

How to choose your next digital camera

By Graeme Eggins

"Cameras don't take good pictures. People do."

Most U3A members today have some experience of digital cameras, which these days vastly out-sell traditional film cameras.

Apart from super expensive models, most film cameras sold today are disposal models and even their sales are declining.

Why upgrade?

Many of us now own a digital camera and are thinking of perhaps upgrading.

Why? Some reasons...

- You are planning a big trip and want to be able to document everything
- To get better quality photos through higher resolution and/or having a longer zoom lens
- You want a camera that reacts quickly when you press the button
- To be able to take more control of the camera – in other words, you'd like to do more than point-and-shoot
- Because your last digital camera is damaged/lost etc and it's not worth replacing
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HOW TO CHOOSE

What do you want to use the camera for?

Do you just want to take snapshots which you will rarely print much bigger than say postcard size, do you want to take photos over a wide range of conditions from children's parties to landscapes, do you want to be able to produce poster-size action shots?

What style of camera would you like?

Broadly speaking, digital cameras today fall into three main types – pocket-size point and shoot compacts (recommended for anyone starting in digital), advanced semi-compact cameras which usually have zooms of more than 3X and digital SLRs which have interchangeable lenses but which have to be carried in a large bag..

Undoubtedly today's **point-and-shoot digital cameras** are much easier to use than SLR types and already have virtually all of the features that most amateur photographers will ever need.

The advanced semi-compacts are a step up in features and complexity but cost more, usually for the inbuilt zoom lens.

If you like big zooms and not carrying tripods, look for true image stabilisation – not just an increase in film speed.

Image stabilization (IS) allows you to handhold a camera with a shutter speed 2-3 stops slower than without IS. It also adds weight, complexity, and cost to the camera.

Most digital photographers would be as well served by using good technique, such as using the viewfinder instead of the LCD screen to frame and compose the picture, holding the camera with both hands, elbows braced against the body, legs apart with knees slightly bent, body braced against something if possible and lightly pressing (not jabbing) the shutter button.

Some manufacturers label their digital cameras with the total (optical + digital) zoom. "Digital zoom" does not really do zooming, but it just enlarges a part of the image imitating optical zoom. It is not bad, but when you are comparing digital cameras, you should always use **optical zoom**, as you can do "digital zooming" and cropping in any image editing software.

Top of the tree in terms of price and features are **digital SLR cameras**. Reasons you might buy one include:

- You are professional photographer
- You want a digital camera to connect a telescope or microscope.
- You already have a nice set of SLR lenses and accessories from your film SLR camera, and you want to re-use your lenses.
- You **want to have full control** and not be afraid to read a camera manual.

How many megapixels do you need?

Megapixels / resolution are the most hyped, and less understood parameter in digital camera selection. More is better? Not always.

If you mainly want to make postcard-size snapshots, a camera with 5- or 6-megapixel resolution should be fine. It will also make an 8x10 print of an entire image without alteration that won't look much different than one from a 7- or 8-megapixel model.

To enlarge the image more or enlarge only part of it, you'll want a camera with a resolution of 6 megapixels or greater.

A bluffer's guide to sensors

In digital cameras the image sensor replaces the film used in film cameras. The light passing through the camera's lens projects the image onto this sensor which then captures it digitally and records the image to memory.

These sensors vary in size in both the number of pixels they contain (megapixels) and their physical dimension.

From the beginning, digital camera marketing has emphasized the pixel count of imaging sensors. What it does not say is that not all pixels are equal.

Compact cameras use much smaller sensor chips than digital SLRs. A typical compact camera sensor is about half the size of your smallest fingernail.

A digital SLR sensor is larger, often about the same as a good-size postage stamp.

As a result, every pixel on a compact camera's sensor chip is much smaller than its counterpart on a digital SLRs sensor. The pixels on a 10-mega pixel compact camera sensor are about 2 microns across, compared with 6 microns for a digital SLR sensor of the same resolution. A micron is one-thousandth of a millimetre.

Experts suggested that you should check the size of the sensor when buying a digital camera. You will have to look it up in the small print of the specs.

For example, tests showed a 6-megapixel Nikon D40 digital S.L.R. takes better pictures than a 10-megapixel shirt-pocket camera, because its sensor is relatively gigantic. Its individual pixel sensors can be larger and soak in more light, even if there are fewer of them. Unfortunately, the camera makers seem to go out of their way to prevent you from knowing what the sensor sizes actually are.

Consumer cameras' sensors, meanwhile, are reported as a weird fraction, like 1/1.8"-and that's the *diagonal* measurement.

Not only does that mean you have to do a lot of math in your head, but it's also counterintuitive. The measurements with a bigger denominator actually represent *smaller* sensors.

A 1/2.5" sensor is actually smaller than a 1/1.8" sensor (0.4 compared to 0.55).

Following is a useful table found on the Web:

Sensor "Size"	Aspect Ratio	Actual Sensor Dimensions (mm)		
		Diagonal	Width	Height
1/4"	4:3	4.000	3.200	2.400
1/3.6"	4:3	5.000	4.000	3.000
1/3.2"	4:3	5.680	4.536	3.416
1/3"	4:3	6.000	4.800	3.600
1/2.7"	4:3	6.721	5.371	4.035
1/2.5"	4:3	7.182	5.760	4.290
1/2"	4:3	8.000	6.400	4.800
1/1.8"	4:3	8.933	7.176	5.319
1/1.7"	4:3	9.500	7.600	5.700
2/3"	4:3	11.000	8.800	6.600
1"	4:3	16.000	12.800	9.600
4/3"	4:3	22.500	18.000	13.500
1.8" (APS-C)	3:2	28.400	23.700	15.700
35 mm film	3:2	43.300	36.000	24.000

The shutter lag that irritates many of us with older digital cameras occurs mostly from the fact that the compact camera's imaging sensors are doing a wide variety of jobs besides capturing a photo.

It usually does extra duty as an auto focus sensor. The need for the sensor to switch from a preview to exposure duty when the shutter is pressed is another cause of shutter lag.

In digital SLRs, however, the image sensor's only job is to take pictures. Specialised sensors handle auto focus readings, exposure measurement and white balance (adjusting the camera's colour settings to eliminate unnatural colour shifts caused by light sources other than the sun).

How big a camera are you prepared to carry around?

If possible, try cameras at the store before you buy. That way, you'll know which one fits your hand best and which can be securely gripped. Some cameras don't much room even for small fingers or have buttons that are hard to see much less press.

A new idea is a uni-pot called a Quikpod for taking pictures of yourself. For details go to www.quikpod.com

Battery type and life

All digital cameras run on rechargeable batteries, either an expensive battery pack or a set of AAs. In tests, neither type had a clear performance advantage. The best-performing cameras offer at least 250 shots on a charge, while the worst manage fewer than 100.

My suggestion is to buy a camera that accepts AA batteries. You can buy economical, rechargeable cells (plus a charger) and drop in a set of disposable lithium or alkaline batteries if the rechargeables run down in the middle of shooting.

(Remember to get a carry case that has a pocket for spare batteries)

Camera speed

How long does the camera take to turn on and be ready to take the shot? Time lag can range between 1 to 5 seconds most being about 3 seconds.

How long does the camera take to focus on the subject? (Not to take the picture) most cameras take between 1 to 3 seconds most at around the 1-second mark.

How long does the camera take to actually take the photo after you have pushed the shutter button completely? Again, most cameras take between 1 to 3 seconds - this is called shutter lag time.

So to take a photo can take up to 5 seconds just to turn on, up to another 3 seconds to focus and then up to another 3 seconds just to actually take the photo.

How long you must wait after each shot as the camera processes the image. Most models let you shoot an image every few seconds, but a few make you wait 5 seconds or more. They may frustrate you when you're taking photos of a subject that is very active, such as a child or pet.

Memory types

Today memory cards come in six main types - SD, MMC, Memory Stick, Compact Flash, xD Picture Card and SmartMedia.

Secure Digital (SD) is quickly becoming the most popular type in the world, and can be found in a large variety of electronic devices in many brands.

Multimedia Cards (MMC) are another popular type, and are used in PDAs, cameras and phones. Memory Stick was developed by Sony and as a result can be found mainly in Sony devices.

Compact Flash is a standard specifically developed for digital cameras, while the xD Picture Card is a proprietary format developed by Fujifilm and Olympus. SmartMedia is an older format which was popular a few years ago but has since waned due to its large physical size.

Many of the more popular formats are coming out with their own sub-variants. SD, for example, also comes in miniSD and microSD (also known as TransFlash) forms, while Memory Sticks have the Memory Stick Pro Duo variants.

My main reason for mentioning all this is that it may pay to select a camera that takes cards you already own. If not that, some cameras have slots which take different forms of cards.

Usually you can use the same card on other devices. If, for example, your mobile phone and laptop take SD cards, then you'll be able to use the same SD card to store data, take pictures or transfer information.

It's worth noting that memory cards have some key advantages over other storage devices such as CDs and DVDs.

Memory cards are much less fragile than a CD/DVD - the case of a memory card can easily take a scratch or two, while scratches on the underside of a CD or DVD will most often result in data loss. The greatest risk with memory cards is that because they are physically so small it is easy to lose them.

Where to go for advice

On the Web you will find tons of advice.

Camera review sites like DPReview <http://dpreview.com/> and its forums, Steve's Digicams www.steves-digicams.com, and MegaPixel <http://www.megapixel.net/> offer great reviews.

Most sites have active forums where people who own cameras share their experiences.

Shop Ferrett www.shopferret.com.au/ is also a useful resource.

Flickr <http://flickr.com/> captures meta data from almost every image uploaded to their photo sharing site.

Their Camera Finder <http://flickr.com/cameras/> tool is useful in that it uses the “wisdom of crowds” to show you what cameras are most popular with photographers.

In real life ask friends to recommend a camera and finally, ask the salesman. But remember to first tell them what you want.

Good luck with your next camera – and remember, it’s the photographer, not the camera, that takes the best photo.

- Graeme