Selecting a Digital Camera

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As a teacher of digital photography I am often asked for help by a student who is trying to select the “perfect” camera. It is very hard to tell someone that there is “no one perfect camera”. What meets your needs today may not be great for tomorrow. I try to tell them that the most important thing about any camera is the six inches behind the camera, the photographer.

Having said all that, there are some things that make one camera a much better choice than another, regardless of the expressed needs of the potential buyer. Just remember to keep in mind that the camera you need for your trip to Africa is vastly different than what you need as you walk through a street market in Rome Italy. You also need to come to grips with how much you are willing to spend, how often you are willing to replace a camera, and how much time are you willing to put into an attempt to master, to understand, and to “play” with a camera.

There are some general features you should look for in any new camera. Unfortunately, this means I have to be a bit technical and you will have to spend some time digging out the details on any camera you are thinking about. So here goes:

Sensor Size
Most point and shoot (P&S) cameras, those you can stick in a shirt pocket or pocketbook use the same size sensor called the 1 /2.3”which measures 6.17 x 4.55 mm. However, more and more, you may be seeing some cameras using larger sensors such as the 1 /1.7”, 1/1.8” , and even a 2/3”. The larger sensors, the 1/1.7 or 1/1.8, or 2/3 inch offer much better low light performance, the pictures tend to be sharper, tend to have less noise or grain. Don’t confuse 1 /2.3”.with the 2/3”, they are very different in size, the 2/3” is much larger and therefore much better.

Sensor Type
The sensors that use a CCD type sensor are old school. They do produce reasonably good pictures but cannot keep up with the newer CMOS when it comes to movie making. Another type of CMOS sensor is called a BSI-CMOS and that is really the best of the lot, especially if you want to make high def movies or do a lot of photography in very low light.

Number of Pixels
With cameras that have the small sensors, more is NOT better. Look for cameras that have only 10-12 MP. More pixels, 14-24MP is only an advantage for cameras that have larger sensors, such as those found on the Nikon V1/J1, the Canon G1 X, the Sony

NEX 5N or NEX 7, or the Fuji X10 or X100.

Zoom Range
Most, but not all cameras have optical zoom ranges from 3x to as large as 36x or more. What that zoom range really means is the "difference" from the widest angle to the greatest amount of zoom. As an example, a 10x optical zoom for a camera with a lens that has a wide angle of 28mm is 10x28 or 280mm. All these measurements are in 35mm film terms. For most purposes, that is an ample zoom range. Some of the cameras do not have any zooming whatever, others only have 3 or 4x optical zoom. Disregard or ignore any digital zoom values.

Widest Angle
This is a very important feature for anyone trying to take pictures in a street market setting or at a party or in any crowded situation. The SMALLER the starting number the greater the wide angle of the camera. A 36mm wide angle is not good, a 28mm lens is very good, but a 24mm one is even better. Taking pictures in confined spaces works better with the wider angle lens, you get more of the picture without having to step back. However, as the lens angle gets bigger, wider, more encompassing, distortion starts to rear its ugly head. Straight lines get bent and the results are not always pleasant.

Maximum Zoom Range
One might think that a large amount of maximum zoom would be good, very good, but there are penalties to pay for that long a zoom range, size and weight are two of the more important penalties. There are cameras with zoom ranges up to 18x optical that can still fit into a shirt pocket. Of course, these cameras do weigh more. But as you start going over 10x optical zoom the need for some type of viewfinder becomes much more important. At over 18x optical, the lack of any viewfinder would prevent me from buying the camera. There are attachments that can be screwed into the tripod hole of a camera that mimics to some extent a viewfinder. Check the website for ClearViewer www.clearviewer.com/) to see if they have a device for your camera.

The lack of a viewfinder for the longer end of the zoom range cameras really spells trouble. Camera shake becomes a real problem even for those cameras with very good image stabilization (I.S.).

Aperture or F Stop
The smaller the number the better the camera performs in dim or subdued light. In an attempt to keep camera prices down and camera size small, most cameras do not have a "fast or bright" lens. A "fast or bright" lens is one that lets in a lot of light very quickly. This allows for a fast shutter speed which allows the photographer to capture fast moving events. This is very important if you are taking pictures from a moving vehicle or of very fast moving subjects or action. The other advantage to a bigger lens opening is the shallow depth of field (DOF) that such a lens is able to provide. Objects in front of or behind the subject are blurred when shooting with a large lens opening, a nice way of visually isolating your subject.

Most zoom lenses have two stated aperture values. One for the widest angle and one for the maximum zoom. The aperture at the widest angle generally ranges from f2.8 to f3.8. A lens with a f2.8 aperture at wide angle admits almost double the amount of light in a given time as one with a f3.8. At the other end of the zoom you will generally find aperture values of f5.5-f5.6. This means that for a given shutter speed the lens at maximum zoom can only let in about 1/4-1/8 of the light at maximum aperture. Thus at maximum zoom you have to use shutter speeds 1/4-1/8 that used when at maximum wide angle. If your camera can properly expose a scene at 1/250 of a second at maximum wide angle (24-28mm), you would need 1/30 to 1/15th of a second at maximum zoom, thus subject movement and camera shake become a greater problem. Another problem occurs because almost all of the point and shoot cameras require fairly bright settings to focus quickly and an f stop of f5.6 just doesn't do well, especially in dimmer light.

Image Stabilization (IS)

Most cameras have image stabilization (IS) of some type. The better ones use either a moveable element in the lens, called OPTICAL IS or a movable SENSOR. Neither of these help when the subject is moving or you are moving, like in a vehicle. A few use other things like increasing the sensitivity of the sensor to light in order to use faster shutter speeds to minimize subject or camera motion. Some use a combination of different IS systems. The combination version has problems which are best avoided if possible. Some cameras allow you to turn off some parts of the IS very useful in your camera has multiple means of stabilizing the camera.

Viewfinders

Most cameras in the P&S family of cameras do NOT have any type of viewfinder. It is only when you get to the more advanced cameras or the super-zoom cameras that you can find an electronic viewfinder (EVF). Viewfinders are very nice to have but are almost impossible to find in most of the P&S type cameras.

LCD

The brightness of the LCD and the size contribute to the ability to use the camera in bright light
and can either make the camera easy to use or a big pain you know where. Generally the more pixels or dots in the LCD the better, but unfortunately there are exceptions. You must evaluate the camera for ease of use in bright light. Some LCDs articulate, i.e., they move up and down or swivel around. That is generally a very desirable feature and can help when shooting in very bright light. Some LCDs are touch screen. You can point to an object displayed in the LCD and the camera will use that as a focus point. You may be able to control various camera settings using the touch screen. Not everyone likes touch screen LCDs, if a camera has that feature, check it out, use it, some are easier to use than others.

There are two other points to consider, but these can only be evaluated by actually

handling the camera. And even then, the pluses and minuses may escape notice unless you have handled a lot of other cameras.

Camera Speed

This is not something you will find in any chart. What I am specifically referring to is how fast does the camera “grab’ focus, how fast is the camera ready to take another picture, how fast is it ready to go to take a picture when turned on, how fast does the camera respond to menu commands?

Controls

Menu system - Some cameras allow the photographer to make a lot of choices, some treat the photographer as not at all
interested in the finer points of photography. What I mean here is <u>your</u> not letting the camera make all the choices. If you always shoot in the AUTO mode, then the ability to set the aperture or shutter speed is unimportant. But, if you are thinking about getting more involved in photography then it is something to consider

It is impossible to list some features that may be very important to some people, things such as built-in GPS or the various movie formats available. Prices are constantly changing, generally downward from when the camera was first introduced. Read reviews both by various websites and by the users of the cameras. My three favorite places to look are DPReview, CameraLabs, and ImagingResources. Steve’s Digicam is also a good information source.