Photography: The Digital Photograph

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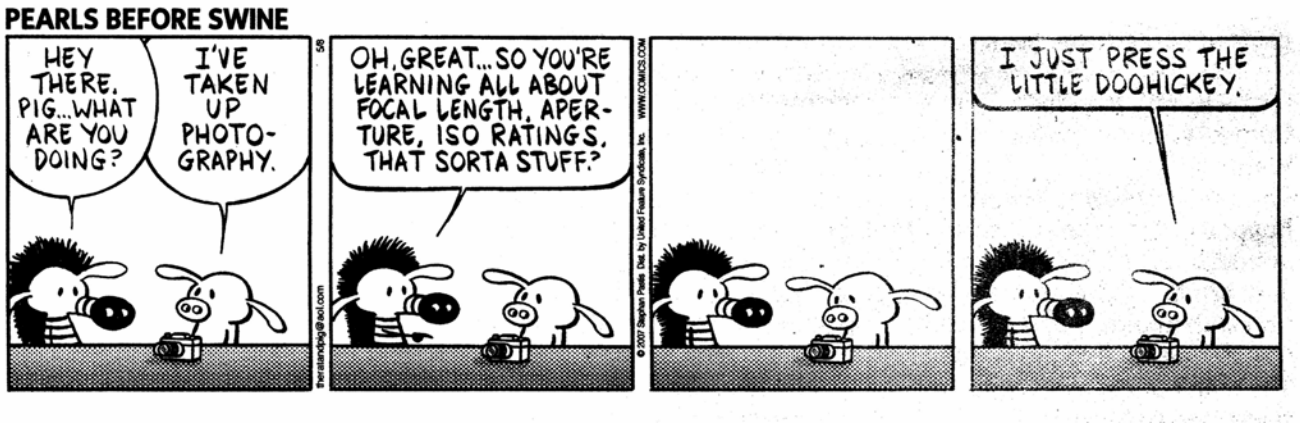
“Photography: The Digital Photograph” Version 3.0



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Photography: The Digital Photograph
TDSB Course Outline

Overview	This class will introduce you to the main ingredients of Digital photography. You will learn about camera features and basic functions, as well as how to start improving the quality of your photographs. You will also learn about editing images and the basics of image editing software, as well you will be shown how to email, print and share your images.
Week One:	**Overview of class**: the whole process start to finish **Camera Basics**: parts of the camera; basic settings; taking and deleting pictures and movies; using the User's manual
Week Two:	**Camera Basics**: controls that are necessary when taking pictures; when to use the flash (and when not to…); common problems (and their solutions)
Week Three:	**Digital Images**: getting them into your computer; getting started with email
Week Four:	**Photography**: taking better pictures of people
Week Five:	**Photography**: taking better pictures of landscapes, and other subjects
Week Six:	**Editing Images**: introduction to recommended software; why editing helps
Week Seven:	**Editing Images**: tips and tricks to make your snapshots into works of art
Week Eight	**Printing**: types of printers; why print at home; preparing images for printing
Week Nine	**Review**: the whole process from start to finish, again.

* Subject to change – Outline based on the needs of the participants.

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Photography: The Digital Photograph

About your instructor

Your instructor, Mark Trusz, is enthusiastic and knowledgeable about photography. Mark has had over 30 years of fun with film and darkroom techniques, and ten years of learning all the bits of digital imaging. He has been the instructor for "Introduction to digital photography" and "Advanced digital photography" with the Toronto District School Board since 2002.

Mark is a creative portrait and commercial photographer located in central Toronto, and is available for commissioned work.

Mark can be contacted at anytime for advice and guidance at: **mark@picturetheweb.com**

Find out about other classes and
photography workshops at **www.picturetheweb.com**

Blogs:
http://truszphoto.blogspot.com/
http://truszgallery.blogspot.com/

For commercial portfolio please see:
www.photobytrusz.ca
Photo by Trusz Studio and Trusz Gallery and Photography School
349 Carlaw Avenue, Suite 305, Toronto ON M4M 2T1

Also check out my galleries at **picasaweb.google.com/truszphoto** and **flickr.com/truszphoto**, and if you have a Flickr account, be sure to join "**Mark's Photo Workshops**" and post your photos for others to see and comment.

Photography: The Digital Photograph
Interesting Facts & Figures
(or, you thought digital was easier than film)

- At ***www.steves-digicams.com*** there are **806*** reviews available (371 in January 20, 2004). ***www.dpreview.com*** has information and reviews for **1,424*** models. (*as of Sept. 30, 2009)
  - Get an up-to-date "Dictionary" of digital photo terms at **www.steves-digicams.com**

- There are over **30** (at least) Brand Names of digital cameras on the market.

- Digital cameras, in the "35mm design", are available in eight **resolution levels**: from less than 1 megapixel to over 21 megapixels. Medium format backs offer resolution up to 45 MP (with a new model offering 160 MP!)

- There are over a dozen types of **storage media** available, including:
  1. floppy disk (1.44MB)
  2. CD (700MB) (mini-CD 156-185MB)
  3. DVD (4.7GB, Dbl Layer 8.5 GB)
  4. HD-DVD, BluRay (25-50GB…)
  5. **Memory stick**, Memory Stick Pro/Duo/etc (only for Sony models)
  6. **Compact Flash CF** (Type I and II) (64 GB, and growing)
  7. IBM Microdrive (up to 4GB)
  8. Smart Media (now *extinct*)
  9. xD (soon to be *extinct*)
  10. **SecureData (SD)** and now SDHC ("high capacity")

- Some printer models (both inkjet and dye-sub) will read directly from the camera memory card, or even wirelessly, allowing you to make a print without a computer.

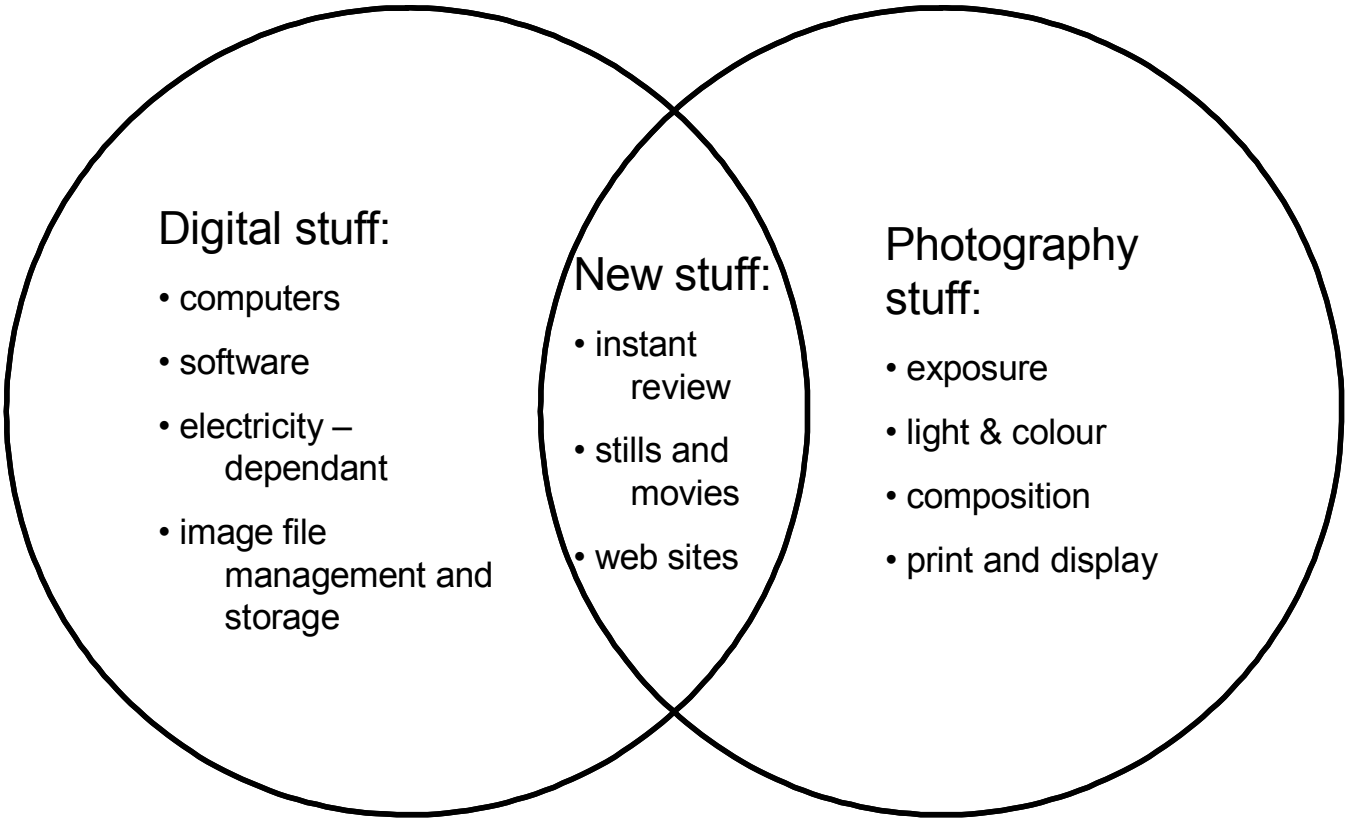
- Most consumer digital cameras will take short movies, in either Quicktime or MPEG formats, and many even record sounds!

- 35mm film scanners can record information from a 35mm negative or slide with resolutions starting at over 9 megapixels – high-end scanners can record at over 30 megapixels!

- Photoshop recognizes **23** different **file formats**… Most consumer cameras will allow you to choose how to save your images in up to six formats. (You will probably work with **4** formats: **BMP, JPG, TIFF** and **RAW**)

- There are now very good, stable editing programs available for **free**, that easily allow you to edit and enhance your photos: Picasa, Faststone, Irfanview, Paint.NET, etc, etc… and many more soon to follow.

Photography: The Digital Photograph
What is "Digital Photography"?



In the "new world" of Digital Photography you can use the new technology to do the old things faster, and do some new things not possible with the traditional methods. New digital technology builds on the existing 180 years of traditional photography tools and techniques, so many of the basic photographic rules still apply. It's not necessarily a case of "newer is better", but it's certainly clear that it's a case of "newer is more fun!"

The new technology brings along some new challenges as well. Computer skills need to be constantly upgraded, along with your computer hardware and software.

Probably the **most important skills** you will need to develop and nurture along the path to becoming an accomplished digital photographer are:

- ◊ PATIENCE and
- ◊ READING and
- ◊ CURIOSITY

Photography: The Digital Photograph
"Mark's Rules" for (Digital) Photography

Overview

Perhaps you can tell from the title of this document, but I believe most of these rules will apply to any kind of photography – film or digital. Improving your skills as a photographer takes practice, like learning any other new skill or sport. If you take the time to learn and practice the fundamentals I am sure you will enjoy photography more, and you will be happier with your photographic images. Have fun!

The Rules:

Rule	Why?	When to break?
Get and use a tripod	• Sharper images • Able to keep your eyes on your subjects (group portraits) • Will slow you down so you can study your subject in detail	• When you don't have time
Turn the flash off	• Natural light looks more natural • Worst light for a portrait	• If it's really dark, turn it on!
"Full Auto" only works 50% of the time – use another setting	• Camera exposure systems can be easily fooled by tricky lighting situations, and provide less than optimal images – you can often do better • "Full Auto" usually means the camera won't let you make slight adjustments, so use P,A,S or M	• When you don't have time
Leave White Balance on Auto	• Most cameras Auto WB settings are very accurate •	• When taking a series of portraits in the same room – different colours of clothing can create inconsistent results
Use the highest image resolution your camera offers	• You can always make a small image for emailing, but you can't make a large image for printing from a small original	• When you are running out of room on your memory cards, go to a lower resolution
Shoot lots – digital film is cheap	• Experiment more, you learn best from making mistakes	• Never!

Note: *disclaimer*

Like most other rules, these are most valuable when they are put into practice, and broken when necessary. If the scene you want to capture is extremely important to you it's okay to set the camera on "Full Auto" and let it do its stuff. When you have the luxury of trying the shot a second time, try to apply some of these rules and see what else can be accomplished.

More Rules:

Make your own…

Rule	Why?	When to break?
	•	•
	•	•
	•	•
	•	•
	•	•
	•	•
	•	•
	•	•

Photography: The Digital Photograph
Workflow

Planning Phase

- Choose your equipment
  - Batteries, memory cards, cables, tripod, protective cases…
- Pre-visualize your pictures
  - What results are you expecting?

Camera Phase

- Preview
  - Check exposure, white balance, framing, background, etc…
- Shoot
  - Stay focused on your subject (easier if you use a tripod)
- Review
  - Confirm results, delete mistakes ("Cook and Look")
- Share
  - Slide show on TV, kiosk printing, direct to portable printer

Computer Phase

- Review
  - Open images in browser software (like FastStone Image Viewer)for detailed review
- Transfer
  - Transfer images to portable storage device, CD or DVD, or your hard drive, using My Computer or other file transfer utility software
- Edit
  - Make adjustments to your images
    - Crop, resize, correct colour, retouch, etc…
- Store
  - Save your images in multiple locations (hard drive, CD/DVD, memory cards…)
  - Archive your images with cataloguing or "album" software
- Share
  - Print (yourself or at retail), display on web site, make CD/DVD slide show, etc..

Learning Phase

- Review
  - Did I get the results I had hoped for?
  - What do I like or dislike about my most recent images?
- Plan
  - What could I do differently next time?
  - What can I do to improve my skills?

Photography: The Digital Photograph
Make Your Own Workflow

There really cannot be a "recipe" book of steps for you to follow along with when taking and processing your images – there are too many variations in cameras, computers and image editing software choices for there to be any consistency.

There is, however, some consistency to be found in the overall steps involved. These steps are collectively referred to as the "workflow". I suggest you fill in the blanks in this worksheet to create your own special recipe that suits your own set of equipment and personal requirements.

Steps	How you accomplish this step with your camera/computer:
Set up camera	
Check and adjust exposure, White Balance, etc…	
Transfer images to external Hard Drive	
Edit selected images for printing and emailing	
Archive images to CD or DVD	

Photography: The Digital Photograph
Popular Software Choices

A survey of recent students along with my own personal choices for image browsing, editing and archiving software. This list is be no means exhaustive, but these are among the most popular and best-reviewed options available. No doubtnew options added over time. It's an exciting time in the software development business! Feel free to add in your own particular favourites.

(Items listed in **bold face** are available for free…)

Workflow Step	Suggested Software
Browsing	**Faststone Image Viewer**, **Picasa**, Irfanview, Lightroom, Photoshop Element, Photoshop Bridge, Picture Window Pro
RAW Conversion (optional)	Lightroom, Photoshop, Photoshop Element, Picture Window Pro, Capture One, UFraw, Nikon Capture NX, Canon DPP, (other camera-specific options provided by the manufacturer of your camera)
Editing - basic	Lightroom, Picasa, Faststone, Image Viewer, Paint.NET
Editing – retouching	Photoshop, Photoshop Elements, Picture Window Pro, **Paint.NET**
Editing – special	Arcsoft Panorama Maker Pro, Neat Image, Noise Ninja,
Archiving	IMatch, Lightroom, Roxio, Nero, IView Pro (now called Expression View)

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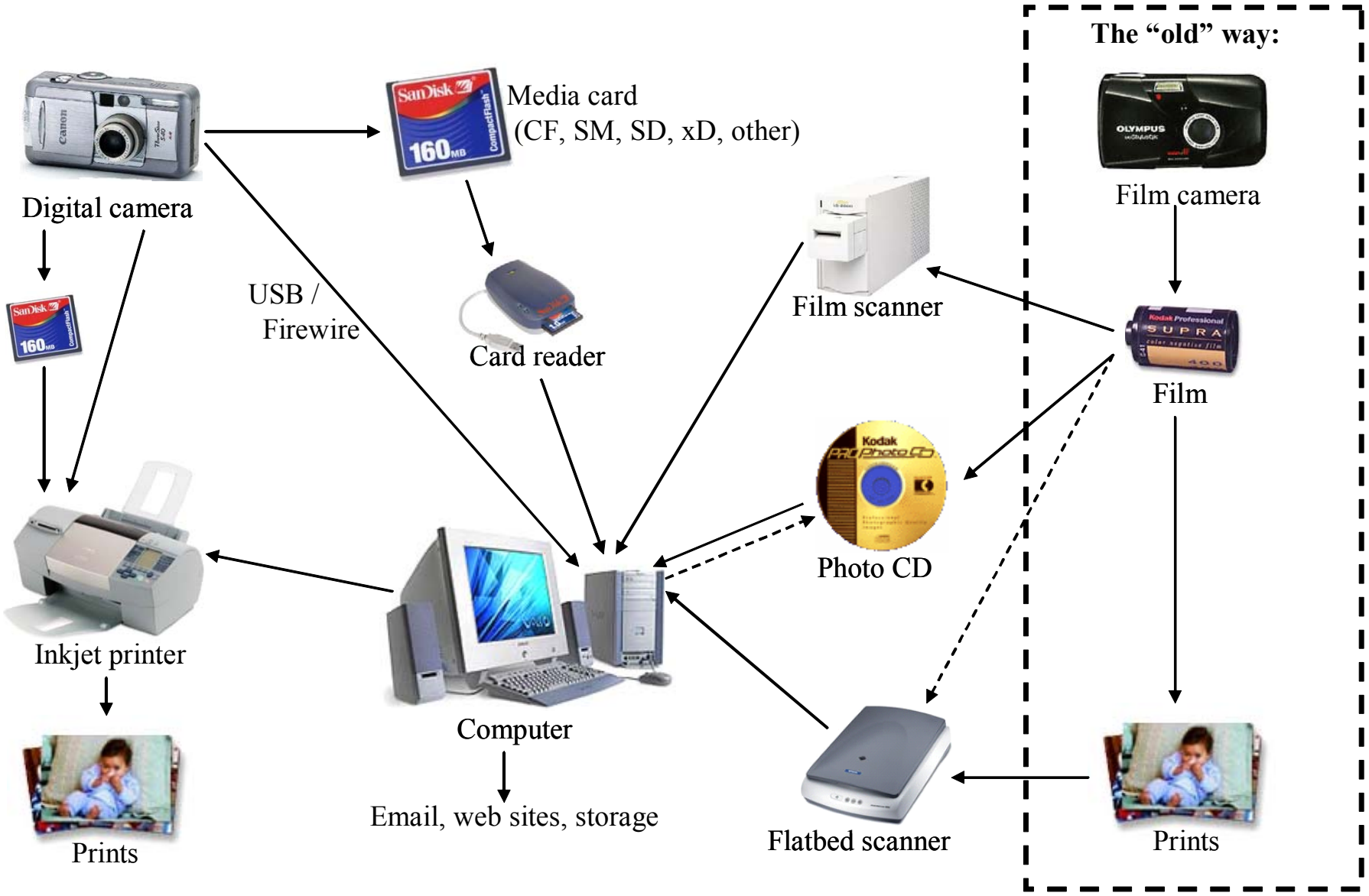

Photography: The Digital Photograph
Parts of a Digital Camera

Overview

Your digital camera can take ("record") pictures (both stills and movies) and display ("playback") pictures (on the LCD screen and your TV screen). In this sense a digital camera is more like a video camera than a traditional film camera.

There are some things that have not changed, and if you are familiar with how a film camera works, then these parts should be familiar to you. These are the parts of your digital camera that, for the most part, are similar to those found on a traditional film camera:

"Camera" parts

- Lens; "zoom" function; Auto focusing options (manual focus optional)
- Shutter-release button
- Exposure mode options: P,S,A, M (P, Tv, Av, M), shutter speed and aperture settings
- Viewfinder/LCD display screen
- Built-in flash (with many option, including "off")
- Self-timer (sometimes available in variable lengths of time)
- ISO (sensitivity) settings
- Exposure (EV) Compensation settings

These are the new functions found on most digital still-image cameras. Some of them, like the "white balance" adjustments, playback functions, and digital zooming will be familiar to the videographers among you.

"Digital" parts

- image sensor (instead of film)
- memory card (and internal memory storage)
- white balance options
- playback: review, delete, slideshow
- movie capture
- file format and resolution options
- ISO (sensitivity) settings: can be changed for each shot, or set to automatically change as the light changes!
- Digital zoom function

You should spend some time pressing every button and reading every menu item *before* you are faced with taking the important pictures on your vacation or of your family. Setting the camera to "Auto" mode and default settings will result in recorded images, but to really make your photographs into works of art (or at least into pictures you will be proud to share…) you will benefit from learning to make a few simple adjustments on your own.

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The Menu system

To control the way your camera functions you have to enter the "menu" system and apply settings as required. Menu systems vary by manufacturer and by model, so if you buy a new camera or borrow a friend's, it might take you some time to understand how the new menu system is organized.

Record vs. Playback Modes

Quite often the menu is split between "user options" and "camera functions". "User options" are generally the type of things you will want to set once, and then forget about them (clock/date/time, sounds on or off, colour, sharpening, and other image parameters, etc…). "Camera functions" are generally adjusted frequently during shooting (white balance, exposure compensation, image quality/size, etc…), and are also sometimes accessible with buttons directly on the camera body.

Set the Correct Time

Take the time to set the correct date and time when you first put batteries in your camera. Follow the instructions in your User Manual to find the right menus, and to become familiar with the proper sequence of "up" "down" "left" right" "OK" "Set" "Cancel", and other commands used in selecting and applying menu choices.

It becomes important to have the correct time and date set before you start taking pictures, as the time, date, shutter speed, ISO, aperture, and many other bits of information are stored as part of each image in the image file EXIF header (EXIF = Exchangeable Image File Format). You can search for images taken on a specific date or date range to help you find photos from an important party or vacation, if you can't remember which folder you stored the images in on your hard drive.

With many models of cameras, you will have to switch the camera from "Record" to "Playback" to access menu options associated with each of these primary functions.

Choosing Resolution and Quality Settings

Digital images are recorded in files that are "so many pixels across by so many pixels down". If you multiply the pixels across by the pixels down and also by 3 (for each of the colours recorded (R=red, B=blue and G=green) you will arrive at the number of Megapixels of resolution your camera is capable of.

I recommend that you shoot at the highest resolution possible for your camera when you are taking pictures on vacation or at a family gathering or any other time when important photos are being taken.

You will probably be recording images in JPEG format (some cameras offer TIFF, which is not recommended, and RAW, which is discussed in the Advanced classes). JPEG images can also be saved in varying levels of "Quality", and your camera may offer you some choices in what level of quality to set. You may wish to experiment to see if you can see any difference between your highest and second-highest settings, and leave it set to the one you are most comfortable with. (JPEG quality relates to the amount of compression that is applied, mathematically, to the image data in an effort to create visually acceptable images that take up the least amount of memory space to store).

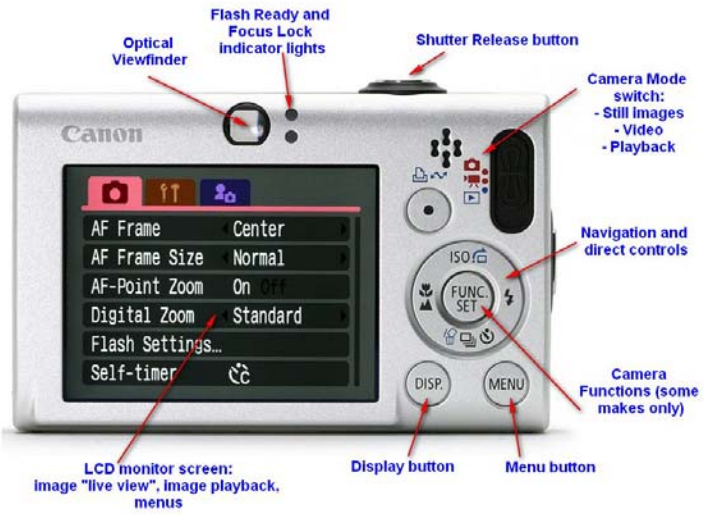
Resolution also appears in the display settings of your computer monitor (go to properties – settings by right-clicking on your desktop), and also in the DPI (dots-per0inch) settings you choose when printing your images with an inkjet printer.

Additional User Settings

Many cameras also let you set the levels for image processing parameters that can effect how your images look. These settings include:

- ◊ Sharpening
- ◊ Contrast
- ◊ Tone
- ◊ Saturation
- ◊ Colour Mode

To great extent, these factors can be adjusted after you take the photo with editing software, but you can save yourself time if you pre-select some of the options on the camera.



Photography: The Digital Photograph
Suggested "Default Settings" for your camera

Overview

Here are my suggestions for "default settings" for your camera, that you can use to check before you go out shooting to make sure you start off in a consistent manner. This list is also a test to help you learn where to find all the buttons and menu options necessary to control these settings.

As your experience grows you may wish to make changes to this list. And also, when in an emergency, you can always turn your camera to "Auto" and let it do what it can for you.

Typical Settings:

- Do you have enough room on your **memory card**? (once you have transferred your images from the card to a HDD or DVD, you should return the card to the camera and Format it to get it ready for the next set of photos)
- Are your **batteries** charged up? Do you have a second battery charged up and ready to go?
- Set **Image Size** to "Large" and **Image Quality** to "Best" (or lowest compression) for JPEG images; or choose RAW + JPEG
- **ISO** is set to lowest normal value
- **Metering Mode** is set to Aperture Priority
- **Meter** is set to "Evaluative" (or "Matrix", or ESP, or whatever your camera's most automated setting is called… not "Spot" or "Centre-weighted"…)
- **Aperture** is set to widest (to begin with, you may alter the aperture during the day, but you might want to set it wide-open so you don't forget)
- **Exposure Compensation** is set to 0.0 (to begin with, then adjust as necessary)
- **Flash Exp. Comp**. is set to 0.0
- **White Balance** is set to "Auto"
- **Drive selection** is set to "Single"
- **AF Mode** is set to "Single"; Selection point is set to "Centre Point" (This is definitely a personal option, you may wish to use any one of the AF options, but make sure you know how it's set before you start shooting)
- Any other settings you may have changed the last time you were out should be reset to the default. This could include: Saturation, Colour Mode, Sharpness, etc…)

Photography: The Digital Photograph
Apertures and Shutter Speeds

Typical Aperture Range ("F-stops")

1.4	2.8	4	5.6	**8**	11	16	22	32

Wider openings: smallest Depth-of-Field

typically the smallest aperture on P&S cameras

Smaller openings: greatest Depth-of-Field

Typical Shutter Speeds (in seconds or fractions of seconds)

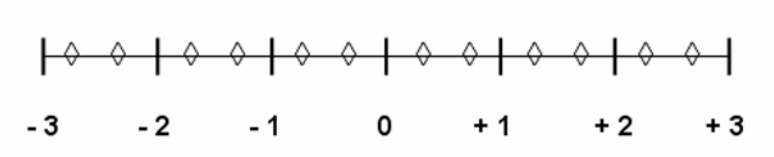
30	15	1	1/10	1/25	**1/60**	1/125	1/250	1/500	1/1000	1/4000

Slower **Faster**

Slowest speed for hand-held shots

Exposure Compensation (EC)

Look for the button or menu with this symbol:  to activate the EC control



Note: Your scale may extend from -2 to +2, or -5 to +5. The ticks in between the full stops may be in "half-stops" or "third-stops". You may also just see the number, not the scale diagram. (As I have mentioned before, camera manufacturers do not agree on one way to present some of the buttons and controls, yet….).

For predominantly bright scenes (snow, ice, whiteboards…) , set the EC control to +1.5 or +2.0

For predominantly dark scenes (black cats on black satin, tuxedos, blackboards…), set the EC control to -2.0

In all cases, determine what is the best exposure for your scene that ensures you do not overexpose the important highlights (i.e., the bride's dress, bright clouds, etc…)

"Cook and Look": Take a test shot and see what compensation is necessary. I worry about Exposure Compensation *every time* I take a picture.

Photography: The Digital Photograph
Camera White Balance

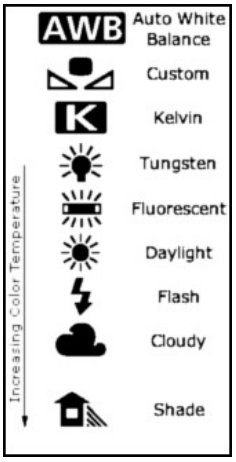
The Colour of Light

One of the more complex but interesting features of a digital camera is the ability to correct for varying colour casts found in photographs as a result of the different hues of light sources. If you are familiar with buying print film, you may have noticed the terms: "Daylight Balanced" printed on the packaging. This indicated that the film was balanced for daylight, and also for electronic strobe lights, as they produce generally the same colour of light as a bright sunny day.

The colour of light is based on the Kelvin scale of temperature (see **http://en.wikipedia.org/wiki/Kelvin** and also **http://en.wikipedia.org/wiki/Color_temperature** for more details, if you are really interested…). What you need to remember is that regular incandescent light bulbs emit reddish light, sunny days are bluish, and overcast days are even more bluish. These tints are also referred to as "warm" for reddish light and "Cool" for bluish light. If you see reddish or bluish tints in your photos where you did not expect them to be (remember that photos taken at sunset should look reddish…), then you will likely need to adjust the White Balance option in your camera.

The White Balance Menu

Luckily your camera has a Auto White Balance function, which manages to make all the colours in your photograph look pretty normal, about 75% of the time. So for the most part you can leave the menu set to Auto and everything should be fine. But when the colours don't look right, try one of the other menu options. Most cameras offer the following selections in the WB menu. Here's a typical WB menu:



If your camera has the options to set a white balance either by choosing a Kelvin temperature ("K") or setting a custom white balance (or "Custom") then you have even more control over how accurate your colours look.

Experimentation is the best way to get a handle on this stuff. Most point-&-shoot cameras will show you on the LCD display how your WB choices are effecting your colours, so change the options until everything looks about right.

Colour casts or imbalances can also be corrected later with most image editing software. It is most important to use a preset or custom WB when you are taking a series of photos (like family portraits, for instance) where you do not shifts in colour due to changes in subject clothing or background lighting.

Here are some examples of how differences in WB settings can look:


Auto WB


incandescent corrected in software


incandescent


shade

Photography: The Digital Photograph

Image Transfer

There are many, many different options available to "help" you transfer images from your camera to your computer. In fact, even the steps involved can be described in many different ways:

- ◊ Transfer your images…
- ◊ Back up your photos…
- ◊ Archive your image files…
- ◊ Import your photos…
- ◊ … from your camera to your computer
- ◊ … from the memory card to a hard drive

The goal here is to safely (1) copy the photos you have taken to a (2) storage location that you will be able to find at a later date, and also to (3) make another set of copies to a second location for long-term storage.

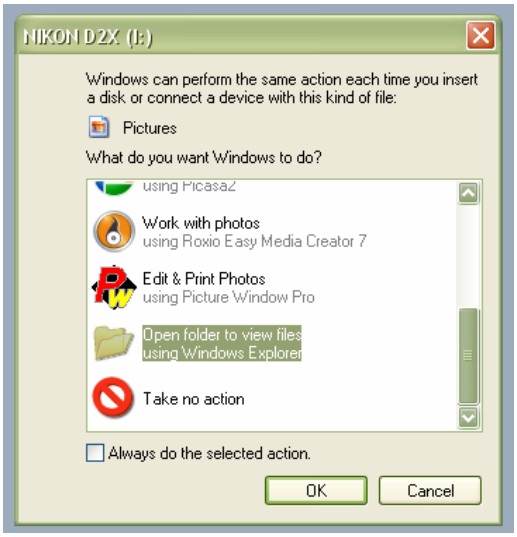
The software supplied with your camera may include some form of image transfer function. This type of function is becoming more common, and can be used with Picasa, Faststone Image Viewer, Lightroom, Picture Window, and many other editing software packages.

I will detail the basic steps involved using My Computer (also known as "File Manager" and "Windows Explorer"). Once you understand how it all works, you may wish to experiment with some of the other "helpful" software options and see if any of them make sense for your way of working.

Mark's Recommended Process

1. Remove the memory card from your camera and insert it into the appropriate slot in your card reader.

2. When the Autoplay window pops up:
   Select the option to "**Open folder to view files using Windows Explorer**"; or, open Windows Explorer manually using the Start key and the "E" key together.



3. In Windows Explorer, make sure the Folders view is selected, and navigate to the drive and folder location where you want to copy the new files. *Note: It is strongly recommended that you DO NOT keep data files in the My Documents area on your C: drive, but rather on an external hard drive.*

4. Make a new folder (File | New | Folder) with an appropriate name, then

5. Drag-and-drop the image files from the card to the new folder (or select the image files you want to copy and use Copy-Paste)

After you have confirmed the file transfer, you can replace the memory card in your camera and Format the card following the menu options on your camera.

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Using My Computer to organize your images

Overview

"My Computer", also known as "File Manager" and "Windows Explorer" is the place to start when getting your computer files organized – not just your images but ALL of your computer files.

I recommend that you become expert with the basic functions available in My Computer, as most other experienced Windows users can help you with questions along the way.

(Note: these comments are current for Windows Versions up to XP. For Vista and Windows 7, "Windows Explorer" is mostly the same with the addition of Libraries)

Getting started

1. My Computer is part of the Windows operating system, so there's nothing to download.
2. Double-click the My Computer icon on your desktop, or press the "Start" key and the "E" key at the same time to open My Computer.
3. If necessary, click the "Folders" button up in the toolbar to change the display to the split left and right panels
4. Learn about the different "Views" available:
   * **Thumbnails**
   * Tiles
   * Icons
   * **List**
   * **Details**

Tips and Tricks

- **Drag-and-drop**: Copying files from one folder to another requires first creating and the "destination" folder, then displaying the files to copy, then arranging the folder list such that the destination folder is visible, then selecting, dragging-and-dropping the files into the destination folder.
  (Hint: Use **File | New | Folder** to create new folders)
- **Selecting more than one image file**: Use **Ctrl+Click** or **Shift+Click** to select and highlight more than one file at a time.
  * Ctrl+Click will select each file you click on
  * Shift+Click will select an entire list, starting at the first file you click on and including the last file you Shift+Click on.

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Burning files to CD with My Computer

(Excerpt from Windows XP Help and Support Center)

To copy files and folders to a CD

1. Insert a blank, writable CD into the CD recorder.
2. Open My Computer.
3. Click the files or folders you want to copy to the CD. To select more than one file, hold down the CTRL key while you click the files you want. Then, under File and Folder Tasks, click Copy this file, Copy this folder, or Copy the selected items.
4. If the files are located in My Pictures, under Picture Tasks, click Copy to CD or Copy all items to CD, and then skip to step 5.
5. In the Copy Items dialog box, click the CD recording drive, and then click Copy.
6. In My Computer, double-click the CD recording drive. Windows displays a temporary area where the files are held before they are copied to the CD. Verify that the files and folders that you intend to copy to the CD appear under Files Ready to be Written to the CD.
7. Under CD Writing Tasks, click Write these files to CD. Windows displays the CD Writing Wizard. Follow the instructions in the wizard.

Notes

- To open My Computer, click Start, and then click My Computer.
- Do not copy more files to the CD than it will hold. Standard CDs hold up to 650 megabytes (MB). High-capacity CDs hold up to 850 MB.
- Be sure that you have enough disk space on your hard disk to store the temporary files that are created during the CD writing process. For a standard CD, Windows reserves up to 700 MB of the available free space. For a high-capacity CD, Windows reserves up to 1 gigabyte (GB) of the available free space.
- After you copy files or folders to the CD, it is useful to view the CD to confirm that the files are copied.

To add more files to a CD

1. Insert the writable CD into the CD recorder.
2. Open My Computer, and check that there is available disk space on the CD to add more files.
3. To check the available disk space on the CD, in My Computer, right-click the CD recording drive, and then click Properties.

4. Click the files or folders you want to copy to the CD. To select more than one file, hold down the CTRL key while you click the files you want. Then, under File and Folder Tasks, click Copy this file, Copy this folder, or Copy the selected items.
5. If the files are located in My Pictures, under Picture Tasks, click Copy to CD or Copy all items to CD, and then skip to step 5.

6. In the Copy Items dialog box, click the CD recording drive, and then click Copy.
7. In My Computer, double-click the CD recording drive. Windows displays a temporary area where the files are held before they are copied to the CD. Verify that the files and folders that you intend to copy to the CD appear under Files Ready to be Written to the CD.

8. Under CD Writing Tasks, click Write these files to CD. Windows displays the CD Writing Wizard. Follow the instructions in the wizard.
9. If the CD is not full, you can add more files to the CD by repeating this process.

Tips for writing CDs

The following tips can help you avoid errors when writing to CDs. Common errors include interrupting the flow of data to the CD recorder or running out of available disk space for the CD recording process.

When creating a CD, the CD recorder must receive a constant flow of data from the hard disk. If the flow of data is interrupted, the CD continues to spin but the writing laser does not have any information to copy onto the disc. When this happens, the writing process stops and you end up with a useless CD.

You can do the following to maintain a constant flow of data:

- Try recording at a lower write speed.
- Close all other programs.
- Disable any screen savers that might begin during writing.
- Defragment your hard disk before writing a CD.
- Make sure that the CD and the CD recorder are clean and dust free.
- If the CDs from one manufacturer keep failing, try a different brand.

When creating a CD, Windows uses available free space on your hard disk to store temporary files.

The amount of free disk space required depends on the amount of data to be copied to the CD. For a standard CD, Windows uses up to 700 megabytes (MB). For a high-capacity CD, Windows uses 850 MB or more.

You can do the following to free up disk space:

- Run the Disk Defragmenter tool.
- Run the Disk Cleanup Wizard.
- Empty the Recycle Bin.
- Delete unneeded data files.

If you have more than one partition or disk drive, select one for the temporary file storage area that has sufficient disk space.

Other CD or DVD burning options

The two most common burning software packages are:

◊ Roxio Easy Media Creator (www.roxio.com), and
◊ Nero (www.nero.com)

These packages are purpose-built to help make your disc burning and file archiving processes easier, and they also include many additional bits of software to help you with editing movies, music, slideshows, and many other digital media functions.

Photography: The Digital Photograph
Basic Image Editing

Here are the typical steps you will want to become experienced with when first editing your photos. Most of these operations are similar to the ones you can find at a photo printing kiosk, so you may already be familiar with them.

I think you will find it's a lot easier and more comfortable to perform these editing steps in the comfort of your own home, and then take the edited images to the store for final printing (if you don't want to do the printing at home).

Overview – "Workflow"

Here are the typical steps involved in taking, editing and storing digital photographs"

1. Take the pictures	Worry about getting the proper exposure, correct white balance and desired composition when taking the picture – Ask about the TDSB classes that will help you with the steps.
2. Review the pictures	You can review your images right on the camera, but it's easier and more accurate to do your reviewing on a computer screen. You have a few options at this point: • Use "My Computer" (also known as "Windows Explorer" or "File Manager") to copy images to new folders, rename photos, delete, search , etc… • Scan the image folder with Picasa or FastStone (or other browsing software) and select your best shots (i.e., the ones you will want to edit for emailing or printing)
3. Make the necessary edits: (as necessary – these are optional but very common)	• **Rotate** or **Straighten** • **Crop** • **Adjust Colour and Levels** • **Add Filters** • **Resize** • **Sharpen** (almost always the last step) • **Save As…**
4. Save the pictures	Use "My Computer" (or Picasa, Roxio, Sonic, Nero or other CD-burning software) to copy your images to CD or DVD media for long-term storage.
5. Print the pictures	• At home, use one of the editing programmes to make prints with your inkjet printer • Copy final versions of images to CD or to a blank camera memory card and take to a retail location for printing.

Photography: The Digital Photograph
Browsing and Editing with FastStone Image Viewer

Overview

FastStone Image Viewer is a very fast and flexible way to display your images for review, and also offers the usual list of basic editing tools for you to get started fixing your pictures.

It includes a very flexible "Slide Show" option, full-screen editing, RAW image file support and a quick-link to your other favourite editing programmes.

The software is available free for download from www.faststone.org.

Getting started

5. Download and install the software.
6. Download and read the "tutorial" file found on a link on the "Download" page on the web site. Keep this file (FastStoneTutorial.pdf) handy, as it is much more detailed (37 pages) than the rather brief Help file
7. Take a look at the "Settings" options – there are lots of user customizable settings, so spend a little time reading through the options to make the working environment suit your personal style.

Working Environment

The main browser window in FastStone looks very much like that of the Folder view in My Computer, and functions in much the same manner. You can locate a folder to browse from the left panel, and display its contents in the right panel. You can create new folders, rename folders and image files, delete folders and files, and add images to a "Favourites" selection.

Double-clicking on a thumbnail opens the image in full-screen view. There are menus "hidden" at the edges of the screen, that can be displayed by sliding the mouse pointer to the edge of the screen. Clicking and holding the left mouse key starts a magnifier function, allowing you to quickly zoom in and scroll around to get a close look at your images. The zoom factor can be adjusted from 1x to 3x by selecting the "Magnifier Zoom Ratio drop-down list from the hidden menu at the bottom of the full-screen view.

Pressing the "Escape" key returns you to the main window view.

Photography: The Digital Photograph

Fantastic FastStone Features

- **Compare Images**  : By selecting up to four images at once, you can easily compare the images at any magnification ratio. This is an indispensable function when you've taken a series of shots of the family and want to make sure you're keeping the sharpest one, or the one with everybody's eyes open.

- **Batch Rename**: Probably the most arduous part of keeping track of your digital images is renaming them so that you can find them later with text searches. FastStone offers you a very comprehensive feature that allows you to make new filenames for many files all at once, saving you time and frustration. Also, batch changes can be made when converting images to a new file format or for lossless rotations.

- **Slideshow Options**  : Create on-screen slideshows of a folder full of images in just seconds – with music (if you have MP3 files on your hard drive). Choose from 150 transitional effects to make your slideshow entertaining and personalized.

- **Edit with External Program**: If you prefer to do your editing with some other programme, then you can set it up so that by pressing the "E" key, the image is automatically opened with the other software (or Alt+2/3/4… to use more than one external programme).

- **Basic Edits**: Rotate, crop, straighten, add a frame, and remove red eye are among the editing functions built-in to FastStone Image Viewer. Should you just want a fast one or two step edit, you don't need to leave this programme to get the job done.

More Help is Available

For more help with Faststone Image Viewer, download the Tutorial from:

http://www.faststone.org/FSIVTutorial.htm

and take a look at the "Online Tips" at:

http://www.imagingtips.com/faststone/

Photography: The Digital Photograph
Getting Started With Printing

Types of Printers

Not all printers are created equally, and you may find that you will want to use a different printer to obtain different results from time to time. There are three types of printers you can choose from to print from home:

Printer Type:	Best for:	Cons:
Inkjet	Photos, presentations, general use Can print on almost any kind of paper, up to 60" wide	Cost-per-print can be high due to cost of inks
Laser	Documents and presentations Very low cost of toners	Too coarse for fine photographic work
Dye-sublimation	Photos	Limited to specialized papers

Of course you can also take your images in to a commercial location for printing as well. For standard 4x6 inch prints, this is the cheapest way to go. Many photo retailers will also provide larger print sizes (16x20, 20x30, or larger) and may also offer unique treatments and surfaces (canvas-mounted, cake designs, rugs, etc…)

Inkjet Printer Maintenance

There are a couple of procedures that are necessary for you to perform to keep your inkjet printer in good condition: "head cleaning" and "head alignment".

Cleaning the print heads is typically something you do if the printer is not used on a daily basis (or conversely, if it's been used too much…), to keep the teenie tiny nozzles free from clogs. Clogged heads can result in white streaks in your photos, as some ink is prevented from spraying out by the clogs.

Aligning the print heads is necessary after one or more of the ink cartridges is replaced, or whenever the print heads have been removed for cleaning or other maintenance. Mis-aligned print heads can cause dark ridges to appear across your photos.

Some newer printers perform these tasks automatically, but you should be aware of the procedures to be able to correct for imperfections in your photos, should they appear.

Special Situations

Here are some things to try to create unique portraits or landscape photos with just about any camera.

Nighttime Flash Portraits

Many entertainment venues have designed some pretty spectacular lighting presentations to keep you thrilled after the sun goes down. You get your friends to stand in front of the brightly lit fountains and take their picture, only to end up with a photo of your friends standing out in the dark. The lights didn't get captured the way you saw them with your eyes.

The camera will need a little help to capture both the lights and your friends, and here's how. Look for one of the following options on your camera:

- ◊ Flash – slow or rear sync
- ◊ Nighttime portrait scene mode, or
- ◊ Nighttime snapshot/scenery mode

You will want to use a tripod for these shots, as the camera will trip the flash (to illuminate your friends) and keep the shutter open for a longer-than-normal length of time (up to 60 seconds, in some cameras…), so to keep the pretty lights in the background sharp you'll need to keep the camera very steady.

Panoramic Stitching

There are many instances where your camera's "field of view" (based on the focal length of the lens) just isn't wide enough to capture the scene you are looking at. The Grand Canyon comes to mind, but you may also want to capture all of your Aunt's award-winning backyard garden in one shot too.

By taking a series of overlapping images you can "stitch" them together to make one large image using panoramic stitching software. Many camera manufacturer's provide you with software capable of performing the stitching, and some cameras provide you with shooting guides to help make the series of images required. (Future cameras will even perform the stitching right in the camera!).

The best software I have found for this job is called "Panorama Maker Pro", available from www.arcsoft.com. It's not free, but it's definitely worth the purchase price if you find yourself interested in making really wide images.

Photography: The Digital Photograph

References

Here are some of the more useful and interesting on line web sites I have found. In addition, you should become familiar with your own camera manufacturer's web site for product information, and especially software and firmware updates.

- **www.picturetheweb.com**
  (my own web site, packed with even more information and video tutorials…)
- www.dpreview.com
- www.steves-digicams.com
- www.strobist.blogspot.com
- www.theonlinephotographer. com
- www.luminous-landscape.com
- www.dailytech.com
- www.picasaweb.google.com
- www.flickr.com
- www.pbase.com

For more links and information please visit my web site: www.picturetheweb.com.