

Things You Should Know Before Buying A Digital Camera

In a traditional camera, the lens was king. If the lens delivered a decent image, exactly that image would be recorded on the film. As the original image size was limited by the film size (35mm having become the standard), you would then have to enlarge it to get any size of print. If the original was at all blurred this would be exaggerated by the enlarging process. The more light the lens let in, the 'quicker' it could take an image - hence expensive traditional cameras had wide lenses. What electronic cameras have done is to downgrade the importance of the lens. Computer software can supply the missing light, and sharpen the image. What you need instead is memory. A 1 megapixel image enlarged to 6x4, is barely acceptable. Above that size, it is a waste of print, but, funnily enough, can be viewed at larger sizes on a computer screen with little loss of quality. A 4 megapixel image can be enlarged to A4. So, here are the rules. You will see that, as with most electronic purchases, it is very important to analyse what you want to do with the camera. For example I saw a neighbour's new system with which she was so pleased, but I was not impressed. There were so many things 'wrong' with it, in fact, her 'camera' was the primary motivation for writing this article. The quick answer is: If you do exactly the opposite to everything in this article, the result would be you buying the camera she did - designed to be as small as possible, so, although expensive, it had too little power, too little memory, an inadequate lens, and fiddly to use. If you want to buy the right system for you; Don't just go out thinking the sales assistants can help you, they may well have pleasant and helpful manners, but most won't know much about anything, do your research first noting the following pointers:

- 1 Pixels:-** If all you want to do is to post images on the internet, the pixel count becomes less important, 3 megapixels is perfect.- If you want to print images to 6x4 or 8x10, however, go for 4 megapixels at least.- If you have a computer and are prepared to use photo editing, pay extra for additional pixels, and don't bother with the features that replicate the computers ability to manipulate your photos.- If you will rely on printing your images direct from the camera, make sure it comes from a manufacturer who links to a good lens maker (eg Kodak, Canon, Olympus, etc.).
- 2 Export/Printing:Next,** how do you get your pictures out. There are 2 ways - taking the memory out of the camera, and slotting it into a print device, (either a home printer, card reader or a machine at a photo printers), or by way of a cable. If you are comfortable with computers, either method is straight forward. If you want to be able to do this without thinking, make sure your camera comes with a removable memory card (and upgrade this to the largest size you can,) and buy one with a docking system. It is worth noting that some people don't even have computers, they simply take their storage media to Tesco or any up-to-date photo processing unit and get their photos printed as they always have!
- 3 Power:-** Electronic cameras use batteries. The more mechanical parts one has, the faster the battery is used. Optical zoom is a mechanical process, and the camera will flex its muscles each time you turn it on, so there is constant battery drain. Avoid it, unless you need the zoom (see below). If you do, consider a non motorised zoom (ie manual or digital).- Zoom: Powered zoom adversely impacts battery time, due to the motors, this mostly happens because of the "power save" mode running the motors every time the system is turned off. Now I realise that, technically speaking, I've already covered the issue of power drain, but I thought it was such an interesting point that it was worth mentioning twice.- Like wise with flash. Be sure your camera only uses flash when you want it, not just automatically, without control.- A docking station based camera will ensure it is constantly powered up, so, if you have to have zoom, go for this option as well.
- 4 Taking pictures:-** Optical zoom. The plus is that this can compensate for lesser pixels - by getting you closer to the target, you avoid the need for some enlargement. However, with a very good lens and high pixel count, you can do this by photo editing instead. The downside of optical zoom, apart from the power drain mentioned above, is that it exaggerates camera shake - see below. Only spend the extra on optical zoom, therefore, if you are relying on third party printing.- Digital zoom. This is a useful back up, and not to be disrespected. All it does, however, is what you can do with photo editing software. Again, it is of more use to the user who doesn't want to be bothered with that, and will rely on third party printing.- Movie facility. This is very memory intensive, so should be avoided by anyone who doesn't intend to use it, or has no access to electronic storage, or display.- Good Photos: If you have no flash or you have turned it off, the system will increase the exposure time, and the risk of hand shake affecting the image. Optical zoom creates a similar problem, by extending the lens forward of the camera body hand shake is exaggerated. It is possible to get extra technology to track and compensate for movement, but this is only worth the money if you plan on a lot of action and instant photos; for everyone else you can get the same effect by being aware of the problem and using your tripod!- Ease of use. For most purposes the ability to point and shoot is crucial. Two things can get in your way. Firstly; All digital cameras have to 'think' before they take a picture. That thinking time can be as much as a second. Taking pictures of live action is impossible with that kind of delay. Spending the extra on a camera with near instantaneous re-action, if you can find one, is essential if action photography is what you want to do. Secondly; You don't want to have to do more than press the button, if you can avoid it. Having a lot of options, and being required to select one before you can do this means many wasted photo opportunities.
- 5 Buying the camera:** If possible try not to buy sight unseen before parting with your money, you should be able to "play" with a demonstration model, failing that you should consider taking your business elsewhere! If that is not possible, consider asking friends or neighbours that have similar (or even the one you are thinking about) and ask to play with it. This is especially important if your buying your first system, but always pick it up, take photos with it and try out as many of the features as is possible. Most retailers will happily let you do this, and most even provide a computer. I am sure my neighbour assumed the camera she bought was the size of the image on the box, and was surprised to find out how small it was when she got it home. You may not know what to expect, undoubtedly you will be inundated with more jargon than you know what to do with. You may find what appears to be the perfect system but, after playing with the buttons, you may also find that the controls are confusing or that a seemingly innocuous aspect of the design may present problems, a good example of this would be the location of the tripod mount, sometimes this is added as an after thought, thus making the system unbalanced. As with all the ergonomic issues, this is all highly subjective, so you must just trust your better judgment as to the qualities of the unit, but be aware that size does matter, the box will be deceptively big and the photo won't help much. This is important because the controls, screen and the working parts are subject to the systems size, so the smaller the unit is, the more difficult it will be to use and the battery will likely suffer too!

Like all small consumer electronics it is important to budget yourself when purchasing a digital camera, it is all too easy to think, 'well the one I wanted at first is £100, but for £150 I can get one with xyz'. This is how the retailer makes a lot of his profit, so don't give him the satisfaction of letting him win so easily through the impulse buy, this invalidates all your research, and you may end up paying for features you didn't want and will never use, because it's his job to make a sale, and you only had his version of why you 'need' the xyz.⁶ Technical issues in more detail: Logic alone will not help you buy a good system, the higher end systems and now some cheaper units come with apparently useful features, such as night scene mode, to help take photos in low-lit conditions "out of the box". However this is often just a preset configuration of the exposure time and other sensitivity options (referred to as ISO settings) that help increase sensitivity to light, this all has a secondary effect, which if not accounted for, can cause problems such as making your photos grainy and if you don't use a tripod, the longer exposure time will make them unfocused as well. The same goes for systems that do not include a flash. With the plethora of digital camera choices available there are a wide range of resolutions; these is measured and advertised in megapixels, ie the number of pixels that the camera has to take an image with. It's very easy to get caught up in the megapixel race, 4 mega-pixels (4 million pixels) is good enough for you to print 8"x10" pictures; 3 mega-pixels is perfect for email and web sites; note the higher the resolution, the more space on your memory card will be taken up. However, don't rely on pixel counting, as it is not always true that if a system contains more megapixels, it must take better and clearer images than other digital cameras! Sometimes advertised digital cameras pixel count can be deceiving. This results from confusion over how photosensitive elements work, the standard arrangement is that each sensor either detects red, blue, or green per pixel, however, there are some systems, that use arrays of sensors, with three sensors for each pixel and some marketing people (mistakenly) advertise such a system as being say 6 megapixels ie 2 multiplied by 3 is approximately 6, though the resulting resolution of a photo will only be 2 megapixels). You'll need to read the small print on the box. If appropriate to your proposed use and skills, consider other features besides just its megapixels. How fast or slow you can set the shutter speed can determine the type of sports and night photography you can take. Does it support a manual white-balance control to aid photography in homes, offices, and museums? Does it have pre-programmed modes to aid in difficult lighting situations? Aperture Size determines exactly how much light is captured, having more light allows you take better pictures in a variety of lighting condition, and reduces your dependance on the flash, this in turn can increase the battery life, reduce effects like Red eye and the possibility of motion problems due to the need for longer exposure times. An important consideration should be how you intend to get your photos onto your computer, some systems have very slow and badly designed data connections using your serial or printer port. Some manufacturers have put more time and effort into this than others, so be careful to check how this is done; note that most good systems will use a USB interface and will be compatible with the device drivers and transport services provided by Windows and Mackintosh. However, some systems require the manufacturers proprietary software to be installed, which will not be available on any other computer. Kodak have an exceptional system called Easy Share which includes a system dock that provides both power and data transfer in a single unit. Many systems come with the manufacturers single use batteries but a lot also support various rechargeable "battery packs", that happen to be configured as a set of 2 or 4 AA batteries, so if you currently use rechargeable batteries, look for a system that supports the same types of batteries. Also consider getting extra rechargeable batteries for prolonged photo-shoots and never buy a system with a sealed battery, this will severally restrict its use, where if they run flat, you can not replace the battery, only charge it again, and when it dies, as rechargeable batteries in cheap system often do, you are even more restricted! Your camera will "come with" just enough media to make it work, while still being cost effective; don't expect the camera to come with enough media to handle your photography needs and never buy one that has no external capacity, ie it must allow you to upgrade the memory. Many "fun" but still expansive systems come with say 8 megabytes of internal memory and that's it, no accessible media card per se; these are sealed systems, enough for 6 high quality photos or say 25 seconds of movie! The only way to take more photos is to delete them directly from the system or take it home a download to your computer. You need at least 24Mb of memory to take the equivalent of just 1 roll of film of equivalent quality (at 4 megapixels). If you are taking it on holiday, and can't download images, you need a multiple of that. Nowadays, most digital cameras, come with a 16 or 32 MB internal capacity or will only be packaged with a 16 or 32 MB card if it has no internal capacity; you will tend not to find both. This used to be enough memory for a couple dozen pictures, high megapixel photos in fine, very fine, or raw detail can eat up that memory in just a couple of photos. Prepare to spend money on at least one extra media card. The type of storage media is also a point of contention: Memory prices are steadily reducing, but cards are still not cheap. You don't want to 'throw away' your media investment when upgrading. There are currently many media standards available for cameras, such as CompactFlash, SecureMedia, etc. If you are upgrading than this is an easy choice, you would purchase a camera that is comparable with your old system unless a different media offers other features that far outweigh those of your old camera's media type. If you are buying for the first time but don't have other devices such as PDAs then have a good look around for systems that accept several media types, such as CompactFlash and MicroDrives, this gives you more choice the next time you upgrade. However all mobile devices from cameras to GPS systems accept Secure Digital (SD) cards, including digital cameras, MP3 players, PDAs, cellular phones, camcorders, and much more. SD is fast becoming the new standard due to its high quality, so there is no need to worry about lost or missing data. With the small size and solid-state design of the SD Cards, they are perfect for mobile applications and users.⁷ Summary: Having fixed your budget, make sure you are spending it on pixels and lens. Treat everything else as a bonus. Make sure it has (these are matters of design not cost):

Good expandable storage

Simple buttons

Is a comfortable size

Uses standard software

Pay extra for, if you really need it:

Zoom

Screen

Docking system

Reaction speed

Variable exposure control

About the Author

Interactive optical illusions that reveal the magic and the limits of our visual.

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