may find this site especially useful to incorporate into their own topographical lessons in the classroom.

Cook (1906)

http://www.cookpolar.org/about.htm

The Frederick A. Cook Society is a nonprofit organization dedicated to educate the community about the life of Cook, as well as polar education in general. Educators interested in the life of Cook, polar research, polar literature, and polar exploration will find this site useful because it provides an abundant amount of information on each these topics.

Peary (1909)

http://www.pbs.org/wgbh/amex/ice/sfeature/peary.html

The Public Broadcast Service provides brief biographies on Peary, in addition to special features, timelines, and maps of Peary and other famous polar explorers, including Amundsen and Byrd. Educators may find the teacher's guide especially useful because it provides discussion questions and other features for student participation.

Henson (1909)

http://unmuseum.mus.pa.us/henson.htm

The Virtual Exploration Society provides a detailed account of Henson's race to the North Pole. Educators will find this site useful because it provides education information, while students will enjoy the drama and adventure of this biography.

Amundsen (1909)

The South Pole, Amundsen

Why Amundsen Killed his Dogs
http://tea.rice.edu/activity/rose/whyamundsenkilledhisdogsalessonfromtheheroicage_main.pdf

Rice University provides a brief explanation and an activity for students to participate in. Educators will find this activity beneficial in order to help their students understand Amundsen's actions towards his dogs.

Scott (1909)

Scott's Last Expedition, Scott

The Worst Journey in the World, Aspsley Cherry Garrard

90 Degrees South: With Scott to the Antarctic (1933), DVD

Terra Nova Expedition
http://www.south-pole.com/p0000090.htm
The South Pole site provides an in-depth, detailed summary of Robert Falcon Scott's *Terra Nova* Expedition with a handful of pictures to add to the text. This is ideal for higher-level educators and students interested in the specifics of expedition and polar education, in general.

http://www.nmm.ac.uk/education/fact_files/fact_scott.html
The National Maritime Museum and the Royal Observatory in Greenwich have created a fact file about the polar expedition leaders. Educators with younger students will find this site useful because it provides all basic, background information about Antarctica (i.e., What is Antarctica?; How did it get it name?) that younger students may be curious about.

Brief overview of Scott and his voyages
http://www.enchantedlearning.com/explorers/page/s/scott.shtml
The Enchanted Learning Center provides a brief, colorful biography for younger students interested in the life of Robert Scott.

Scott vs. Amundsen

Last Place on Earth, Huntford

Judgment over the Dead: The Screenplay of The Last Place on Earth (London: Verso/New Left, 1986) Scott and Amundsen, T. Griffiths a dramatic series on Masterpiece Theatre, a PBS television series produced by WGBH-TV, Boston, made possible by a grant from Mobil Corporation

The Coldest March, Solomon

Susan Solomon's web link
www.coldestmarch.com
This source provides a brief summary of Susan Solomon's *The Coldest March*, as well as her goal in writing this book and critical reviews. Educators who are contemplating sharing this book with their class may want to visit this site in order to make a well-informed decision.

PBS Secrets of the Dead
http://www.pbs.org/wnet/secrets/case_southpole/interview.html
In the Public Broadcasting Service organization's Secrets of the Dead series, the "Tragedy at the Pole" was further investigated. The episode contains background information on Scott and Amundsen, as well as clues and evidence to what may have happened. An interview with Susan Solomon, author of *The Coldest March*, is also part of this episode. Educators may find it useful to order or view this episode in class because it is both educational and engaging for students.

Polar Race Offers Leadership Lessons
http://www.uscg.mil/hq/g-w/g-wt/g-wtl/news/winter99/polar.htm
Robert Gunther provides a list and brief explanations of leadership qualities that every good leader should have. Educators of all level will find this an ideal method of teaching students of today to be leaders of tomorrow.
http://www.cep-dc.org/testing/testtalkoctober2002.htm
This "TestTalk for Leaders" issue, written by Nancy Kober, from the Center of Education is an in-depth guide for educators and parents to understand the limitations of tests on an individual's character. Educators with students who

feel pressured by tests should read this issue in order to comfort and encourage students that tests are not the determinant factor for one's future.

Shackleton

South: A Memoir of the Endurance Voyage by Ernest Henry Shackleton, 380 pages (selections)
http://etext.library.adelaide.edu.au/s/s52s

This source is a 380-page selection of Shackleton's story of his last expedition. Educators and students of higher level may appreciate this source more because it is a very detailed, personal account of his expedition, in addition to reviews and reactions by experts of the field.

Shackelton's Way

Endurance

Shackleton - The Greatest Survival Story of All Time (3-Disc Collector's Edition), DVD

South - Ernest Shackleton and the Endurance Expedition (1919), DVD

Shackleton's Antarctic Adventure (Large Format) (2001), DVD

Shackelton's Voyage of Endurance documentary, PBS Nova (2002)

Shackelton miniseries, A&E (2002)

Shackelton IMAX

Shackleton's Antarctic Odyssey
http://www.pbs.org/wgbh/nova/shackleton/

The Public Broadcasting Service organization highlights NOVA's film "Shackleton's Antarctic Adventure." Educators, who want to teach about the events of Shackleton's expedition, as well as survival stories from other members of his crew, will find this source valuable and engaging for students.

Endurance Expedition timeline in paragraph form:
http://www.south-pole.com/p0000098.htm

The South Pole program provides an in-depth biography of Shackleton's trans-Antarctic expedition. Educators with high-level students will find this source useful because of the detail and length of this literature.

Timeline of the Endurance voyage (by date)
http://www.pbs.org/wgbh/nova/shackleton/1914/timeline.html

NOVA provides a detailed, but concise, timeline of Shackleton's voyage on the *Endurance*. Educators of all levels will find this source useful because it organizes the sequence of events for most students to easily comprehend and be engaged.

Elephant Island
http://www.visibleearth.nasa.gov/cgi-bin/viewrecord?3007

NASA provides a directory of various images and animations of the Earth. This source is a satellite image of Elephant Island and a brief description of what is seen for educators and students to observe familiar or unfamiliar land in different ways.

Navigating on the open sea
http://www.pbs.org/wgbh/nova/shackleton/navigate/escapewave.html

NOVA online provides technical information for those who would like to learn more about Shackleton's expedition to Antarctica. This source includes how a sextant works and Shackleton's escape from Antarctica. Educators of middle school and high school students may find this source useful in order to expand their naval education.

South Georgia
http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img_id=10312

NASA's Earth Observatory provides new, detailed images of South Georgia Island, as well as brief explanations of what is observed. Students interested in topography and earth science may find this source engaging.

Byrd (1934)

http://www.pbs.org/wgbh/amex/ice/index.html

The Public Broadcasting Service organization created this source targeting younger children (3-8) as their audience. The source contains brief, colorful timelines, maps, and biography of Byrd's expedition to Antarctica. Educators will find this site intriguing as well because of the details it provides, form Byrd's shack at Advance Base Camp to a teacher's guide including activities for students.

Classics

"Rhyme of the Ancient Mariner"
http://utenti.lycos.it/quaildoc/eballata.html

This site provides a brief description of the film "The Rhyme of the Ancient Mariner," as well as provide the background information. Educators who desire to teach the classics may want to visit this source to help form a decision if it would be beneficial to display this film in their classroom.

Dante's *Inferno*
http://www.arches.uga.edu/~redman/hellhigh.html

This site contains an interactive map that both visually and textually represents the various components important to Dante's *Inferno*. Educators teaching this piece of literature will find it very beneficial to share this website with their students because it summarizes the different levels of perdition to help students follow the book.

Polar Driver of Thermohaline Circulation
http://www.ldeo.columbia.edu/dees/ees/climate/labs/circ/index.html

This source, provided by the Columbia University's Earth Observatory, provides a lab that helps students of high education learn how to drive ocean circulation. Because this is a hands-on activity, educators and students alike will find this source beneficial.

Polar Institutions and Organizations

Alaska Native Knowledge Network
http://www.ankn.uaf.edu

The Alaska Native Knowledge Network is a resource created to share knowledge about the cultural experiences of Alaska Natives, including a section designated to Science and Mathematics Education. The section contains Alaskan and non-Alaskan links, such as to Alaska Science Forum, which provide both pictures and written explanations of various components of Alaska's environment.

Arctic Research Consortium of the United States (ARCUS)

http://www.arcus.org/

The Arctic Research Consortium of the United States, ARCUS, is a non-profit organization that consists of and connects various educational, professional, and scientific institutions dedicated to the purposes of Arctic research. A recent addition to ARCUS's commitment to education is TREC, Teachers and Researchers Exploring and Collaborating. A network between the science and education fields is further created by this program, improving and strengthening science education. TREC allows kindergarten through twelfth grade teachers to participate in Arctic research by working closely with scientists. It is an interactive program for students as well, providing links educational games and interactive programs that explore the Arctic.

Scott Polar Research Institute - Directory of Polar and Cold Regions Organizations
http://www.spri.cam.ac.uk/lib/organ/keyindex.htm

The Scott Polar Research Institute of the University of Cambridge provides a directory of Polar and Old Region Organizations in most of major countries. Educators in these countries are able to gain access to these organizations, which can help send educational information (from documentaries to pamphlets) that may be good supplements to polar education.

Byrd Polar Research Center
http://www-bprc.mps.ohio-state.edu

Ohio State University's Byrd Polar Research Center encourages polar research. Educators of high school and undergraduate students can use this source to teach more about research in general, as well as encourage polar research education, to their students. Various resources, such as polar and weather pointers, are also included in this website to supplement research.

National Ice Center
http://www.natice.noaa.gov/

The National Ice Center provides an archive that educators and the community alike may access to learn more about the history of Antarctica, Arctic, the Great Lakes, and other water regions of the country. Educators of all levels will find this source useful in order to find factual information of the various regions.

University of Alaska Northern Studies
http://www.uaf.edu/northern

The University of Alaska provides information about Alaska, their students, and most importantly, the Northern Studies Program. The program is an interdisciplinary program in which students study the problems and policies of the North. Educators should encourage students interested in Alaskan history and public policy to apply to this program to further their Alaskan education.

U. S. Fish and Wildlife - Arctic National Wildlife Refuge
http://arctic.fws.gov/index.htm

The United States Fish and Wildlife Service of Alaska has established an Arctic National Wildlife Refuge to preserve the wildlife of the region. Educators teaching wildlife conservation and extinction will find the factual information helpful. Educators of middle schools are especially the target audience because the refuge provides science and math lessons and activities for students to learn more about the Arctic refuge.

Arctic Circle
http://borealis.lib.uconn.edu/arcticcircle/

The goal of the Arctic Circle program is to expand knowledge about the circumpolar North to other parts of the community, including students, educators, and policy makers. A virtual classroom with syllabi, problems, and activities

provides a method of integrating polar education into the science curriculum for educators.

Long Term Ecological Research (LTER)
http://www.lternet.edu/

The Long Term Ecological Research (LTER) Network involves over 1800 scientists and students working together to observe and study the ecological processes over numerous time scales. Educators with undergraduate or graduate students interested in research and ecological preservation should encourage their students to participate in this network.

National Science Foundation - Polar Related Links
http://www.nsf.gov/od/opp/wwwsites.htm

The National Science Foundation has created a website containing various Antarctic, Arctic, and Polar Region links that those interested in discovering information about the regions may access. Information includes facts of the regions from various United States government agencies, historical information, and research programs.

The New South Polar Times
http://205.174.118.254/nspt/home.htm

The *New South Polar Times* is an online archive and newsletter that provides its audience, teachers and students, with information about the scientific research taking place at the South Pole.

Nunavut Planning Commission Environment Database
http://npc.nunavut.ca/eng/index.html

The Nunavut Planning Commission (NPC) is responsible to develop plans, policies, and objectives for land use. Educators of public policy will find this a useful real-world example of how policies affect the envinroment.

Polar Libraries Colloquy
http://www.acs.ucalgary.ca/~tull/polar/plcmain.htm

The Polar Libraries Colloquy website that those interested in polar information can access the various publications in the archive. Students writing reports on the various components of the Polar Regions will find this website an ideal source to find information.

Polar Research and Cold Climate Technology (link from EELS)
http://www.luth.se/foundations/coldtech/coldeel.html

The Polar Research and Cold Region Technology is an online database connecting users to journals and publications written, as well as access to the various institutes and research programs around the world.

Antarctic Exploration
www.studyofplace.com

Middle-school students can access this website to:

- use a route map of Shackleton's expedition to navigate to investigations
- study a time-line of Antarctic Explorers
- study maps and aerial views of Antarctica in an online image gallery, individually or in a side-by-side view (Investigation 1, Exploring and Discovering)
- measure seasonal change in sea ice using an online grid (Investigation 2, Exploring and Discovering)
- watch a quick-time movie of seasonal change in sea ice (Investigation 2, Extension Activity)
- use an online solar calculator to obtain data and an online tool to graph the angle of the sun in their home town over a year's time compared to data from Antarctica (Investigation 2, Looking Closer)
- graph cooling and heating curves derived from insulation and reflectivity experiments

(Investigation 4, Exploring and Discovering)
- type their answers on line for all record sheets

Teachers can:
- Access and print all the science content and technology background they need for teaching
- Evaluate student assessments that accompany each investigation with scoring rubrics
- Print all record sheets, readings and assessments from PDF downloads

Univesity of the Arctic
http://www.uarctic.org

The University of the Arctic organization contains is a network of universities, colleges, and other organizations that are committed to the education and research of the North. Educators can use this website to gain access to the programs offered by the University of the Arctic, as well as information about current events in the North.

Geociences at Purchase
http://www.ns.purchase.edu/geo/greenland.html

This website, part of the Environmental Sciences Board of Study of SUNY, provides numerous links to the courses and research publications offered by SUNY. Educators and students may access this site to observe the various projects students of SUNY are participating in, as well as rsearch for jobs/internships that the board offers.