



"Caring for this planet begins with getting to know our neighbours of other species."

GET TO KNOW LESSON PLAN:
Digital Photography



www.gettoknow.ca



Digital Photography

Introduction

Nature photography is easy to do, especially with modern digital cameras. Digital cameras are becoming increasingly user-friendly and have the advantage of giving immediate results (i.e., you don't have to wait for the film to be developed). In this lesson, students will learn how to use a camera, download photos, and create a project.

Grade Level: K-12

Location

Classroom and either schoolyard or nearby park

Objectives

- Learn to use digital cameras to take creative and descriptive images of natural subjects
- Conduct research and report on natural subjects such as plants and wildlife, illustrated with photography
- Create a visual display of photography for education purposes

Prior Knowledge

Some of your students may have lots of experience with digital cameras. Find out which students are most comfortable with digital cameras and/or similar technologies, then pair the advanced students with the beginners. This lesson plan includes a brief guide to outdoor photography with digital cameras for all individuals in the classroom.

Materials

- Digital cameras (one for every 3 students)*
- Computers with internet access
- USB flash memory stick or memory card (one for each student)
- Printed copies of included "Guide to Outdoor Photography with Digital Cameras"

*Sources for Cameras:

Students may have access to cameras at home or have their own. School policy should be consulted to ensure that students are allowed to bring in cameras. In addition, be sure to check your school's liability/insurance policies.

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Many schools may not have ready access to a number of cameras. If you have limited numbers of cameras, please consider the following suggestions:

- 1) Contact high school A/V department if you teach in an elementary school.
- 2) Contact local photography store (owner could also come to demonstrate how to use camera equipment).
- 3) Contact county offices or school district to see if cameras can be borrowed.
- 4) Contact discount stores or technology stores like Walmart, Best Buy, or Costco. Many of these stores will have equipment available for donations. Start with local general manager.
- 5) Contact local corporations, especially technology companies. Ask to speak with Public Affairs or Community Service division. They may be able to loan cameras or have employees assist with events.
- 6) Contact local libraries and universities, as they may be able to loan equipment or donate services.
- 7) Contact local chamber of commerce to assist with locating sponsors for cameras.

Procedure

- Select a project or activity from the list below, or make one up of your own design.
- Assign your students to groups, each equipped with a camera.
- Run through the guide to outdoor photography with your students, covering the basics of using a camera outside, especially the safety precautions.
- Ensure each camera is fully charged, or comes equipped with spare batteries, and that your students are familiar with the basic controls and adjustments, such as image quality, zoom control, and flash control.
- Give your students some time indoors to test out their cameras, taking pictures of each other or of objects in the room.
- Take your students outdoors to complete their project work.
- Allow time for your students to complete their projects indoors. They may need time and equipment for editing their image, doing research on their natural subjects, and creating portfolios.

Photography Project Ideas

Here are some ideas for nature photography projects you may wish to consider with your students:

Robert Bateman Get to Know Contest

Each fall, renowned artist, naturalist, and former teacher Robert Bateman invites students to “get to know” their wild neighbors, capture their experience in photographs, art, or writing, and then submit their creations to the “Get to Know” Contest. During the contest, you can help your students “get to know” their wild neighbors on a field trip, out in the schoolyard, or by bringing plant or animal specimens into the classroom. Invite all of your students to photograph their wild neighbors or let them choose which medium they want to use (photography, art, or writing) to capture their experience. Then, collect your class’s entries and submit them online. Your students can win prizes and see their work published.

Get the details at www.gettoknow.ca/us/contest/.

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Photographic Scavenger Hunt

Using National Wildlife Federation's Wildlife Watch site (www.nwf.org/watch) for your particular state, have the students take photos of the wildlife species on the watch list (plants and animals). Using the photos as documentary evidence, have each student write down in a journal the date, time, and location of the find. Using the photos in the classroom or as homework, have the students research the wildlife they photographed. Submit these findings to the National Wildlife Federation website and upload photos onto Flickr along with stories about the animals.

Photographic Field Guides

Depending on the season, you may have your students compile a field guide of local plants – especially native shrubs and trees. Send them out to collect images of any species that can be found in the school yard, their back yards at home, or in local parks. Have each student or group do the following:

- Collect images of a whole plant, along with images of any visible leaves, flowers, and fruit.
- Identify the plant with both its local common name and its scientific name.
- Write a paragraph or two describing the plant. Information on native plant species is readily available in books and on the Internet. If using the Internet, be sure to use credible sources.

When students have completed their photography and research, gather the images and descriptions, and use them to make up an illustrated guide to local plants, devoting one page to each species. Design the guide in a web page or create a word processing document, then insert images where possible.

Nature Photo-documentaries

Have your students use photographs and text to tell the story of a plant or animal that they can observe in their neighborhood.

Use the camera to capture how it looks and what happens to it over a period of time. For instance, you could let your students choose a tree, a shrub, or a location in a nearby natural area. Let them follow it through a season, making images of the changes they see over time. Recording of images over a month or more will give the best results.

Have your students put their images, observations, and research together in an electronic or printed documentary-style article.

Visit sites such as National Wildlife Magazine and National Geographic, for examples of other articles written by experts.

Nature Facebook

Utilizing the photos collected, have the students develop a social marketing campaign (using Facebook, Twitter, and other multimedia tools) to create a web presence for the wildlife they found, describing what is special about the species and their environment.

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Nature Photography Portfolios

If you concentrate more on the creative aspects of nature photography with your students, you could ask them to compile their own personal artist portfolios. This might require access to good quality color printers and paper. Provide your students with a description of what you expect of the portfolio and the quality of the photos they make.

They may display them in a commercial or hand-made photo album, or they could create an electronic portfolio.

Publishing Photos

When your students have completed their project, they may want to publish it. Here are two interesting options you or your students should consider:

- **Print publication:** Use the text and images gathered by your students to produce a printed booklet or guide. This may be accomplished entirely with a simple word processing package or with a more sophisticated webpage design program, depending on your equipment and software.
- **Power Point Presentation:** The work of individual students, student groups, or the whole class may be used to create a fun presentation in Power Point or other presentation software. These programs have the ability to display text and graphics, but can also play back sounds, video clips, animations, and web links. Take full advantage of all these opportunities to make the presentation fun and informative. Once complete, the presentation could be used at a public event such as a parent night, a school open house, or presentation to members of the public at a trade show or exhibit.

Also, several public access sites offer free photo publishing services.

Tips and Enrichment

- Invite a nature photographer to visit your class and do a presentation of his or her work, talk about equipment, and share stories about their experiences doing nature photography.
- Bring in and display books of high-quality nature photography for your students. Help them to appreciate that great images can be made using simple equipment.

Watch Robert Bateman's clip on using digital cameras:

www.gettoknow.ca/us/lessons/

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Alignment with California and National Science Education Standards

Standards		State of California	NSES
VISUAL ARTS			
Artistic Perception	Develop perceptual skills and visual art vocabulary	X	
Creative Expression	Communication and Expression through Original Works of Art	X	
Connections, relationships and applications	Visual Literacy	X	
SCIENCE			
Life Science			
Characteristics of organisms		X	X
Organisms and environment		X	X
Diversity and adaption		X	X
Science as Inquiry			X
ENGLISH –LANGUAGE ARTS			
Reading			
Reading Comprehension		X	
Writing			
Writing Applications		X	
Written and Oral English Language Conventions		X	

Guide to Outdoor Photography with Digital Cameras

Equipment

There are two general kinds of digital cameras: the most common are the compact “point and shoot” style with a fixed (non-removable) zoom lens, a preview screen on the back, and a built in flash; and the more expensive digital SLR (single lens reflex) of the kind many professionals use. We will assume you are using the point and shoot style.

Familiarize yourself with the main controls of your camera, including:

- On/off switch
- Shutter release button
- Mode selection button or dial
- Zoom control
- Turn on / turn off the built-in flash

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Besides your camera, you may also need:

- A camera case or bag
- Tripod
- Spare memory card
- Spare batteries

Camera Care

Here are some tips for using digital cameras outside:

1. Keep your camera clean and dry. Do not lay it on the ground, or let it get wet. Keep it in a camera bag or clean pocket when you are not using it.
2. Always keep a firm grip on your camera. Digital cameras are delicate and can be damaged by being dropped on the floor.
3. Use care when opening battery and memory card compartments. Be sure no dust or moisture gets inside, and that the battery or memory card is clean and turned the right way before inserting it.

Composition and Framing

When you find something you want to photograph, think about how the picture will look. You can often line up your subject using the preview screen. Be sure your subject is in focus and is located in the frame in a way that is interesting and tells the viewer something about the plant, animal, or scene you are shooting.

You may want to change the orientation of the camera to frame the subject. For instance, the desert plant in this photograph was shot with the camera in portrait orientation. Other shots, especially wide-angle shots of large areas, are usually taken in landscape mode, with the camera in the normal horizontal position.

Lighting

Lighting is very important in photography. For most kinds of photography, the best natural lighting conditions happen at sunrise and sunset, or when the sky is a bit overcast. During the morning and evening hours, the sun is low and the reddish colors of sunlight come through giving everything a warm look. Slight overcast conditions allow for wonderful photography of plants and brightly colored animals because the true colors are revealed and there are fewer shiny highlights and dark shadows to hide important details.

Texture and Color

Sometimes, the most interesting thing about a natural object is not what it is, but its texture or color. You can use your camera to capture interesting and creative details if you look for opportunities to combine texture and color in your images. For example, you might find fascinating patterns and textures in the bark of a large tree or on the surface of a weathered rock. You can capture that with your digital camera to highlight something people may have never noticed before.



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Perspective

You can use perspective to create some wonderful images of things in nature. Perspective in photography means finding positions to take pictures from that show your subject from interesting and creative angles. For instance, if you want people to appreciate the tallness of a tree, you might consider shooting an image aimed straight up through the tree's branches. Experiment with camera angles. Take test shots of things from above, below, from the side, up close, and from far away. Find angles that show the subject in a way it might not have been seen before, or that reveals something new or interesting about the way it is put together.

Close-ups

Many of the things we find interesting in nature are small, like insects, flowers, leaves, mushrooms, and spiders. Creating a good image of small things requires a camera that lets you get "up close and personal" with the subject. Most cameras have a "macro" setting that lets the camera take pictures of things that are closer than normal.

With close-ups, you need to keep the camera very steady, and you need lots of light. Position yourself so that sunlight comes from behind you or from the side, ensuring that the subject will be brightly lit. Your camera's built in flash may not work well at close distances, so you'll likely get better images without it. There is usually a dial or button that lets you turn the flash off.

Landscapes

For great shots of landscapes, you will likely need to use the wide angle setting of your camera. There may also be a landscape setting on your camera that allows it to get good quality images in wide angle mode and outdoor lighting conditions. Here are a couple of other pointers to help you take the best landscapes:

- Keep the camera steady and level. If the horizon is visible in the shot, it should be parallel with the frame of the image and not tilted.
- Mornings and evenings are often the best time for landscapes because of the quality and angle of sunlight. The colors are usually "warmer" (i.e., contain redder colors) and the sky and clouds may have interesting shades of the color spectrum.
- Orient your camera in "landscape" (horizontal) position for wide panoramic shots or tip your device 90 degrees in vertical "portrait" orientation for really large objects like trees or mountains.

Wildlife

Live animals such as insects, birds, mammals, or reptiles can be tricky photo subjects, mainly because they move around. Some digital cameras have a special wildlife mode that is set up to make the best use of telephoto capabilities. Here are some simple tricks and ideas for making excellent wildlife photos:



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- **Morning portraits:** Insects, amphibians, and reptiles can often be approached in the cool morning hours before their bodies warm up. If you go outside just at sunrise, you can often find a sleeping insect or a slow-moving reptile and get a nice close-up without disturbing it.
- **Bird feeders and feeding stations:** The best place to get good bird pictures is at a bird feeder. Birds may tolerate your presence near a feeder and let you get within a few meters for a good photograph.
- **Telephotography:** Your camera may have a zoom lens with or without additional “digital zoom”. To take advantage of your camera’s zoom lens, you need to put the camera on something solid like a tripod. You can also use a tabletop, backpack, a rolled up coat, or any other object to help steady your camera.

Photo Editing

Once your images are recorded, you’ll need to store and edit them. Working with photos is easier if you have saved them in a folder on your computer’s hard drive, and renamed them so you can find them again later. There are many easy to use photo editing software packages available, and many are included freely with operating systems. It is likely that almost any computer you can find will have photo-editing software. The main tasks you perform with photo editing are:

- **Cropping:** trimming the size of the photo so that the subject is framed better, and extra area of the image is cut off.
- **Rotation:** If the camera was tilted when the image was taken, you can correct this by rotating the image slightly and cropping it.
- **Color correction:** sometimes colors are affected by the quality of the light that was available when the picture was taken. For instance, photos taken in rooms lit by incandescent or fluorescent light can have a reddish or greenish tint respectively. You can correct for this by adjusting the color balance.
- **Sharpening:** Most photo editing software allows sharpening, an electronic trick that brings out the edges of things in the image. Sharpening can help some images appear clearer, but the over-use of sharpening can make a photo look artificially grainy.
- **Contrast and Brightness:** Some images may appear too dark. In this case, you may be able to show more color and detail by carefully adjusting the contrast and brightness settings.



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Digiscoping

“Digiscoping” is using a spotting scope as a super telephoto lens for your digital camera. Simply focus the spotting scope on a subject like a bird or insect, then aim your camera through the eyepiece and hold it steady while pressing the shutter button. You should see the image in the preview screen. With a little practice, you can develop some surprisingly good wildlife shots. One word of caution - be careful not to scratch either the eyepiece lens of the telescope or the front lens of the camera by bumping their glass parts together.

Photographer’s Notebook

It is helpful to write down something about the photos you are making. You can record the image number in a notebook along with information about the picture. This will help you later when you print and organize your images.

Some Common Digital Camera Icons:

Most digital cameras have several preset modes for shooting in different conditions. Below is a list of some common camera mode icons that you may find on your digital camera. These icons may have different meanings depending on the make and model of the camera that you are using.



Auto - Camera will automatically adjust for current lighting conditions.



Portrait - An automatic settings intended for taking portraits of people.



Autofocus - Camera will automatically focus on your subject and may correct for lighting conditions.



Night - An automatic settings meant for taking pictures at night or in low-light conditions.



Manual - Manual shooting mode allows you to adjust the camera settings for optimal results.



Macro - An automatic setting meant for macro or close-up photography.



Camera Shake - This icon tells you that the camera is not still enough to take a clear photograph and may cause blurry images.



Cloudy day - A shutter speed setting intended for use outside on a cloudy day.



White Balance - This setting will allow you to tell your camera what white looks like under current lighting conditions.



Action - This setting is best for photographing moving subjects like birds in flight or sports shots.



Flash - This icon means that the camera’s flash is activated.



No Flash - This icon means that the camera’s flash is deactivated.

