

Melting Glaciers in the Art Room

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Introduction

I became interested in creating a curriculum unit for my students as a result of what I discovered in my Delaware Teacher Institute Seminar "Human Population Growth: Environments and Cultures in Jeopardy" and a video my sister sent to me last January. The video was of Zaria Forman creating one of her monumental chalk finger paintings of a glacier. The video showed several photo-realistic images of glaciers and eventually imagery of the artist creating the image. Forman attaches her paper or canvas to the wall, and donning rubber gloves, she sets out to smudge, smear, and manipulate the chalk with the iceberg emerging from her movement.¹ Her art inspired me to learn more about glaciers, but it was not until I began the Teacher Institute Seminar that I really put her art to use in my classroom.

Population and cultures in jeopardy are challenging concepts to conquer in an elementary art room. Art for activism is a difficult topic to cover for elementary students as well, but these concepts are important and relate to my students' coursework in science. I propose to address these topics through art by examining the glaciers melting in Alaska. My students will learn about glaciers through the eyes of the contemporary artist Zaria Forman. We will explore the effects thus far of the diminishing glaciers through reading children's literature on the subject. We will create works of art in response to the readings. Specifically, we will create glacial landscapes inspired by Forman. We will create original works of art about animals in decline due to changing climate resulting from glacial melting. Students will also examine the art of the Inuit while considering the impact of the changing climate on this group of native Alaskans. Additionally, students will consider what Inuit villages and dwellings look like.

I work in one of twenty-two elementary schools in Christina School District. The school houses one of the satellite Montessori pre-school programs and two Delaware Autistic Program satellite classrooms. There are approximately three hundred and thirty students enrolled in the school. Student demographics are thirty-five percent African American, twenty-eight percent Hispanic, twenty-nine percent Caucasian, and eight percent American Indian, Asian and Multi-Racial combined. Eighty-eight percent of the students are considered low income and qualify for free and reduced breakfast and lunch. Eight percent of students qualify for special educational services. There are twenty-nine educators, eight para-professionals, and two guidance counselors employed at the school. Christina School District is the largest school district in the state of Delaware with an

enrollment of over sixteen thousand students. The school district is in New Castle County and serves students in Newark and Wilmington.²

I teach fifteen classes in my school, grades kindergarten through fifth. This unit could be modified to teach with any elementary grade, however I think the unit is best suited to second grade. Second grade spends time in science discussing weather and land formations. We complete land form art projects in first grade and therefore students have some background knowledge required to be successful in this proposed unit. Megan Guderian, the school librarian, will be conducting a unit on glaciers with the same classes. We will collaborate on this unit to re-enforce the topics covered in our respective classrooms.

Content Objectives

This unit is about the melting glaciers' impact on animal and indigenous peoples of the Alaskan region. Students will have an opportunity to translate scientific and environmental issues into works of art. Students will learn that we live in a fragile environment and that humans can have a positive or negative effect on the environment. We will learn of the impact humans have had in regard to climate change and on animal populations in Alaska. What glaciers are, where they are located, and that glaciers were once covering our area will be central components to the lessons. Students will learn that scientists can predict outcomes of glaciers melting. Finally, students will learn of the effect of melting glaciers and climate change on indigenous people, specifically the Inuit.

Because my students have little experience with geography and current issues in climate change, this lesson will help expose them to these topics. Students are very interested in animals and learning about new cultures, therefore creating art projects as a reflection of threatened animal populations and indigenous cultures will spark their inquisitive nature.

Background Knowledge

Students will learn information about glaciers and animal and human populations in both art and library classes. The librarian will cover content information and scientific research based projects with the students focusing on the effects of glacial melts on animals such as the polar bear and seal. In art, we will review the content the librarian covered and explore characteristics of the landscape and translate this information into creative products. Students will learn that glaciers are found all over the world with the largest glacial formations in the Arctic Islands, North America, and Central Asia. Glaciers are formed from snow that becomes compacted over time to form ice that has the ability to "flow" and move over time.³

Glaciers

Alaska is a geologically active region. The Alaskan mountain range was formed from earthquakes and tectonic shifts along the Denali fault. Though the region was formed some 25 million years ago, it is still geologically active. In 2002 there was a major earthquake that inspired new investigation of the formation of the glaciers and geology in the area.⁴

Glaciers are formed through accumulating snow over time changing to ice. Year after year, new layers of snow and ice compact. The compacted snow and ice becomes very dense and after about one hundred years a glacier could form.⁵ Glaciers are critical to life because they store an estimated seventy-five percent of the world's freshwater. Glaciers have the capacity to move because of their mass. They evolve over time from snow accumulating and melting. Glaciers are typically part of a mountain range which is the case for Alaskan glaciers. Scientists consider the changing glaciers as an important part of climate change. Some of the changes in glaciers are typical changes, but some changes are affected by global warming and man's impact on the environment through industrialization and climate change.⁶

The relationship between glaciers and climate isn't just about global warming. Scientists can gain knowledge of earth's climate throughout history from examining glaciers. Scientists can learn about the temperature of the earth before, during, and after ice ages by researching the clues in glaciers.⁷

Glacier Recession

Researchers are trying to predict how rapidly the glaciers in Alaska, and elsewhere, are receding. Scientists are working to record data on as many Alaskan glaciers as possible to learn about climate change. Scientists tend to "overlook" Alaskan glaciers because most of the world's ice is part of Greenland and Antarctica, so scientists have focused attention on those regions in regard to glacial recession and climate change.⁸

Glacier Recession: Impact on Animals

Due to changing temperatures, melting ice, and shifting glaciers, animals in the Arctic and Alaska regions are under much stress. In some cases, the animals are making adaptations. For example, scientists have noticed a polar bear-grizzly bear hybrid, or Grolar Bear, which is a new phenomenon.⁹ This new animal is attributed to the receding ice and warming temperatures making it difficult for polar bears to breed in their typical manner.¹⁰ There is some scientific debate as to whether these hybrids are a natural occurrence because bears' breeding grounds overlap or could become a more regular occurrence due to global warming because bears have been known to interbreed in captivity. Time will tell whether or not these hybrids species will continue.¹¹

Glacier Recession: Impact on Inuit

The Inuit culture relies on the climate for their way of life. Climate change has an impact on this culture because of the impact on the environment. Inuit hunt whales and since the water temperature is changing, whales' habits are changing as well. Large animals consume algae and the water temperature is affecting the amount of algae in the water. The marine system is fragile and the impact of climate change affects it dramatically.¹²

Climate change affects indigenous peoples in various ways. Although indigenous groups have incorporated some modern hunting techniques and other foods, indigenous cultures do still rely on local hunting and gathering for their livelihood. Because weather has become somewhat unpredictable, travel in Arctic regions has been impassable or dangerous. Because temperatures have fluctuated, certain meat curing that requires consistent freezing temperatures has been impacted causing some insecurity with sustenance for indigenous groups. The changing climate is also affecting the preservation of permafrost dwellings and archeological locations.¹³

Peoples of Alaska

There are several indigenous groups of Alaska including Inuit or Eskimo, Athabaskan, Yupik, Cup'ik, Inupiaq, Yupi'ik, Aleut, Alutiiq, Eyak, Tlingit, Haida, and Tsimshian. The Eskimo, or Inuit, are the more notable group and inhabit the largest area. Inuit are typically considered Arctic dwellers and have lived in Russia, Canada, Alaska, and Greenland. There are cultural and language differences among the peoples of Eskimo heritage. The indigenous groups depend on hunting and fishing as a cultural way of life. Inuit are characterized by their total reliance on the icy ocean for survival. The indigenous tribes of Canada and Alaska consider themselves a component of the environment.¹⁴ In a sense, the native peoples believe they have an impact on the environment and the environment has an impact on them. In general, native peoples of the region hold the environment in a sacred place of respect and significance.

Inuit Dwellings

Because Inuit and other indigenous peoples of the region are primarily hunters, dwellings need to meet the needs of the hunter and function as climate protection. Additionally, dwellings are dependent on the available materials. Inuit certainly used igloos. Igloos may have been used all winter, or just as temporary shelter while hunting. Igloos were usually built on ice or frozen areas. Inuit living on the coast occasionally dug into the ground for their shelters. These shelters were usually covered with earth or with animal skins to protect from precipitation. Each group or tribe used different styles of home building.¹⁵

Indigenous peoples of the Arctic region don't typically live in these types of dwellings anymore. In the past, they had a summer and a winter dwelling suited to the climate and the materials available.¹⁶ These groups used materials that were readily available and provided by the environment to construct dwellings.

Zaria Forman

As previously mentioned, much of the inspiration for this lesson came from the art of Zaria Forman. The artist typically takes an expedition to a location for inspiration.¹⁷ She takes thousands of photographs and makes sketches on her travels. Then she works in her studio to make monumental paintings using her fingers and hands with chalk and pastel. Forman created her series of glacier paintings, *Chasing the Light*, to shed new and artistic light on the issues of climate change and the impact on glaciers. She donates a portion of the proceeds of her art to climate change. Forman's inspiration, apart from nature, came from her mother who was a fine art photographer.¹⁸

Totem

Contrary to popular belief, totem poles were not created by all indigenous Americans because wood was not available to all populations. Inuit tribes did not create totem poles. Totems were, however, created by groups in the Pacific Northwest and by Canadian indigenous groups. Totems are wood carvings, usually of animal type characteristics. Totems have tribal significance and symbolism, not spiritual. Totems are still created today and are very expensive to commission due to the materials and time required to create the monumental works. Totems have been found in Alaska, however they are not considered to be Inuit. Totem poles are a visual story and can represent a significant event for the tribe. When a totem is erected, a whole is dug and a ceremony or celebration occurs as it is a special occasion to commemorate an important event. Unfortunately, many totem poles have succumbed to the elements and don't stand the test of time because they are made of wood and left outside for the community to view.¹⁹

Totem poles are very costly as they are carved from a single large tree. They take a tremendous amount of time to plan and carve. Totem poles are often painted. The imagery is symbolic and could tell the story of the carver or of the tribe.²⁰

Teaching Strategies

Multiple teaching strategies will be used to implement the lessons in this unit. The unit will be introduced with a power point presentation about glaciers. The power point will be shown during art class. The power point will demonstrate the formation of glaciers and have images of glaciers. Students will do a brief worksheet activity discussing glacial landscape characteristics. Students will produce a landscape image inspired by the work

of glacier landscape artist Zaria Forman. During an open ended question and answer dialogue, students will consider Forman's motivation for creating these monumental works. Each lesson will be differentiated to accommodate any special learning circumstances for students in the class. One-on-one directions will be given as needed as will one-on-one modeling of artistic techniques.

Students will work in small groups of six or less at tables to complete independent work. Students will share art supplies provided for each project to be completed.

Classroom Activities

Lesson Plan 1: Glacier Landscape and Zaria Forman

The introductory lesson to this unit will be creating a glacial landscape in response to the work of Zaria Forman. The lesson will require approximately three forty-five minute art lessons. In the library, students will read The Glaciers are Melting! by Donna Love.²¹ Because students will be exploring the environmental impact of melting glaciers in both art and library, they will gain a better understanding of this complex topic. In art, we will review what students have learned in library and we will dig deeper into the characteristics of the glacial landscape.

Children will learn that glaciers are full of life, glaciers move, and glaciers support life in the water and on the surface. We will look at the map and find locations where glaciers exist today and we will consider where glaciers were in the past, including our area. We will discuss what happened to the glaciers that were once covering America. Next, we will compare different landscapes with a hand-out. The hand-out has images and short definitions of various land mass formations. Students will match the definition to the image and then color the image. The images and definitions include a forest, a peninsula, mountains, fjords, and glaciers.

After gaining some background information on glaciers, we will look at the work of contemporary artist Zaria Forman through a brief PowerPoint presentation of her work. First, students will be confronted with Forman's monumental hyper photo-realism in capturing the majesty of the glacier. Students will discuss the merits of the art work. It is likely that upon first glance, students will assume Forman's images are in fact photographs, but as we look at more images we will discuss what the artist may have used to create her monumental images. Finally, students will be confronted with an image of the artist herself creating her glacier with her fingers and chalk.²²

Students will prepare for their glacier landscape portraits. We will discuss what colors might be found in the glacier and why those colors are part of what we see. Then we will begin our own glacier images using chalk. Students will use their hands and fingers to blend the chalk on their paper. I will demonstrate, in a step by step manner, the artistic

techniques required to complete the image in front of the class. After the class is finished, I will take the images outside and spray them with fixative to secure the chalk to the paper. The art will be displayed on the bulletin board outside the library along with facts we learned about glaciers.

Lesson Plan 2:

During the second lesson students will review the information we learned from the power point. We will explore climate change and melting glaciers. We will consider the outcomes of the current glacial melt in Alaska. We will discuss possible outcomes for the future and what scientists are predicting. We will pay special attention to Alaskan wildlife affected by glacial melting. We will create an endangered animal portrait for display in the hallway. Students will attempt to persuade viewers to be aware of the animal population plight due to glacial melting in Alaska.

As previously mentioned, my students are very interested in wildlife and discussing the impact of melting glaciers on wildlife will be a very engaging topic for my students. After a reflective review of vocabulary and information previously covered, we will start this lesson with the story Honey Paw and Lightfoot by Jonathan London.²³ The students will enter the classroom and sit on the floor in front of my chair so we can read the story.

After reading the story, students will sit in their assigned seats. I will distribute twelve by eighteen inch white paper to each student, beginning with the quietest group first. This will promote a smooth transition from the floor to the assigned seating arrangement. At our seats we will review the material covered in the story and as a class, we will begin our image using pencil and paper. In front of the class, I will model how to begin the Alaskan glacial landscape. We will review some techniques from the previous glacial landscape. After we have drawn the landscape setting for our animal portraits, I will demonstrate how to draw some of the animals we saw in the story. Students can follow my directions for the animal they want to include in their image. They can decide if they'd like more than one animal. Students will use their own aesthetic judgment on what animals to include and where to place the animals in their image.

For this lesson, students will need background knowledge on glaciers which we will have covered in previous art classes and they will have covered in previous library classes. Additionally, students will need background knowledge in the elements of art including line, shape, space, texture, and color. The elements of art are a central theme in every project we complete during second grade. The elements of art are the building blocks for all imagery and include line, shape, form, space, texture or pattern, color, and value. Students must have deep understanding of these concepts for success in future artistic coursework. The elements along with the principles of design are a focal point for the Delaware State Standards in Visual Art for all grade levels which is why is so imperative that these concepts are constantly referred to in lessons beginning in second

grade. Kindergarten and first graders learn about the elements in a more generalized way as they are novice beginners. By second grade, students have had enough experience with the elements to begin to form stronger cognitive connections to the ideals in their imagery and learning.

Lesson Plan 3:

We will consider Inuit dwellings for the third lesson. This lesson will take at least three forty-five minute art class periods to complete. After a short power point presentation about Inuit dwellings, students will work together in small groups of four to six students. Groups will be given a housing development problem. A short paragraph giving instruction about the type of hunting and the climate for the Inuit tribesman will be given to each group. Students will have to decide what kind of dwelling would be best to fit the scenario. Then students will work together to draw a design of the dwelling they decide to work with. Students will use paper and pencil to draw a sketch of an idea for their Inuit dwelling. I will work with students on the preliminary drawings.

After reviewing what was covered in the previous class, students will begin constructing their dwellings based on last week's drawings. Students will be given clay, cardboard, model magic, fabric, artificial leaves and other materials to begin work on designing their dwelling as a team. Students will finish final elements of their dwellings for the third art class. If groups finish early, they will work on additional drawings of Inuit dwelling designs for display. Inuit dwellings will be displayed in the library in conjunction with the librarian's unit on Alaskan glaciers.

Lesson Plan 4:

In the final lesson of this unit, students will examine the impact of melting glaciers in Alaska on the indigenous Inuit population. This lesson will take approximately two forty-five minute art class periods to complete. When students enter the class, we will sit on the floor to read the book The Polar Bear Son: An Inuit Tale by Lydia Dabovich.²⁴ Inuit communities rely on working together to survive the elements and to hunt. After we read the story, we will reflect on the information we learned about Inuit culture. Then we will discuss how the environment is affecting some aspects of the traditionally Inuit culture. Students will learn that Inuit populations extended from Siberia, Canada, and the Alaskan regions.

Next, students will move to their assigned seats. From our assigned seats, we will look at a brief PowerPoint presentation about totems and Inuit totem poles. Students will get a hand out on some totem symbols and their meanings. We will begin our totems on three by five inch index cards. Each card will represent a different totem symbol. First we will draw and color up to five cards. After we decorate the front and back of the cards we will cut small slits into the bottom edges of each and score a line down the center of each

card. We will fold each card. Then we will attach the folded cards together, one on top of the other. The totems will have imagery on the inside and outside. The totems will be small table top free standing three dimensional pieces. Because of the fragile nature of the totems, there will not be an opportunity to display the totems in the school as we have no art show case, only bulletin boards. Students will take their totems home upon completion. If students complete work early, they will be given a coloring sheet of various totem poles to work on while their classmates finish working.

Bibliography

"11 Hybrid Animals: Grolar Bears." MNN. Accessed December 5, 2014. <http://www.mnn.com/earth-matters/animals/photos/11-amazing-hybrid-animals/grolar-bears>.

This website offers information about climate change effects on wildlife breeding.

"Alaska History and Cultural Studies - Alaska's Cultures - Table of Contents." Alaska History and Cultural Studies - Alaska's Cultures - Table of Contents. Accessed December 2, 2014. <http://www.akhistorycourse.org/articles/article.php?artID=314>.

This website provides information about the indigenous peoples of Alaska.

"Alaska Natives." Alaska Native Peoples Natives Indians Eskimos. Accessed December 2, 2014. <http://alaskatrekker.com/natives.htm>.

This website provides information about the indigenous peoples of Alaska.

"American Experience: TV's Most-watched History Series." PBS. Accessed December 2, 2014. <http://www.pbs.org/wgbh/americanexperience/features/biography/alaska-natives/>.

This video provides information about native populations in polar and Alaska regions.

"Are Recent Sightings of Polar Bear-grizzly Hybrids Due to Climate Change? Will This Help save Polar Bears?" Polar Bears International. Accessed December 5, 2014.

<http://www.polarbearsinternational.org/about-polar-bears/what-scientists-say/polar-bear-grizzly-hybrids>.

This article describes the possible cross breeding of different species of bear linked to climate change.

"The Arctic People - Environment / Housing." The Arctic People - Environment / Housing. January 1, 2007. Accessed December 2, 2014.

http://firstpeoplesofcanada.com/fp_groups/fp_inuit2.html.

Information about indigenous peoples of the Alaska and Canada regions is provided by this website.

“Artist Uses Her Fingers to Create Mind Blowingly Realistic Paintings of Icebergs.” YouTube. May 31, 2014. Accessed December 2, 2014.
http://www.youtube.com/watch?v=_jc1CX3jUz8.
Article describes the work of artist Zaria Forman, a main inspiration for this unit.

Attenborough, David. "BBC Nature Video collection." BBC News.
<http://www.bbc.co.uk/nature/collections/p00kf6hs> (accessed October 25, 2014).
This collection of videos by the environmentalist David Attenborough could be used as supplemental information on glaciers. The information in these videos has been used for background information in the unit and could be shared with the students if time allows.

Christina School District. (n.d.). *Christina School District*. Retrieved July 30, 2014, from <http://www.christinak12.org/>
School district information on demographics for the school and district I teach in.

Dabovich, Lydia. *The polar bear son: an Inuit tale*. New York: Clarion Books, 1997.
This book will be used as part of the second lesson in this unit.

Doak, Robin S.. *Arctic peoples*. Chicago: Heinemann Library, 2012.
This book will be used by the librarian in her collaborative unit plan.

Environmental Protection Agency. "Society Impacts & Adaptation." EPA.
<http://www.epa.gov/climatechange/impacts-adaptation/society.html> (accessed October 3, 2014).
This website provides valuable information on the impact of climate change.

"First Nations & Inuit- Shelter." First Nations & Inuit- Shelter. Accessed December 1, 2014. http://www.ecokids.ca/pub/eco_info/topics/first_nations_inuit/shelter.cfm.
This website provides information about indigenous dwellings.

"Global Warming and Polar Bears - National Wildlife Federation." Global Warming and Polar Bears - National Wildlife Federation. <http://www.nwf.org/Wildlife/Threats-to-Wildlife/Global-Warming/Effects-on-Wildlife-and-Habitat/Polar-Bears.aspx> (accessed August 17, 2014).
This website provides information about the effect of global warming on polar bears.

Goldsmith, Diane, and Donna Perrone. *From top to bottom: carving a totem pole*. Glenview, Ill.: Scott Foreman, 199.
This website provides information for the totem art project.

Kutner, Max. "Snow Globe." Smithsonian. November 1, 2014. Accessed December 2, 2014. http://media.wix.com/ugd/382ccb_7951ef0464b543069fcc84f13e1ece02.pdf

This website provided valuable background knowledge.

Love, Donna, and Shennen Bersani. *The glaciers are melting!*. Mt. Pleasant, SC: Sylvan Dell Pub., 2011.

This book will be used by the librarian in her collaborative unit plan.

London, Jonathan, and Jon Zyle. *Honey Paw and Lightfoot*. San Francisco: Chronicle Books, 1994.

This book will be read prior to second art lesson.

"National Snow and Ice Data Center." How Are Glaciers Formed? Accessed December 2, 2014. <http://nsidc.org/cryosphere/glaciers/questions/formed.html>.

Valuable information about climate change and glaciers can be found at this website.

"Nunavut Climate Change Centre." Climate Change Impact. Accessed December 2, 2014. <http://www.climatechangenunavut.ca/en/understanding-climate-change/climate-change-impact>.

This website chronicles the impact of climate change.

Olson, Gillia M.. *Polar bears' search for ice: a cause and effect investigation*. Mankato, Minn.: Capstone Press, 2011.

The librarian will be using this book with her students during her collaborative unit.

Robertson, Jessica. "Are Melting Glaciers Disturbing Alaska's Ecosystems." USGS. http://www.usgs.gov/blogs/features/usgs_science_pick/are-melting-glaciers-disturbing-alaska%E2%80%99s-ecosystems/ (accessed August 9, 2014).

This article examines the effects of glacial melt and the Alaskan environment.

"Scientists Read Layers of Alaska's Ice and Snow to Track Climate Change." PBS. November 17, 2014. Accessed November 26, 2014.

<http://www.pbs.org/newshour/bb/scientists-read-layers-alaskas-ice-snow-track-climate-change/>.

This article provides valuable insight into climate change and glaciers.

"SitNews: Geologists Shed Light on Formation of Alaska Range." SitNews: Geologists Shed Light on Formation of Alaska Range. November 24, 2014. Accessed December 2, 2014. http://www.sitnews.us/1114News/112414/112414_alaska_range.html.

This website provides valuable background information for the unit.

"State of Alaska - Climate Change in Alaska." State of Alaska - Climate Change in Alaska. <http://www.climatechange.alaska.gov/cc-ak.htm> (accessed October 25, 2014).

This website provides valuable background information for the unit.

State of Delaware. (n.d.). *State of Delaware Visual and Performing Arts*. Retrieved August 9, 2014, from http://www.doe.k12.de.us/infosuites/staff/ci/content_areas/vparts.shtml
Common Core State Standards and Delaware State Standards for Visual and Performing arts are found at this link.

Struzik, Edward. "The End And Beginning Of The Arctic." The Huffington Post. December 3, 2014. Accessed December 5, 2014. http://www.huffingtonpost.com/2014/12/03/arctic-climate-change_n_6261590.html.
This article discusses climate change.

Sumitra, and Zaria Forman. "Zaria Forman Creates Hyper-realistic Paintings of Glaciers Using Her Fingers | Oddity Central - Collecting Oddities." Oddity Central Collecting Oddities. <http://www.odditycentral.com/art/artist-uses-her-fingers-to-create-mind-blowingly-realistic-paintings-of-icebergs.html> (accessed October 1, 2014).
Zaria Forman is credited with photos provided on this website. Information about the artist is also found here.

"Totem Bight State Historical Park, Alaska State Parks." Totem Bight State Historical Park, Alaska State Parks. Accessed December 3, 2014. <http://dnr.alaska.gov/parks/units/totembgh.htm>.
The significance of totem symbolism and history is discussed.

"Totem Poles." The Special Meaning of Native American Indian. Accessed November 6, 2014. <http://www.indians.org/articles/totem-poles.html>.
The significance of totem symbolism and history is discussed.

University of Colorado: Boulder. "National Snow and Ice Data Center." Where are glaciers located? <http://nsidc.org/cryosphere/glaciers/questions/located.html> (accessed September 26, 2014).
Important information about glaciers and climate change is found at this website.

Weber, Bob. "The Full And Disturbing Impact Of Melting Arctic Ice." The Huffington Post. http://www.huffingtonpost.ca/2013/08/01/arctic-ice-melt-artic-ecosystems_n_3690664.html (accessed September 4, 2014).
If time allows, students could watch the video attached to this news article. The video shows melting glaciers in the Arctic. The video is five minutes. The whole video does not need to be shown, the first three minutes could be used to teach the first lesson in the unit.

"Welcome to the Inuit Gallery of Vancouver." Inuit Gallery of Vancouver. <http://inuit.com/> (accessed October 25, 2014).
This website provides valuable images of Inuit art including Inuit totem poles for use with the third lesson in the unit.

“Zaria Forman.” Zaria Forman. Accessed December 2, 2014.

<http://www.zariaforman.com>.

The artist Zaria Forman’s website. She is a major inspiration for this unit.

Appendix

Appendix A: Materials for Classroom Use

This unit will be taught with three second grade classes. There are approximately sixty students total. Each student will need two sheets of twelve by eighteen inch white drawing paper and up to five three by five inch index cards. We will need pencils and erasers for each project that I will provide to each student. We will use chalk pastels for the first lesson. The other two lessons require crayons and markers for completion. Students will need time to clean themselves and their tables for the first lesson as the chalk can create a mess. I will acquire the books mentioned within the lesson plans and I will create the PowerPoint presentations for introducing the lessons and the artists.

Appendix B: Essential Questions

- How do melting glaciers in Alaska affect animals, humans, plants?
- Where else are glaciers melting?
- What can we predict about glaciers melting?
- What do artists have to do with melting glaciers?
- Did we ever have glaciers here? Where did they go?

Appendix C: Implementing Common Core/DE State Standards in Visual Arts

The State of Delaware Department of Education is in the process of developing Common Core Standards for the Visual Arts. At this time, The Visual Arts standards are focused on literacy and are general guidelines for including visual arts into core curriculum. All of the lessons in my proposed unit will be product based and all six Delaware State Standards for Visual Art will be addressed within this unit.

Standard 1: Understanding and applying media, techniques, and processes

Standard 2: Using knowledge of structures and functions

Standard 3: Choosing and evaluating a range of subject matter, symbols, and ideas

Standard 4: Understanding the visual arts in relation to history and cultures

Standard 5: Reflecting upon and assessing the characteristics and merits of their work and the work of others

Standard 6: Making connections between visual arts and other disciplines

(State of Delaware, n.d.)

Appendix D: Teacher Resources

Texts

http://www.amazon.com/The-Polar-Bear-Son-Inuit/dp/0395975670/ref=lm_t?ie=UTF8&psc=1&smid=ATVPDKIKX0DER

http://www.huffingtonpost.ca/2013/08/01/arctic-ice-melt-artic-ecosystems_n_3690664.html

Websites

http://en.wikipedia.org/wiki/Retreat_of_glaciers_since_1850

<http://www.climatechange.alaska.gov/cc-ak.htm>

http://www.usgs.gov/blogs/features/usgs_science_pick/are-melting-glaciers-disturbing-alaska%E2%80%99s-ecosystems/

<http://www.nrdc.org/wildlife/default.asp>

<http://www.epa.gov/climatechange/impacts-adaptation/society.html>

<http://www.eoearth.org/view/article/153781/>

<http://www.wwfblogs.org/climate/sites/default/files/WWFBinaryitem4920.pdf>

<http://www.nwf.org/Wildlife/Threats-to-Wildlife/Global-Warming/Effects-on-Wildlife-and-Habitat/Polar-Bears.aspx>

Artists' Work

<http://inuit.com/>

<http://www.odditycentral.com/art/artist-uses-her-fingers-to-create-mind-blowingly-realistic-paintings-of-icebergs.html>

¹ Zaria Forman. "Zaria Forman." Accessed December 2, 2014.
<http://www.zariaforman.com/>

² Christina School District. (n.d.). *Christina School District*. Retrieved July 30, 2014,

from <http://www.christinak12.org/>

³ Attenborough, David. "BBC Nature Video collection." BBC News. <http://www.bbc.co.uk/nature/collections/p00kf6hs> (accessed October 25, 2014).

⁴ "SitNews: Geologists Shed Light on Formation of Alaska Range." SitNews: Geologists Shed Light on Formation of Alaska Range. November 24, 2014. Accessed December 2, 2014. http://www.sitnews.us/1114News/112414/112414_alaska_range.html.

⁵ "National Snow and Ice Data Center." How Are Glaciers Formed? Accessed December 2, 2014. <http://nsidc.org/cryosphere/glaciers/questions/formed.html>.

⁶ "National Snow and Ice Data Center." How Are Glaciers Formed? Accessed December 2, 2014. <http://nsidc.org/cryosphere/glaciers/questions/formed.html>.

⁷ "National Snow and Ice Data Center." How Are Glaciers Formed? Accessed December 2, 2014. <http://nsidc.org/cryosphere/glaciers/questions/formed.html>.

⁸ "American Experience: TV's Most-watched History Series." PBS. Accessed December 2, 2014. <http://www.pbs.org/wgbh/americanexperience/features/biography/alaska-natives/>.

⁹ "11 Hybrid Animals: Grolar Bears." MNN. Accessed December 5, 2014. <http://www.mnn.com/earth-matters/animals/photos/11-amazing-hybrid-animals/grolar-bears> and Struzik, Edward. "The End And Beginning Of The Arctic." The Huffington Post. December 3, 2014. Accessed December 5, 2014. http://www.huffingtonpost.com/2014/12/03/arctic-climate-change_n_6261590.html.

¹⁰ "11 Hybrid Animals: Grolar Bears." MNN. Accessed December 5, 2014. <http://www.mnn.com/earth-matters/animals/photos/11-amazing-hybrid-animals/grolar-bears>

¹¹ Struzik, Edward. "The End And Beginning Of The Arctic." The Huffington Post. December 3, 2014. Accessed December 5, 2014. http://www.huffingtonpost.com/2014/12/03/arctic-climate-change_n_6261590.html.

¹² "Scientists Read Layers of Alaska's Ice and Snow to Track Climate Change." PBS. November 17, 2014. Accessed November 26, 2014. <http://www.pbs.org/newshour/bb/scientists-read-layers-alaskas-ice-snow-track-climate-change/>.

¹³ "Nunavut Climate Change Centre." Climate Change Impact. Accessed December 2, 2014. <http://www.climatechangenunavut.ca/en/understanding-climate-change/climate->

change-impact.

¹⁴ "Scientists Read Layers of Alaska's Ice and Snow to Track Climate Change." PBS. November 17, 2014. Accessed November 26, 2014. <http://www.pbs.org/newshour/bb/scientists-read-layers-alaskas-ice-snow-track-climate-change/>.

¹⁵ "First Nations & Inuit- Shelter." First Nations & Inuit- Shelter. Accessed December 1, 2014. http://www.ecokids.ca/pub/eco_info/topics/first_nations_inuit/shelter.cfm.

¹⁶ "The Arctic People - Environment / Housing." The Arctic People - Environment / Housing. January 1, 2007. Accessed December 2, 2014.

¹⁷ Sumitra, and Zaria Forman. "Zaria Forman Creates Hyper-realistic Paintings of Glaciers Using Her Fingers | Oddity Central - Collecting Oddities." Oddity Central Collecting Oddities. <http://www.odditycentral.com/art/artist-uses-her-fingers-to-create-mind-blowingly-realistic-paintings-of-icebergs.html> (accessed October 1, 2014).

¹⁸ "Zaria Forman." Zaria Forman. Accessed December 2, 2014. <http://www.zariaforman.com>.

¹⁹ "Totem Poles." The Special Meaning of Native American Indian. Accessed November 6, 2014. <http://www.indians.org/articles/totem-poles.html>.

²⁰ "Totem Bight State Historical Park, Alaska State Parks." Totem Bight State Historical Park, Alaska State Parks. Accessed December 3, 2014. <http://dnr.alaska.gov/parks/units/totembgh.htm>.

²¹ Love, Donna, and Shennen Bersani. *The glaciers are melting!*. Mt. Pleasant, SC: Sylvan Dell Pub., 2011.

²² "Zaria Forman." Zaria Forman. Accessed December 2, 2014. <http://www.zariaforman.com>.

²³ London, Jonathan, and Jon Zyle. *Honey Paw and Lightfoot*. San Francisco: Chronicle Books, 1994.

²⁴ Dabovich, Lydia. *The polar bear son: an Inuit tale*. New York: Clarion Books, 1997.

Curriculum Unit Title

Melting Glaciers in the Art Room

Author

Wendy Bell

KEY LEARNING, ENDURING UNDERSTANDING, ETC.

This unit is about the melting glaciers' impact on animal and indigenous peoples of the Alaskan region. Students will have an opportunity to translate scientific and environmental issues into works of art. We will learn of the impact humans have had in regard to climate change and on animal populations in Alaska.

ESSENTIAL QUESTION(S) for the UNIT

- How do melting glaciers in Alaska affect animals, humans, plants?
- Where else are glaciers melting?
- What can we predict about glaciers melting?
- What do artists have to do with melting glaciers?
- Did we ever have glaciers here? Where did they go?

CONCEPT A

Glaciers

CONCEPT B

Arctic Animals

CONCEPT C

Inuit/Indigenous People

ESSENTIAL QUESTIONS A

What are glaciers? How are glaciers formed? How can art affect climate change? Who is Zaria Forman? What is landscape?

ESSENTIAL QUESTIONS B

How do the animals adapt to the Arctic environment? How does glacier melt impact these animals?

ESSENTIAL QUESTIONS C

What kinds of dwellings do the indigenous peoples live in and build? How does glacier melt affect the Arctic people? How are the lives of the Inuit the same/different from our lives in Delaware? What art did they make?

VOCABULARY A

| | |
|---------|----------------|
| Arctic | Landscape |
| Tundra | Global Warming |
| Glacier | Climate |
| Run-off | |

VOCABULARY B

Grizzly Bear
Polar Bear
Grolar Bear

VOCABULARY C

| | |
|------------|-------|
| Indigenous | Totem |
| Inuit | |
| Dwelling | |
| Igloo | |

ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES

Text:
 Website: <http://www.zariaforman.com/>
 Video: <http://www.bbc.co.uk/nature/collections/p00kf6hs> and http://www.youtube.com/watch?v=_jc1CX3jUz8
 Picture Book: The Glaciers are Melting! By Donna Love