

## Details



**Completion Time:** More than a week

**Permission:** Download, Share, and Remix

## Photography 1: Documenting a Migration

### Overview

This lesson was written for a Photography I course, to be taught in a lab with access to either a darkroom or computers/printers. The class has already spent ample time getting used to the basics of photography, learning to use their cameras as a creative tool, just as a painter might use a brush. This lesson could easily be modified to work in a non-photography class, by removing the photography aspect and focusing on the studies of and documentation of migrations.

In this lesson students will learn how to observe the movements of a group of organisms by documenting their patterns through photography. They will also learn various ways to portray the dynamic actions of organisms in photographs by using the shutter speed setting on the camera to depict either blurred or frozen movements.

By studying research taking place in the Arctic to identify the driving factors that dictate the migration patterns of bowhead whales, and by comparing this information with similar data about the local migration patterns of monarch butterflies, students will prepare to document their peers on campus as they move through their own migration process.

Organizing Questions:

1. What are the causes of animal migration?
2. How can I manipulate the shutter speed of a camera to photograph movement?
3. How are the migratory causes of different groups of organisms similar/different?

### Objectives

By the end of this lesson, the students will be able to:

1. manipulate the depiction of movement in a photo by adjusting the shutter speed of their camera.

## Materials

- camera (1 per student)
- photosensitive material (1 roll of film per student/digital sensor)
- printing materials (darkroom or computer/software/printer)
- computer/handheld digital device & access to the Internet (1 per student)

2. explain how specific causes dictate the migration patterns of various groups of organisms.
3. show documentation of a daily human migration on campus.
4. explain the similarities/differences between the daily migration on campus and the annual migration of bowhead whales and monarch butterflies.

### **Lesson Preparation**

This lesson assumes prior instruction in basic-intermediate use of cameras and a printing process. If students do not yet have the ability to use these tools comfortably, the foundational instruction could potentially be embedded into this lesson but an instructor should expect such a lesson to take at least twice as long.

The instructor needs to prepare a slideshow to show the students patterns of migration by the bowhead whales and by the monarch butterflies. Particular emphasis should be placed on comparing maps of the migrations to a map of the krill locations as a food source for the bowhead whales, and temperature plotting as an environmental hazard for the monarch butterflies. The migratory patterns of any animals could be used as long as they are paired with data about the causal effects of the migrations. However, this lesson will be taught using the example of work that is being done in the Arctic to understand the bowhead whale migration and the monarch butterfly migration which winters annually in regions very close to this school.

Students will need to take and print photographs for this lesson. Thus, students will need at least one camera per student and a means by which to print their photographs. If students are using analog cameras, they will need film, paper, as well as access to a darkroom and all of the technology/chemistry that is involved in the development/printing process. If students are using digital cameras they will need access to a computer lab with photo-editing software, and a printer.

This lesson was designed to be taught in class periods of 80 minutes over 4 (plus) class periods (the number of days could vary, depending on the method of printing photos [digital is faster]). Some groups of students will be able to work at this pace, but only if they are comfortable with their cameras and the printing process. If not, allowing for 7-10 class periods might be more realistic. Additionally, these 4 class periods do not necessarily have to occur consecutively, but rather could overlap other assignments. This might be a good idea in order to allow students enough time to take quality photographs. This lesson could also be built into a larger unit on photography as it is related to polar sciences.

### **Procedure**

#### Day 1

15 min. Photo Of The Day Martha Holmes photo of bowhead whale just below the surface, "Bowhead Whale" (<http://cdn2.arkive.org/media/D5/D5C3C3F1-879B-48F6-9949-99F2AE62E83C/Presentation.Large/Bowhead-whale.jpg>). As part of a daily routine students will analyze the aesthetics of this photograph. Then, during the follow-up discussion they will

be asked to address their prior knowledge of whales in general and their behavior. This photo was chosen to introduce the bowhead whales to the group, and to emphasize the technical difficulties involved in documenting such a creature.

20 min. Discuss Motion & Introduce Shutter Speed (notes). Talk to the students about learning to control the shutter speed of their camera. Use a slideshow of various photos that depict movement in different ways. Some examples should show (1) frozen movement in front of a frozen background, others should show (2) blurred movement in front of a frozen background. Finally, show examples of (3) frozen movement in front of a blurred background. Ask the students to hypothesize about the means by which these three effects were created. Then demonstrate the manual changing of the shutter speed setting on a camera and have the students do the same with their own. They should write down a few notes about how each of the effects are achieved.

20 min. Share Dr. Steve Okkonen's Research. Use the archived video of Dr. Okkonen's presentation (<http://www.polartrec.com/resources/event/dr-steve-okkonen-on-the-oceanographic-conditions-of-bowhead-whale-habitat>), about his research of the bowhead whale migration. Emphasize the slides of the mapped migration and compare it with the location of the krill as a food source.

10 min. Introduce Migration Documentation Assignment. Explain to the class how they will be working as a team to collectively document the migration of students on campus. That means that they should be carrying their cameras with them all the time, and taking pictures during the school day, particularly during passing periods. Each student will be required to turn in a total of three (3) polished prints that show how the student body moves about campus. Each of the prints must depict motion differently. The first print will show frozen movement in front of a frozen background, the second will show blurred movement in front of a frozen background, and finally the third will show frozen movement in front of a blurry background. In order to prepare, the students must each shoot an entire roll of film for development. Collectively, with 5 classes, and a total of 75 students documenting the same migration, they will have a final total of 225 pieces of visual data to examine the student migration on campus. While they will be graded based on the standard Photo Print Rubric that is used all year, bonus points will be made available to students who shoot images that show unique information about factors that influence the migration such as the cafeteria and the busses, etc.

15 min. Location Scouting Time. The students will be given time to scout out locations for photographs that they plan to take in the coming week. They should go out around campus and begin looking for ideal views to shoot from when the rest of the student body begins to move from class to class, etc. If they want to shoot photos they can, but this time is really meant to find the best views.

Day 2

15 min. Photo Of The Day. Sue Sill photo of Monarch butterflies at rest, “Michoacan 1,” (<http://www.americanforests.org/wp-content/uploads/2011/10/Michoacan1.png>). As part of a daily routine students will analyze the aesthetics of this photograph. During the follow-up class discussion, students will be asked to describe their thoughts about the purpose of documenting animals. What is it that we can learn from observing these creatures? How can this information relate to our lives?

20 min. Monarch Butterfly Discussion. The students who have grown up in Mexico City, have been learning about Monarch butterflies throughout their education due to the proximity to the wintering grounds that end this massive annual migration. Begin the discussion by asking the students to reflect upon their prior knowledge, listing the facts that they know on the front board. It is likely that, as a class, they will be able to recall a lot of information because the subject of the Monarchs is so popular in the region. However, as a safeguard against the possibility that they have suddenly forgotten their past studies (or to be prepared for another demographic that is not particularly familiar with the monarchs), use a slideshow of images and 10-20 basic facts about the butterflies to acquaint them with these magnificent insects. Finish the conversation by asking the students to compare and contrast the migration of the butterflies with the migration of the bowhead whales that they learned about in the prior class. Encourage them to consider why they are migrating, and to compare and contrast the causes and other influential factors.

5 min. Assignment Review & Idea Sharing. Refresh the students' minds about what they accomplished last class and about the goals of the assignment. Ask students to share out their initial observations and any successes that they might have already had in documenting the way students migrate around campus. This is meant to inspire other students with new ideas of how/where they can find new and interesting perspectives on daily student migration.

40 min. Production Time. Students will have a block of time to go out of the classroom and take pictures of the campus and/or students migrating about. If they got a good jump on shooting photos and are ready, they could also go into the darkroom to develop their film.

### Day 3

20 min. Photo of the Day. Pablo Lopez Luz photo of automobile traffic in Mexico City, ([http://1.bp.blogspot.com/-lwJg80Dble0/UfMS7f7vNMI/AAAAAAAAAB\\_s/IDQFDU3J-Mg/s1600/traffic.jpg](http://1.bp.blogspot.com/-lwJg80Dble0/UfMS7f7vNMI/AAAAAAAAAB_s/IDQFDU3J-Mg/s1600/traffic.jpg)). As part of a daily routine students will analyze the aesthetics of this photograph. As part of the daily discussion incorporate the idea that we all migrate in different ways. This student demographic is very familiar with the automobile traffic problems that plague Mexico City. Discuss what the causes of this problem are and how they are different or related to the migration of the people. Discuss the similarities and differences between this daily migration and the annual migration of the bowheads and the monarchs.

10 min. Essay Assignment. Introduce the final portion of the unit assignment: a 500 –word essay that describes a student's observations of the daily student migration patterns on cam-

pus. They should refer to at least one of the printed photographs that they took in terms of connecting the visual evidence with their observations. The essay is to be turned in at the end of the assignment period, on the day that the photographic prints are turned in.

40 min. Production Time. Students should be given this chunk of time develop their film and/or their 3 final prints.

#### Day 4+

For any traditional photography class that uses a darkroom, far more production time will be needed in order to properly develop film and make quality prints in the darkroom. Additionally, more time will be needed to give all students an opportunity to showcase their Photography Research slideshows and to present their Arguments for the “strongest” found perspective of their chosen subject.

#### Final Day

15 min. Photo of the Day. Glen Williams photo of bowhead whale meat, “Mutak,” ([http://www.tunngavik.com/wp-content/uploads/2010/08/dsc\\_0322-copy.jpg](http://www.tunngavik.com/wp-content/uploads/2010/08/dsc_0322-copy.jpg)). As part of a daily routine students will analyze the aesthetics of this photograph. During the discussion, ask the students to discuss how the migratory patterns of the bowhead whale have affected the lives of humans. If they cannot make the connection, teach them about how the Inuit rely on the hunting of whales to sustain their communities, and how hunters have to follow the whales wherever they go.

15 min. Photo Reflection & Hanging. During this time the students will be asked to write a reflection on the photographs that they printed for this assignment. They are to answer a set of six standardize questions that are used regularly in the class, which cover a range of topics, focusing on various artistic/technical strengths and weaknesses that the students perceive in their own work. As they finish their reflection they are to use the remaining time to hang their work on the wall for all to see. In this case, they will hang the three prints amongst the prints of the other students and students in other classes in order to contribute the collective documentation of student migration on campus.

55 min. Peer-to-peer Photo Critique. For the remainder of the period the class will sit in close proximity to the wall of photographs. The instructor will choose a photo at random. Then the respective photographer will stand in front of the class, while their peers first provide positive feedback and then some constructive criticism. The instructor should then follow this discussion to cover any key elements that were not touched upon by the group before providing the artist with an opportunity to share their experiences/story about the photograph. Participation by all students should be mandatory, though no grades should come from this portion.

#### **Assessment**

The primary summative assessment asks each student to (1) photograph students migrating

about campus, and to (2) print the 3 most successful photographs of their chosen subject. Following the production of these photographs, students will also (3) evaluate their work based on the aesthetic characteristics we have studied throughout the semester. Formative evaluation will take place, first, through a peer-to-peer critique, and later the instructor will have an opportunity to read through a written reflection about successes and struggles of the concept and process and assess the students more summatively. Additionally, students will be asked to demonstrate their understanding of migration and the influential factors involved in causing the migration through a 500-word essay. The essay should reference at least one of their three printed photographs incorporating the photo's subject matter in the observations of the daily student migration on campus. Formative assessment of photo production will also take place throughout the production process, as the instructor has individual conversations with the students about the photos they are taking and printing, and how these artistic products could be improved upon by taking more photos from different perspectives.

### **Credits**

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## **National Science Education Standards (NSES):**

### **Content Standards, Grades 9-12**

Content Standard A: Science As Inquiry

- a. Abilities necessary to do scientific inquiry

Content Standard C: Life Science

- f. Behavior of organisms

Content Standard E: Science and Technology

- a. Abilities of technological design
- b. Understandings about science and technology

Content Standard F: Science In Personal and Social Perspectives

- c. Natural resources

Content Standard G: History and Nature of Science

- a. Science as a human endeavor

### **Other Standards**

CA State Standards:

Nine Through Twelve-Proficient

Visual and Performing Arts: Visual Arts Content Standards

Develop Perceptual Skills and Visual Arts Vocabulary

1.1 Identify and use the principles of design to discuss, analyze, and write about visual aspects in the environment and in works of art, including their own.

1.2 Describe the principles of design as used in works of art, focusing on dominance and subordination.

Impact of Media Choice

1.4 Analyze and describe how the composition of a work of art is affected by the use of a particular principle of design.

Skills, Processes, Materials, and Tools

2.1 Solve a visual arts problem that involves the effective use of the elements of art and the principles of design.

2.2 Prepare a portfolio of original two- and three-dimensional works of art that reflects refined craftsmanship and technical skills.

2.6 Create a two or three-dimensional work of art that addresses a social issue.

Make Informed Judgments

4.4 Articulate the process and rationale for refining and reworking one of their own works of art.

4.5 Employ the conventions of art criticism in writing and speaking about works of art.