Basic Digital Photography & Images

Department of Instructional Technology & Libraries

Bellingham School District

Ken Russell

Objectives of this class

- Understand basic photography terms
- Know about digital camera equipment
- Understand your camera
- Take photographs
- Download images
- Editing digital photographs
- Display photographs

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Equipment

- ✓ Camera
- ✓ Operating manual (!)
- ✓ Batteries/power cord. *Use NiMH batteries.*
- ✓ Extra storage (memory cards)
- ✓ Computer interface cable
- ✓ Optional: lens paper, bag, tripod, flash, UV filter, etc.

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Digital camera categories

These categories are somewhat arbitrary:

- Point and shoot $100-$200 (4-6 MP)
- Intermediate $200-$500 (6-10 MP)
- Advanced consumer $500-$600 (6-10 MP & more features)
- Prosumer dSLR $600-$1800 (8-10+ MP, multiple lenses & more features)
- Professional $3,000-$10,000 (12-22 MP & more, more, more)

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Decide what you need

- How much resolution?
  - The resolution you need (4 megapixel, 7 megapixel, etc.) depends on what you plan to do with the photos. A 6-7 megapixel camera can produce a good 8 x 10 print. There is much more to a good camera than just how many megapixels it shoots at.
- Do you take snapshots or do you want to get technical?
  - Paying for advanced features is not needed if you do not use them
- Will you eventually upgrade?
  - Prices are still falling and quality is still improving. In a few years you may want to upgrade.

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Understanding your camera

- What are your camera's abilities and limitations, what features does it have?
  - *You need to read and understand your camera's operating manual!*
- You need to have experience shooting pictures and studying the results.

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Digital camera features & terminology

You don't *need* to know terminology or your camera's features, you can just shoot "auto" and hope for the best. But if you understand your camera and have experience using it's features, you will take better pictures.

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Auto Focus

- Auto focus (usually by default) lets the camera set the focus point in a picture without your intervention. Sometimes it works well, sometimes it doesn't depending on the subject you are taking the picture of. Know how to over-ride the autofocus.

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Focus Lock

Focus lock activates when the shutter button is half-pressed. It locks the focal point that is in the middle of the focus window in the viewfinder. This can allow you to place the image you want to focus on off to one side of the picture.

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Optical Zoom

An optical zoom moves the lens in and out, allowing wide-angle, telephoto or close-up pictures. In effect, it "crops" the scene. Use optical zoom before you use the digital zoom. Unlike digital zoom, it doesn't reduce the resolution.

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Digital zoom

Digital zoom makes the center of your picture bigger by electronically removing the outer area (cropping electronically). However, when this feature is used, the picture is of lower quality. Use it as a last resort, if at all.

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AE (Auto Exposure)

AE automatically sets the exposure according to the available light conditions. Almost all digital cameras default to AE and automatically set the shutter speed and aperture to accommodate the lighting conditions that exist when you take the photograph.

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Shutter Speed

Shutter speed determines how long the exposure is. Dim light requires slower speeds to avoid a dark picture, fast motion requires faster speeds to avoid blur.

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Aperture

The aperture is the size of the opening in the lens that controls the amount of light let in. Think of the “f stop” used on older cameras, expressed as f/2.8 to f/8. Aperture also controls the depth of field (DOF), that is what area of the photo is in focus.

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Shutter Speed + Aperture = Exposure

Shutter speed and aperture interact to produce good *exposure*. While AE is usually the default, it can be overridden on some cameras by setting the camera to:

- Aperture-priority auto: the user sets the aperture and the camera sets the speed.
- Shutter-priority auto: the user sets shutter speed and the camera sets the aperture.
- Manual: the user sets both speed and aperture.

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Aperture ←→ Shutter Speed

Aperture and shutter speed interact to give a correct exposure there is a balance between the two. These settings would give about the same exposure:

Aperture	F22	F16	F11	F8	F5.6
Shutter	1/30	1/60	1/125	1/250	1/500

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Image Size

Refers to the dimensions of the image, measured in pixels. Pictures taken at smaller sizes require less memory and are suitable for distribution by email or on the web. Conversely, the larger the image, the larger the size at which it can be printed or displayed without loosing quality (becoming “grainy”).

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Image Size

Image Size	Pixels	Print Size (@300dpi)
3264 x 2448	8 MP	11” x 8”
2592 x 1944	5 MP	8½” x 6½”
2048 x 1536	3 MP	7” x 5”
1600 x 1200	2MP	5” x 4”
1280 x 960	1 MP	4” x 3”
640 x 480	.3 MP	Email and Web

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Megapixel

A megapixel is equal to 1 millions pixels. How many megapixels a camera shoots at indicates the maximum size and/or detail of a digital picture. Generally, more pixels are better (and cost more), but it is not only factor that should be considered when choosing a camera.

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White Balance

White balance adjusts the white color quality of your image. Digital cameras usually have adjustable white balance settings for electronic flash, shade, sunlight, fluorescent lighting and tungsten lighting. Most cameras default to “auto” white balance and some cameras allow it to be set separately.

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ISO (Sensitivity)

ISO (International Standards Organization) is a camera’s light-sensitivity. Think of the film you used to buy – it was 100, 200, 400, etc. This setting can adjust the camera for bright or dim conditions beyond what shutter speed and aperture do. Most cameras default to an auto setting and some have additional manual controls.

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Macro

Macro refers to a digital camera function that takes “close-up” pictures—pictures of objects that are only a few inches away. Most digital cameras have a macro setting and take good macro pictures because of the inherent design of digital cameras.

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Other Settings

Settings that some cameras have that we won’t cover (not on all cameras, consult your manual):

- Camera settings (language, auto-off, etc.)
- Timer (so the photographer can be in the picture)
- Metering (how the camera decides on brightness)
- Continuous shooting (camera shoots as fast as it can)
- Best Shot Selector (multiple shots at different settings)
- Saturation Control (controlling color intensity)
- Image Sharpening (electronic improvement of shot)
- Etc. (etc.)

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File Types

- JPEG (JPG): The most common format. This is a “lossy” compression format that can be saved at various qualities.
- TIFF: A “loss-less” compression format of a higher quality that is better for very high-quality prints but has larger file size.
- RAW: Non-lossy big files; seldom used.

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Flash Mode

For dim light or for “filling in” backlit pictures. Most cameras default to auto flash, but you need to know how to manually turn the flash off or on for special conditions. Turn off the flash when it will be useless. For example, photographing a person far away under dim light conditions.

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Practice with Your Camera

The best way to take good pictures is to *take a lot of them* and to *experiment* with your camera.

- Understand your camera settings
- Take pictures and do tests: Take the same picture several times while changing the settings for each shot. Then compare the result. What settings work best under what conditions? What are the characteristics of your camera?
- Digital pictures are *FREE* until you print them!

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Transferring Pictures

- Delete “throw aways” from the camera before you download to your computer.
- Most cameras use a USB cable that connects the camera to the computer. After connecting, the camera should appear in My Computer. A “Found New Hardware” alert may appear.
- Software that comes with your camera or that you buy separately can transfer images easily.

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Additional Things to Know

- Photos should generally be saved as JPG. “Normal” compression is adequate in most cases.
- *Think ahead* before you take the picture, what are you going to use it for? The output device determines the image size.
- Large image size can be reduced without loss in quality. However, when small images are enlarged, quality will significantly degrade.
- Understand how image size interacts with output resolution (screen or print).

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Basic Digital Photography

Session 2

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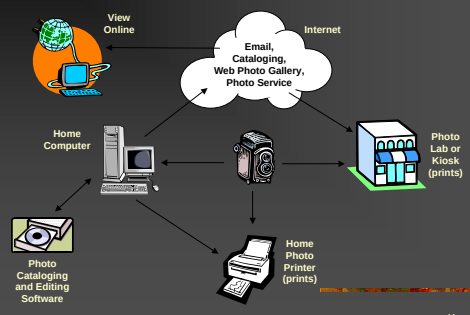
Workflow



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What to Do with Your Pictures

- View on your computer
- Print at home
- Print at a kiosk, lab or online service
- Post online
- Make stuff

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Image Editing Software

- The software that came with your camera
  —varies widely in quality, it may be OK.
- Picasa http://picasa.google.com/
  —free, easy and very good
- Photoshop
  —expensive and complex, about $600
- Photoshop Elements
  —less expensive and easier to use, about $80
- GIMP http://www.gimp.org/
  —the power of Photoshop for free! (open source software)

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Common Image Editing

- Rotate
- Save the original (Save As…) before editing
- Cropping
- Image resizing
- Brightness & contrast
- Color adjustment
- Red eye

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Tips for Taking Photos

- www.kodak.com/eknec/PageQuerier.jhtml?pq-path=39&pq-locale=en_US

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View on Your Computer

Create a slideshow
- Microsoft PhotoStory

- Screen saver
- Desktop background

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Organizing your Photos

- The more photos you have, the more important it is to organize them. You can't store digital photos in a shoebox!
- Online photo catalogs
- Personal photo catalog software
- ***BACKUP!!!***

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Printing at Home

- The most expensive option
- Some cameras transfer pictures directly to the printer (no computer in between)
- Read reviews to find a good photoprinter
- For good prints you need:
  - A photoprinter, not a regular color inkjet
  - High quality paper, not copier paper

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Print at a Kiosk Lab or Online Photo Service

- Probably the least expensive option
- Take your storage media and insert into the machine, follow the directions
- Images can be uploaded online, stored, and prints ordered with pickup or delivery
- These services usually also offer online photo sharing

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Print Pricing

Costco	
Size	Price
4 x 6	.17
5 x 7	.39
8 x 10	1.49
8 x 12	1.49
Wallet set	.39

Kit's Camera	
Size	Price
4 x 6	.29
5 x 7 6 x 8	1.99*
8 x 10	5.00*
* Cheaper if you join the club	

Quicksilver Kiosk	
Size	Price
4 x 6	.29
5 x 7	1.99

Fedex Kinkos Kiosk	
Size	Price
4 x 6	.39
5 x 7	1.99
8 x 10	4.99

Others local kiosk locations:
Walgreens and other stores

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Posting Online

- Photo sharing web sites (easy)
  - www.flickr.com; photos.yahoo.com; Kodak Easyshare; or many others
- Post photos to your ISP (almost easy)
  - Create a "photo gallery" with Picasa, Photoshop Elements, or other programs
- Online photo services often have an area where you can share photos with others

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Make Stuff

Online photo services frequently offer "things" that can have a photo applied

- Calendars
- Mugs
- T-shirts
- Other stuff

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To Sum Up

- Understand basic camera functions
- *Know your camera!*
- Be aware of basic photo techniques and pitfalls.
- *Use your camera.* The more you use it, the better you will be at taking photos.
- Use cataloging and image editing software.

Ken Russell