NATIONAL PHOTO CURRICULUM "FAST FACTS"

BOOK 1 - FOCUS ON PHOTOGRAPHY

First Photo Shoot: Tips for Storing Photos (pg. 13)

If photos in family albums are starting to turn color, ask about replacing them with archival-quality albums. Check out "archival" quality photo albums that will protect your photos for years to come.

Always keep a back-up copy of digital photos.

When doing electronic editing, make sure the original image is saved or kept unedited.

Never store photographs where they could get too hot or too cold.

Do not store albums where they could get damp.

The Light Makes a Difference: Pre-focusing or Focus Lock (pg. 19)

Most automatic focus systems focus on the center of the picture. Usually there is a mark in the center of the viewfinder to show where the camera is focusing. However, sometimes your focal point may not be in the center of the frame. You may want to place the main subject off-center to make the composition more interesting or you may have two friends standing side-by-side with a distant background between them in the center of the frame.

To prevent your subject from being out of focus, you will need to activate the Pre-focus or Focus Lock. Center the camera on one of the subjects and push the shutter halfway down. You are telling the camera where you want it to be focused. Next, without lifting your finger, move the camera back to reframe your photo and press the shutter the rest of the way down.

If you have a digital camera, you can check the picture in Playback mode.

The Light Makes a Difference: Automatic Exposure (pg. 21)

Cameras with automatic exposure can be confused by strong backlighting. Since the camera adjusts automatically for the best overall exposure, your subject may be dark or underexposed if the strong light is in the back. Move your subject to adjust the direction of the light.

Flash for More Light: Built-in Flash (pg. 31)

Most cameras come with a built-in flash. The job of the flash is to provide extra light so there is enough light to get the picture. In some cameras, the flash will flash for every photo you take. In other cameras, it will automatically turn on when the camera senses the flash is needed.

Some digital cameras have special flash modes such as autoflash, red-eye reduction flash, fill-flash, night flash and flash off. The red-eye reduction flash mode causes a bright lamp or series of flashes to go off before you actually take the picture. Look at your camera manual.

Know how to make your flash work for you.

Photograph with Your Feet: Zoom Lens (pg. 39)

A zoom lens is an adjustable type of lens on some point and shoot cameras that allows you to zoom from a wide view of the scene to a closer look at your subject. A zoom lens lets you get a little closer and fill the frame with your subject without having to move your feet. Learn to use your feet to get in close and fill the frame first.

A zoom lens is a good tool to use as you develop your photography skills.

Hat Tricks and Magic: Faked Fairies (pg. 51)

In 1917, some photographs were presented as evidence of fairies. The photographs were declared genuine by experts. However, the English photographers, Frances Griffiths and Elsie Wright, admitted to the hoax in 1981. They revealed that paper fairies had been cut out of a book and pinned in place for the photos.

To see the photographs, search the internet for the words "Cottingley Fairies."

Photos Can Tell the Story: Storyboarding (pg. 59)

Storyboards are plans you make before you shoot. A storyboard is a visual script and guide for your project. Filmmakers create multiple drawings when they "storyboard." Here is the process:
1. Break down your story into parts. Plan and discuss your ideas ahead of time.
2. Create a draft drawing of how your sequence of pictures will look. Think about what shots, angles, and frame sizes you will use in your project.
3. Describe how the photos are sequenced and put together.
4. Write a step-by-step guide to make and shoot your pictures.
5. Develop the images and put your project together.

Black and White: Sepia Tones (pg. 63)

Sepia tones (warm-brown tones) are another interesting photography technique. With digital editing, sepia tones, like black and white images, give photographers another tool for changing the feel or story of a photograph.

BOOK 2 – CONTROLLING THE IMAGE

You Take Control: ISO and Film Speeds (pg. 11)

Film speed is a measure of a film's sensitivity to light. Common film speeds include ISO 100, ISO 200, ISO 400, and ISO 800. Digital cameras use these same ISO numbers. Since there is no film, the ISO numbers refer to the effect of light on the camera sensors. The higher the number, the less light you will need. The lower the number, the more light you will need.

ISO 25 to 100 – Slow Speed
- The sharpest results; for use in bright light.
- Good to emphasize motion blur or to force the depth of field.
- Ideal for enlargements.
- Popular with nature photographers and scene photography.

ISO 125 to 200 – Medium Speed
- The best general-purpose choice; for use with a variety of lighting.
- Captures a greater depth of field.
- The most popular choice for automatic cameras.

ISO 400 to 1600 – High Speed
- For dim light and to freeze fast action; good for using available indoor light.
- Used by action photographers and photojournalists.
- Used primarily with adjustable cameras.

You Take Control: Exposure Modes (pg. 11)

Digital cameras offer a variety of exposure modes that help the camera perform in certain situations. Program (P) or automatic mode will automatically set the camera controls for most subjects, making it a good choice for everyday snapshots. Action mode sets the shutter speed as fast as possible for shooting fast-moving subjects. Portrait mode sets the aperture to focus clearly on the subject and eliminate distractions in the background. Macro or close-up mode and movie mode are also available on many digital cameras.

You Take Control: Equipment (pg. 11)

Get a Look Inside - An Activity

1. If you have access to a film-based camera, try this. Before you put in any film, get a look inside!

   Watch the shutter in action.
   Set the lens opening at its largest opening. Set the shutter speed at 30. Open the camera back. Be careful not to touch the inside of the camera or the surface of the lens. Hold the camera up and look into the lens through the open back of the camera. Press the shutter release button. See how long light is let through the lens. The shutter was open only

1/30th of a second. Advance the camera once and set the shutter speed at 250. Look into the lens and watch how fast the shutter works. Compare several different settings. If your camera has a B or T setting, try it out. It keeps the shutter open as long as you hold down the shutter release.

Watch the aperture in action.
Set the shutter speed at 1/15 second. Set the lens opening at its largest opening. Press the shutter release and notice how big the opening is when light comes through the lens. Set the lens at the smallest opening, advance the camera once, and repeat. Notice how small the opening is. Compare several different settings. Each larger opening lets in twice as much light.

2. Using a digital camera, set your camera to the Program Mode, usually indicated by a "P."

Watch how aperture and shutter speed are programmed to work together. Point the camera at one scene and start with any combination of aperture, shutter speed, and ISO settings. On digital cameras, ISO is the measurement of the sensor's sensitivity to light. For film cameras, it is the measurement of film's sensitivity to light. As you change one of the settings, watch how the other settings change. You can usually see these numbers change on an LCD screen. Continue changing the aperture or shutter speed until you have gone through all of them. Create your own exposure chart by recording the relationship of the setting numbers as they change. Different combinations of aperture, shutter speed, and ISO can all add up to the same overall exposure.

Low Light Challenges: Long Exposures and Painting with Light (pg. 19)

Long Exposures
Make a time exposure at night. Carnival rides, fireworks, star trails, or car tails make interesting pictures. Put the camera on a tripod or set it on a solid surface so it doesn't move. Set the shutter at "B." Set the lens at its largest opening.

Painting with Light
To paint with light you need a tripod, a small flashlight, and an assistant. Outside at night or in a dark room, mount your camera on the tripod and set the shutter on "B." Have your assistant stand about 15 feet away and point the flashlight at the camera and draw patterns in the air, trace the outlines of subjects, or write his or her initials or nickname (backwards) or as you hold the shutter open. Your exposure should last 10 to 20 seconds.

Lighting the Mood: Advance the Sunset (pg. 23)

Advance the sunset so that it appears to pass through its natural stages by reducing exposure time. Correctly exposed at 1/15 sec. and f/11, a sunset can appear boring with little detail in the clouds. If you reduce the exposure to 1/250 at f/11, the result may be more dramatic. The mood of the scene becomes more somber, with greater detail in the clouds.

Lighting in a Flash: Make Your Own Reflector and Diffuser (pg. 31)

Make some reflectors and diffusers. These lighting tools will often help you manipulate natural light so you won't need a flash.

A reflector to bounce natural light
- Place the subject so that one side is parallel to window. If the camera is facing the person, the window light causes the other side of the face to be darkened.
- Use white cardboard or paper on the dark side of the subject at an angle to catch the window light and bounce light onto the subject's face (dark side).

A diffuser to soften light
- Unwrap a hanger and bend the wire to make a circle.
- Cover the hanger with a sheet and hold it above the subject.
- Take a picture at high noon with and without the diffuser to compare results.

Panoramas: Montage (pg. 67)

Montages are like a jigsaw puzzle. But instead of joining pictures in a long strip, you make a patchwork of pictures. A montage can cover both the length and depth of the scene. There are no rules, so be creative!
- Stand in one spot and take your photographs in a systematic way to ensure you cover the whole scene.
- To avoid gaps in the finished montage, overlap adjoining areas that contain important details.
- Leave out areas such as broad expanses of cloudless sky, but keep the horizon because it provides continuity.
- Concentrate each frame on a light or dark area. This way each individual section of the montage will be correctly exposed.
- Assemble your finished prints. Overlap the pictures to cover the length and depth of the scene.

BOOK 3 – MASTERING PHOTOGRAPHY

Special Effects: Infrared Photos (pg. 15)

Some wavelengths of light, invisible to the human eye, can be seen and photographed by special cameras and image sensors. Infrared, ultraviolet, and x-rays are among the best known. Infrared photos can create unusual colors; green foliage becomes magenta, and pale skin tones become green.

False color images often reveal details that we don't normally see. Infrared film was originally made to detect hidden military bases, showing the difference between living foliage and dead branches cut for camouflage. It is also used by forensic scientists to spot forgeries in documents and paintings.

Some imaging techniques don't use light at all. A magnetic resonance imaging (MRI) scanner uses a combination of magnetism and radio waves to pick up signals from the human body and then a computer uses these signals to create a visible image. For digital cameras, this can be done though editing software using software filters.

Exposed to the Light: More about Metering Systems (pg. 19)

There are four types of metering systems that are commonly found on modern cameras.
- Average metering – Takes light readings from across the whole image and finds the average.
- Center-weighted average metering – Light readings are determined by the brightness in the center of the frame.
- Spot metering – Like a hand-held meter, a spot meter takes readings from a tiny area within the frame. A photographer can point to different areas within the frame to get several readings before choosing a setting.
- Matrix metering – A multi-zone system where the camera compares brightness levels in the zones to determine the best setting.
- A hand-held meter has the advantage of taking incident light readings (light falling on the subject), as well as the reflected light reading (light reflected from the scene). A camera's built-in meter just takes reflected light readings.

The histogram is a graphic chart found on your digital camera that shows the brightness levels of an image ranging from pure black on the left to pure white on the right. If your digital camera offers a histogram, you can use the chart to read the exposure of a photo.

Flashy Photos: White Balance Settings (pg. 23)

The process of compensating for color tone in different light is referred to as balancing the light or white balance. The most common white balance settings are:
- Daylight – for direct sunlight
- Cloudy – for shady, overcast skies
- Fluorescent – for use under fluorescent lighting

- Incandescent/tungsten – for use under standard light bulbs and some types of fluorescent lighting
- Some digital cameras have a custom white balance setting. You take a reading off a white-colored object to set the white balance. Check your manual for specific instructions. These settings act much like filters adding necessary warm or cool casts to the picture to help accommodate for different lighting situations. If you are using JPEG or TIFF format, setting the white balance is very important. Only the RAW format lets you easily adjust white balance when importing the image into your software.

Double Exposure – Moving the Moon
You can move the moon so it is right where you want it to be by double-exposing the picture. To do this you need a camera that lets you take one picture on top of another. Check your camera instructions to see if your camera can make a second exposure. Take one night picture without the moon; remember where the dark sky is positioned. Then take a second picture looking up in the sky showing only the moon so that it shows up in the dark sky of your first picture. Try double-exposing night-lights and signs or put your friends on a television screen using a double-exposure.

Black Light
Make a still life using beads, clear glass goblets, glow-in-the-dark objects, a flashlight covered with colored cellophane, or other objects that represent your Presentation Portfolio theme. Place a black light bulb in a clamp reflector. Set the camera on a tripod and use a cable release. Before taking the picture, focus the camera in a lighted room. Turn out the lights. Depress the cable to open the shutter for 30 or 40 seconds. Then depress the cable to close the shutter.

Three-Headed Person
Set your camera on a tripod in the dark. Cover your subject with black fabric leaving the head uncovered. Prepare three hand-held flashes. Open the shutter. The first flash captures the head facing left. The second flash photographs the head of the person facing the camera. The third flash captures the head facing right. Close the shutter.

Out in the Light: Ghost Photography/Apparition (pg. 27)

Try some ghost photography. An apparition effect can be created with a camera that has a bulb setting or flash attachment, a tripod, and a cable release or remote.
- Use a hidden light or waning, natural light or create an eerie setting with artificial light.
- Arrange the subject and props to set the mood, e.g., a window, a piano, and a person dressed in costume.
- Set the camera on bulb, focus on the subject and part of the window, open the shutter and count to five or less (depends on the light coming in). Then tell the subject to move out of the area, count again, and close the shutter.
- More than one photo shoot might be needed to get the proper apparition effect. Give this photo a title.

Out in the Light: Digital Noise (pg. 27)

Noise pollution or digital noise is generally an unwanted characteristic of a digital photo. Digital noise gives a photo a grainy effect. Digital noise is related to your ISO settings. You generally get the best picture quality by using a low ISO setting. You should only increase the ISO settings when you need a faster shutter speed to avoid a blurry picture. Higher ISO settings produce more noise, which becomes even more noticeable when you enlarge an image. For more information on ISO settings, refer to Book 2, page 15.

Still-Life Photography: Professional Food Photographers (pg. 43)

Professional food photographers use interesting techniques to make food look better. Dye can make food more colorful. Vegetables are coated with a thin layer of oil to make them shiny. Cereal is photographed with white school glue instead of milk; it looks creamy and not watery. There are many "tricks" to improve the appearance of the photos.

Say Cheese!: History of Photography Portraits (pg. 47)

In the late 1800s, someone having a portrait taken had to remain completely motionless for as long as one minute while the shutter was open or the photo would be blurred. Clamps were often used to support the head and back to make sure there was no movement. Smiling was not allowed. Blinking was forbidden.

Mastering Composition: Macro Lens (pg. 51)

A macro lens is a lens designed for very close-in photography. Many digital cameras offer a macro mode, which enables the camera to photograph the smallest details.

Details! Details!: Tripods (pg. 59)

Use a tripod when doing macro photography. The depth of field is so shallow that the slightest movement can cause the wrong part of the subject to be in focus. Nighttime photography is best with a tripod because the slightest movement will make the photo blurry. Photos with very fast shutter speeds to stop action benefit from tripods to avoid camera shake. Low ISO settings and long shutter speeds improve with tripods.

Pictures with a Purpose: File Size/Pixel Resolution (pg. 63)

The word *pixel* comes from "picture" and "element." A pixel is one tiny dot of the overall photo. Different pixel resolutions result in different print sizes. If you are going to produce artistic prints, shoot in the highest pixel resolution available. Reduced pixel resolution is fine if you will need only low resolution (for example, for e-mailing).

Digital cameras give you a choice of file format. The best way to decide which format is best for you is to try them out. As you switch between modes, compare how many photos you can capture on your memory card, how they open in your computer, and the quality of each as you enlarge them.

JPEG – The most popular image file format. The results are acceptable and the amount of images you can fit on a memory card is far greater than when using a TIFF or RAW file.

TIFF – A high-quality image file that is a good choice if you have lots of space on memory cards. TIFF assures the highest image quality, especially when printing. For a brochure, you might want to use TIFF files.

RAW file format – This format captures a pure file without any image processing occurring in the camera. They can produce large, high-quality image files. However, they require special software to open on your computer.

How Did They Get That Picture?: Specialized Equipment (pg. 67)

Underwater Photography
Observe all safety procedures before scuba diving.
- Equipment: Special equipment must be completely waterproof and able to withstand water pressure for underwater photography. Waterproof disposable cameras are available for snorkeling or for use in a pool. There are also camera bodies or shells made for cameras that allow you to take a camera into water.
- Light: The deeper the water, the more wavelengths of light are absorbed, some sooner than others. Below 100 feet, most photos tend to look blue; add flash for good results.
- Composition: For general views, shoot upward toward the surface. For underwater shots, try double-exposures.
- Skills: A flash used at a 45-degree angle will help with the hazy effect caused by the particles suspended in water that reflect light.

Copying Techniques
More than original images, photography is a useful way of copying existing pictures and artwork.
- Equipment: A copystand can be improvised using a tripod and two small desk lamps placed on either side.
- Light: The key to good copies of artwork is even lighting. To avoid reflections and shadows on the surface of the object, mount a pair of lights at 45 degrees.
- Composition: Some popular uses for copying techniques include repeat prints, insurance records, heirlooms, coin collections, framed pictures, and slide copying.
- Skills: Avoid reflections of framed pictures; surround the camera set-up with a sheet of black cardboard, cutting a hole for the lens.

Large Format Cameras
Large sized cameras and film are used by commercial and advertising photographers in studios to provide better images; the large film can be enlarged to billboard size without distortion. High-resolution digital cameras that are lighter and less bulky are replacing the large format cameras.

- Equipment: Lens mounted on a board-viewing screen, mounted at back. In between is a bellows, which allow the lens to move up and back.
- Light: Film should be loaded in total darkness one sheet at a time. Images are viewed on a viewing screen in dim light – hence the need for a hood.
- Composition: The size of film is 5 x 4 or 5 x 7 inches and gives extra quality for the large format and blowing up to poster size.
- Skills: Use manual only. Shutter speed and aperture must be set by hand, providing control over the final image that is not always available in other formats. Both the film plane and lens plane can be tilted, rotated, and moved up and down, giving control over the perspective and depth of field.