Digital Cameras in the Classroom

MLTI Summer Tech Institute
Castine, Maine, July 23 - 25, 2008

Agenda

Introduction / Wikispace
http://sutterworkshops.wikispaces.com/DigitalCameraInClassroom

Overview of digital cameras in the classroom
Ideas & Examples

Introduction to the camera functions (handout)
Video : The Basics
Dials and buttons
Setup menus
Shooting Modes
Capturing Video

Photography Tips (see checklist)

Testing camera at stations

Downloading into iPhoto or through Image Capture
IF you have your cord, download pictures to laptop.
IF you have 400 pictures, only 10 of which you shot today, use IMAGE CAPTURE to download SOME vs ALL of your pictures (watch for demo)

iPhoto for organization and editing (very briefly!)
Overview demonstration

Additional Resources
See wikispace for links to photo editing software, online photo editing sites, photosharing sites, and resources for copyright free and creative commons licensed images for students to use.
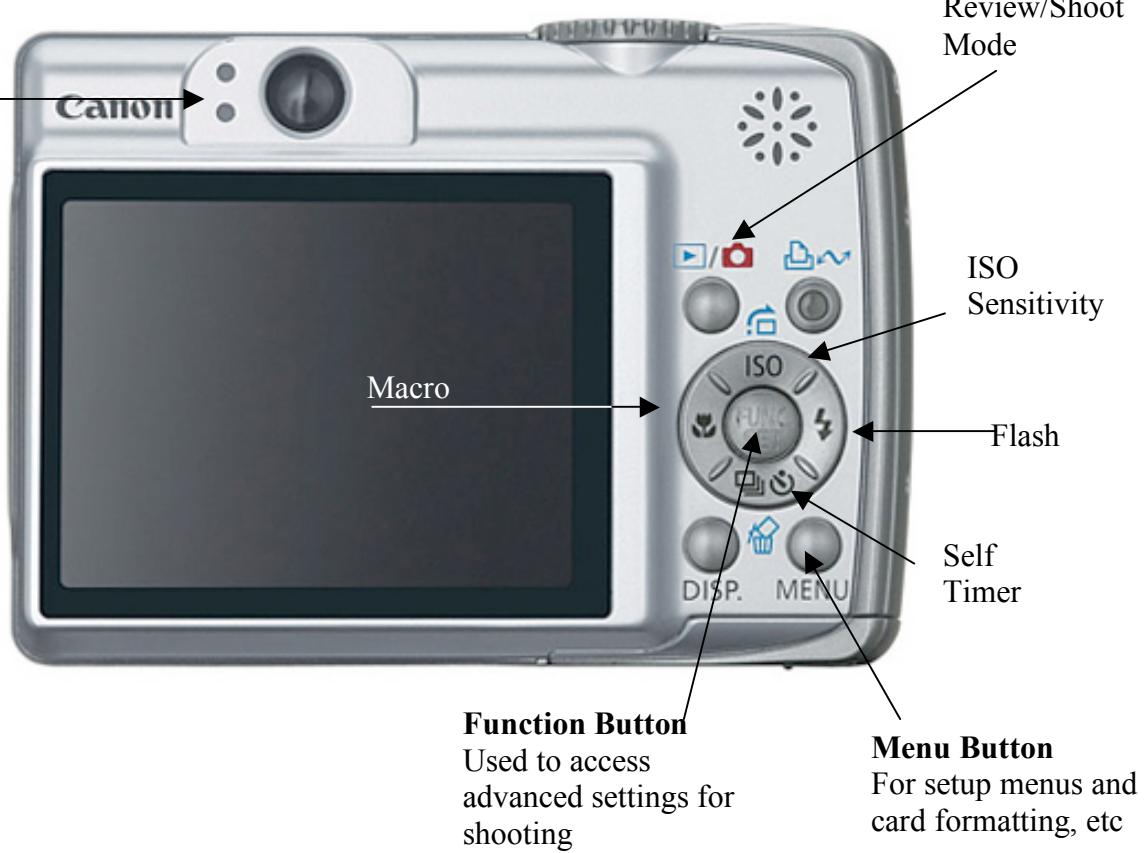
Questions / Evaluation

Sarah Sutter, Art Teacher
Wiscasset High School
ssutter@wiscasset.k12.me.us

Camera Functions

Shutter Button   Control Dial   On/Off Button

Zoom Ajustment

Timer Lamp

MIC

4X Zoom Lens

4× OPTICAL ZOOM

PowerShot A550

Canon ZOOM LENS 4×

5.8-23.2mm 1:2.6-5.5

7.1 MEGA PIXELS

Lights here let you know if the shot is focused, and if the shutter speed is too slow for hand holding.

Review/Shoot Mode

ISO Sensitivity

Macro

Flash

Self Timer

DISP.   MENU

Function Button
Used to access advanced settings for shooting

Menu Button
For setup menus and card formatting, etc

Checklist

Still or Video? – If video, pick the "movie camera" setting and skip to "white balance" setting

Which Still Setting?
Automatic or P is fine for most situations
Manual or P for extended or very short shutter speeds

FLASH
Flash OFF if :   Shooting artwork? Reflective surface? Behind glass? Through microscope? Extended shutter speed? More than 10' away? Performance situation?

Flash ON if: Stop nearby action? Low-light / blurry picture?

White Balance:
AWB (Auto White Balance) : fine most of the time
Daylight : if using light through window or outside
Cloudy : will "warm" up pictures (great for fall foliage!) so not so blue
Incandescent : GE Soft White – eliminates orange cast (also Christmas lights)
Fluorescent : (Sometimes two settings) eliminates the green cast
Custom : Take a reading from a white sheet of paper in lighting conditions

EXPOSURE
Normal Exposure: if you are using a flash (most times) or in average, even lighting
Over Expose IF : Background is lighter than subject, subject is backlit, shot is mainly white (ie: pencil drawing on white paper), light source is in the frame (ie: you can see the lightbulb)
Under Expose IF : you need information in highlights that are being blown out (too white!)

Tip: You can correct for some aspects of exposure in editing. It is easier to lighten shadow areas in editing than it is to make a bright area darker and have it look realistic.   *Advanced Tip*: Keep your histogram without spikes at the black point or white point – but mainly look out for a spike at the white point.

STABILITY
If you are doing longer exposures, use a tripod, beanbag pod, or stabilize on a table or other surface to avoid camera shake.
If you are doing super long exposures, use the self timer as a "cable release" so you don't move the camera when the shutter opens.
If you are shooting video, a tripod always helps. Keep the camera as still and level as possible.

Tip: VIDEO: Don't turn the camera to "vertical" if you are shooting Video! The screen doesn't work that way when it plays back. Landscape / horizontal view only.

ALIGNMENT

When shooting flat projects, make sure your lens-plane and the plane of the paper are parallel so you don't have distortion of the rectangle to a trapezoid.
Crop to edges so you don't have to go back and crop again later.

LENS DISTORTION

Faces in particular can be distorted when you use a wide-angle lens to shoot a portrait. Instead, for more accurate and flattering portraits, stand back and zoom in. (see examples)

GENERAL TIPS for better Photographs

Simple background : Use contrast – dark background for light objects, light background for dark objects.

Eliminate the unessential from the frame.

Choose an interesting vantage point : Level and straight on when aligning edges for copy work or shooting flat artwork, otherwise aim for some angles.

Get down down low or up high to alter scale relationships.

Use angles to create dynamic compositions; lead lines to draw the eye into the shot.

Place objects and lines such as the horizon on a third line or power point instead of centering the main subject bulls-eye.

Remember to turn the camera for **VERTICAL** still shots where appropriate.

Portraits look better if the person is not fully front faced; use the "school photo" technique of having the subject turn partially to the side and then turn their head back toward the camera. Shoot from slightly above the subject.

LIGHTING is key to a successful photograph. Transparent and translucent subjects may be made more interesting with side or backlighting. Soft even light (or even shadow) is best for portraiture.

BUYING a Camera : which one, why and where?

Image size : How many Megapixels? Honestly, if you aren't printing over 8x10 in size and aren't cropping the image significantly, 3 or 4 megapixels are plenty. That said, most basic "point and shoot" digital cameras are 6, 7 or 8 megapixels now (changing rapidly). More allows you to crop the image in the computer after it is shot and still have enough image left to print large.

VIDEO: Make sure the model will shoot for extended times, not just 30 second videos, if video is a priority for you.

Zoom : Optical zoom / digital zoom : Basically, don't use digital zoom - it's the same thing as cropping in on a computer after you shoot the image. The optical zoom factor of 3 or 4 is pretty standard, you'll pay more for a 10x. However, if you need to zoom in on things from a distance - a sporting event, a landscape from far away, the bird at the top of a tall tree - then it is worth it.

ISO capabilities: the ISO references the relative sensitivity of the sensor, and ranges from 50 to about 1600 for most cameras (6400 in some new ones, but only top models). If you want to do slow shutter speed exposures easily, finding a camera that has a 50, 80 or 100 ISO for the low end would be helpful. If you are planning to shoot high speed photos or stop action in low light (ie: PE in a basic school gym), get one with at least an 800 top setting, if not 1600 to avoid blurred motion.

Aperture : if you are shooting macro photos and want more depth of field, the higher the aperture setting possible the better off you are. 11, 16, or 22 would be great (or somewhere in that range), as sometimes f-8 is the highest offered.

Shutter Speed : Having a "bulb" setting for extensive exposures can be useful for some specific situations. A 15-second or 30 second exposure at the high end is also fine for many science projects. Having a high shutter speed for stop motion is also useful - anything above 500 or 1000 is fine to stop water droplets, hummingbird wings, etc.

MANUAL or AV (aperture value) and TV (time value) controls : When you are using the features of the camera to control for aperture and shutter speed, you need to be sure the camera will let you set them yourself with something beyond an "auto" setting.

MEMORY CARDS : With memory prices going down all the time, it is best to get whatever memory you can for your price point. I'm currently purchasing 2GB cards for my classroom cameras, which allows us to shoot all day for a field trip without worrying about running out of memory.

Also, the current leader for card standard is SD for memory cards- not compact flash. Plus, CF cards have pins that can be bent, so SD is better for kids in a classroom setting.

Batteries : I don't know about you, but I need to be up and running with cameras ASAP when I reach for it. If your camera takes a proprietary battery, you have to be sure to charge it regularly. I prefer cameras that take AA batteries, and I can have a handful ready to put in when the need arises, recharging the dead ones at that time without being left without a working camera.

Where to buy?
B&H Photo video is my first stop. They take PO's, have all the accessories, good prices, reliable service, and access to extended warranties, which I highly recommend when using digital cameras with kids. One knock to the extended lens, and it's stuck . . . and has to go back for repairs.
I also always check Amazon for prices, as well as a basic price-checker like Bizrate or PriceGrabber or whatever your favorite is. Be sure to check the Package to see what you get for that price - if you are shopping for an SLR make sure it is for the body and a lens, not just the body.

Ideas for Using Digital Cameras in your Classroom
(Marzano pdf linked on wiki)
Teachers might:
- Demonstrate "how to" to post with equipment in the classroom - add labels, zoom in on controls, etc.
- Document classroom / students for teachers professional portfolio
- Nonlinguistic representation
- Guide kinesthetic activity

STILLS
- Documenting and then debriefing a field trip experience : kids with cameras engage with the subject matter
- Phrenology Project : students create a field guide to plants, animals, stones, etc in local area
- Document steps in science labs : students use images in their lab reports, or in a voicethread or wiki that explains what they did
- Documenting change over time : plants, crystals, bacteria cultures, tadpoles, etc.
- Use software (Image J) measure color, tone, darkness of subjects photographed
- Digital Storytelling (see links)
- Document student learning – process as well as product
- Create Writing Prompts
- Create How-To guides
- Community History Projects
- Time Lapse Photography
- Exercises in Classifying, categorizing, or compare / contrast
- Learning Portfolios
- Cues, questions and advance organizers

VIDEO
- Record student performance of a task in PE for assessment and review with students in slow motion, re-recording after practice to show improvement
- Record public speaking or oral presentation for assessment and review with students - both formative and summative
- Record foreign language speaking for assessment and review - formative and summative
- Record music performances, instrumental or vocal, for reflection
- Record drama performances for reflection, practice