

What to Look For When Buying a **Digital Camera**



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Introduction

Just for fun, I just visited Best Buy's Web site, and took a look at the digital cameras they have on sale. And for more fun, I sorted the list from lowest price to highest price. The least expensive camera they list is a **Fuji FinePix 12.2MP Digital Camera, with a 3x optical zoom and a 2.7" LCD**. The price? Just **\$89.99**.... holy cow! Tell you what, I'm just floored the way cameras (and all other electronics, for that matter) are plummeting in price while still bursting with features. A year or two ago, this camera would have set you back at least 3x that much if not more.

Now, I'm not suggesting you run out and get this particular camera... But the point is, it really is a perfect time to jump into digital cameras (if you haven't yet), or perhaps even upgrade if your current digital camera is a few years old.



With that in mind, let's take a look at the most important features to look for when shopping for a digital camera.

1 - Point and Shoot or DSLR (digital single-lens reflex)

This one is pretty easy. If you were a photo-head in the past, and still have your old 35mm Nikon bodies sitting amongst a slew of interchangeable lenses (replace "Nikon" with your favorite camera company), you'll probably want all those same film-camera features in your new digital camera. That means that **DSLR** is for you. On the other hand, if you just want to aim your camera in the general direction of your subject, push a button, and get a wonderful picture without knowing anything about aperture, shutter-speed, ISO, etc., then a **Point and Shoot** is for you.

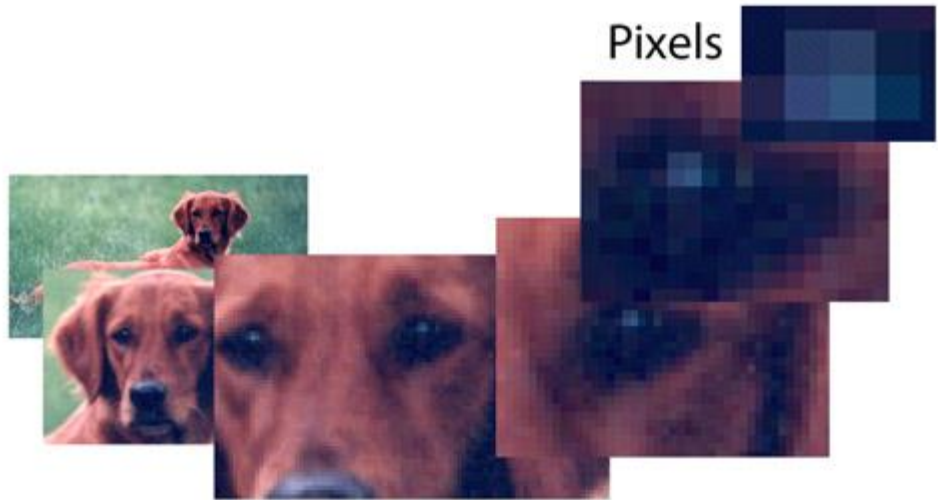
2 - How many

Megapixels?

In the digital world, your picture is made up of little tiny squares we call **pixels**. Just how many pixels make up your picture is referred to that cameras

“Megapixels”... which means “millions of pixels”. For

example, let’s say you have an 8.2 Megapixel (MP) camera. That means there are 8.2 million little square pixels in each picture you take. They come up with the MP number by multiplying the number of pixels wide x the number of pixels tall. With the this camera, it’s $3264 \times 2448 = 7,990,272$. But wait, that’s NOT 8.2 million!!!! Well, they fudge a bit with the numbers because of some other technical things... but for our purposes it’s close enough.



So who cares? Well, the number of MP’s means two things to you...

(1) The more pixels in your picture, the bigger the print you can make. As a rule of thumb, 200 to 300 pixels per inch (ppi) is what you want in a good looking printed image. Doing a bit of math with the above picture dimensions (3264×2448) and the 200ppi, you can determine that the largest BEST looking print you can make from this camera is $(3264/200 = 16\text{inches}) \times (2448/200 = 12\text{inches})$ a 16 x 12 inch print. Now keep in mind that beauty really is in the eye of the beholder, and in fact, a picture at 150ppi or even 100ppi might look just fine to you. So this camera might actually let you make pictures that are even bigger than 16×12 .

But let’s face it, do you typically print images that big? I bet not. Most of us are happy with the good old 4×6 . Guess how many MP you need for THAT size? Only 0.96MP (less than 1MP)!!! What does this tell you? Maybe you don’t really NEED all those MPs... but read on....

(2) The more pixels in your picture, the better you can zoom in on just parts of the image AND the more pixels you have to work with when editing images. If you are someone who does a lot of nature photography (i.e. takes pictures of little things far, far away and then likes to enlarge them to print) or just are someone who stands too far way from the subject when they take pictures, you will benefit from a camera with more MPs. The more pixels you have when you enlarge just small parts of an image, the better the final, cropped picture will look. You also get better results with more MPs if you do a lot of image editing (fixing up your pictures in software called an image editor).

Look at these three pictures as an example.

The **first** is our shot zooming as close as we could.

The **second** is what the picture looks like after enlarging just the head area in our image editor. This is from a camera with lower Megapixels. The third is the same enlargement, but from a camera that has higher megapixels. Can you see the difference?



What to do? At this point in time, the most common MP sizes for cameras is in the 6 to 12MP range, which is certainly overkill for #1 above (print size), but perfect for #2 (enlarging parts of an image, image editing). And as time goes on, inexpensive cameras will probably quickly move into the 10+ MP range. So the good news is, just about any modern digital camera is going to have enough MPs for you. But there is some bad news too... keep in mind that more MPs also means bigger file sizes, and bigger file sizes translates to pictures that take longer to transfer from your camera to the computer, pictures that take up more space on your computer, and pictures that may not travel well as email attachments.

3 - Optical Zoom

Zooming is great, and frankly, most of us can't get enough of it. This means you should look for a camera that has as much optical zoom capability as you can. Notice I said "**optical**" and NOT "**digital**" zoom. **Digital zoom is "fake zoom"**, a.k.a. "bad zoom". It's simply where the camera internally enlarges part of the camera sensor chip to make part of a picture bigger. This leads to bigger looking pixels, which leads to crummy looking pictures. **So, ignore digital zoom and focus (focus, get it?) on optical zoom.** Most digital cameras will have zoom listed as an "X" factor. Our Fugi FinePix camera has an optical zoom of 3x, which is pretty typical. If you are a photo-head and want to relate this to the lens mm (millimeter) focal equivalent, this camera has a zoom from about 35mm to 113mm. You can always see the "x" factor focal equivalent if you look at the digital camera specifications. But for the rest of you non-photo-heads, your camera should have at least a 3x zoom. But if you can do better (5x, 7x, 10x), it's worth it.



One more note about zoom...

One of the most common mistakes amateur photographers make is "**not filling the frame**". This

simply means that when they take a picture of something, they leave too much wasted space around the subject, and later have to dramatically crop the picture in their favorite image editor. What they should do instead is try to fill the viewfinder/LCD up with as much as the subject as they can. This is where the zoom really comes in handy. Without getting closer to the subject, you can use the camera's optical zoom to fill up the frame, and get the best possible shot.

4 - LCD Screen Size

The little TV screen on the back of your camera is called an **LCD** (liquid crystal display), and it's what you use to (1) sometimes compose the image before you take it, (2) view the image after you've take it, and (3) display your cameras internal, electronic, menu. The larger the LCD size, the easier it is to see these three things. This means bigger IS better. However, keep in mind that some cameras that have BIG LCDs do not have a regular viewfinder to compose your shot... which is something you might miss when you're out taking pictures in bright sunlight, and start getting a lot of glare from you LCD.

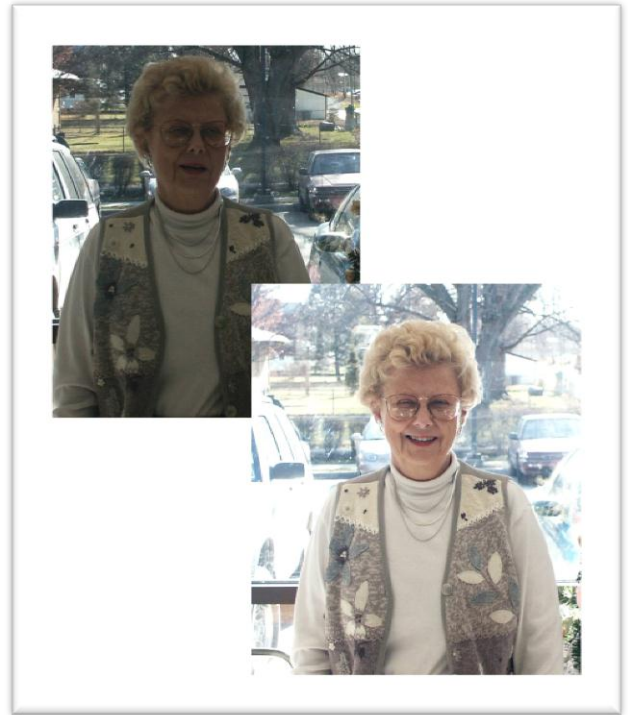
One more thing... We're starting to see more "**touch-screen**" cameras, where the LCD unit is not only used to compose the picture, but is also used to make menu selections with the touch of your finger. I'm all for touch-screens, but unless you have a fairly good sized LCD, those of us with "big fingers" sometimes have trouble touching the right place. You'll want to make sure to try this out in the store before you spend your hard-earned cash.

5 - Exposure Features

I one time heard a photographer say "**I paint with light**", which is a very true statement but one that many budding photographers don't think about. **The most important thing about your picture (besides the subject) is HOW IT IS LIT.** How the scene is lit is translated into your "picture exposure" on the camera.

Your camera controls **exposure** (how dark or bright it is) using two features: (1) **Aperture** (size of the lens opening), and (2) **Shutter Speed** (how long light falls on the sensor chip). The camera balances these two features to get the properly exposed picture. Although your camera has wonderful **AUTOMATIC EXPOSURE** settings that usually give you a great picture, your camera can be fooled in certain situations.

For example, if you've ever taken a picture of someone standing in the **snow**, you'll notice that the snow looks pretty good, but the person comes out quite dark (underexposed). Same thing happens when you are by a **lake** or **river**. There's so much light reflecting into your camera that it wrongly lowers the exposure, making the subject too dark. Another example is when your subject is standing in front of a bright light source (like a window). The camera sets the exposure for all the light coming from the light source and not your subject, which leaves your subject as a dark silhouette.



Ok, here's the point... new digital cameras have lots of different ways to set exposure besides automatic, and for those who want to get the best pictures, purchasing a camera that includes these features is important. They include:

- **Scene Settings** where you choose the type of scene and the camera automatically adjusts to it
- **Aperture and Shutter Priority** where you control either of these, and the camera sets the other, giving you control over depth of field with Aperture, or subject movement with Shutter Speed
- **ISO** where you set the "speed" or light sensitivity of your sensor chip so that your camera becomes more useful for indoor pictures without the flash
- **EV** exposure value settings, where you can manually over or under expose an image

Of course, once you get a camera with all these exposure settings, you have to learn how to use them. But let me give you a tip about exposure: if you learn nothing else about your camera exposure, at least take the time to **learn how "Scene Settings" work**. They are probably the easiest exposure feature to learn, and yet one of the most powerful to use. Scene Settings are like having a "tiny camera geek" that knows exactly how to set your exposure settings, inside your camera.

6 – Odds and Ends

In the past few years, a few additional features worth mentioning have found their way onto digital cameras. Although these probably won't make or break your buying decision, they are worth considering when you're comparing two cameras that otherwise have the same features.

- **Image Stabilization** – Once considered somewhat of a gimmick, this feature has matured to become a **very useful way to get sharper images** in situations where you have lots of **camera movement**. Notice I said "camera" movement and not "subject" movement. Image stabilization typically takes place when a set of gyros inside your camera sense the camera shaking, and then attempt to electronically compensate for that movement by freezing the image on the sensor chip. OK, it's a lot more complicated than that, but you get the idea.

As great as this feature is, you should still take the time to steady yourself as best you can whenever you take a picture. This might mean holding your arms in to your body, leaning against a wall, and holding your breath as you press the shutter, or even putting your camera on a tripod.

One final note about stabilization... many photo-heads suggest that you turn OFF image stabilization when you have your camera on a tripod. Reason being, since the tripod is holding the camera as steady as it can, stabilization actually just gets in the way and can actually make your pictures less sharp.

- **Face / Smile Recognition** – I'm still getting use to this one, and I'm not sure I ever will or even want to... but here's the deal. Some cameras have "smart" technology that can look for peoples "full faces" in pictures, and not let you take the picture until it can "see" those full faces. So for example, if you are taking a group shot and have this feature turned on, when you press the shutter and not everyone is looking your way, the camera will pause and not take the shot until it sense that everyone is. The camera does this by detecting faces, and by then making sure it sees "two" of everything it should (ears and eyes). I don't have any experience with this feature, but I've heard that in some situations, it can work pretty well.

- **Movie Camera Mode** – Since they first hit the market, most digital cameras have had the ability to take a “movie” instead of just a still image. But until recently, this feature was really pretty simplistic and gave you only low quality video, not the good video you see with a regular video camera.

However, this is beginning to change, as some of the **new high-end DSLR cameras** now include special electronics that let them become a full-fledged **HD video camera**. Of course, right now you’ll pay a lot more money for a camera like this, but as with all other electronics, I imagine the prices will begin to drop and it won’t be long before we all are just carrying one camera around to do all of our still and video picture taking.

Wrapping It Up

We could probably go on, but in our opinion, those are the most important considerations as you shop for a digital camera. But keep in mind that the “feel” of the camera is also important, so you’ll want to visit your local store and actually pickup and try the camera out in your own hands. The good news is, we’re at the point where you really can’t make too much of a mistake when buying a digital camera, since they all do a great job of capturing your precious “Kodak” moments.

Feel free to drop me a note if you have any questions about cameras or any other digital photography matters (John Lortz – jlortz@shf.org).

Also keep in mind that the Senior Health Foundation has LOTS of classes that have to do with digital imaging and cameras, and very soon, we’ll be adding a “How to Use Your Digital Camera” series of video tutorials to the DiscoverSkills.com site. Stay tuned....



Who is this Guy?

Yes, I am a real person, and I live in the United States, Midwestern town of Omaha, Nebraska. No, my office window does not look out over a field of corn, but go about 10 blocks to the north, and you'll find one. And yes I did grow up in a small farming town... a very, very small town of 600, and loved every minute of the 18 years. Here in Omaha, I live with my wife Sue Leavitt (another professional geek) and my son Jack (a want-to-be professional baseball player), and lead a fairly common, Midwestern life.



Ok, frankly, I'm not really into talking about myself, but since you're meeting me here on an eBook that carries my name, I guess as an issue of trust, so I need to tell you a bit about my technology background.

For 15 years, until just recently, I was Director of Education and Technology for the Senior Health Foundation (SHF), a non-profit that specialized in computer education for senior citizens. There, I developed all the class curriculum, books, and videos, as well as created and maintained the organization web sites, which included my current learning site, www.DiscoverSkills.com. I also taught most of the senior technology classes and workshops, with over 10,000 students passing through over 900 classes.

Because of the weak economy, SHF closed its doors at the end of 2010. But working for SHF was a wonderful experience, both in forming lifelong relationships with my students, and in learning how to teach and relay technical information in an understandable way. That was always the challenge, and still is today.

Also during my time with SHF, I assisted other retirement communities in creating senior training labs and setting up computer learning programs. I still contract and provide the learning for one of those communities, the Computer Education Center at the Landing, in Lincoln, Nebraska. This particular computer lab is state of the art, and along with my lead instructor, Wayne Casper, we provide over 40 different class offerings from the very basic for those just getting started, to the more advanced for those who want to learn eBay, Facebook, Photoshop editing, or PC maintenance. Besides teaching at SHF, I continue to be an adjunct instructor at the College of St. Mary here in Omaha. I've been teaching computer-science related classes there since 1988, including web page design, database management, various programming and digital imaging classes, and advanced business applications. Teaching at the college level has been a great balance to teaching seniors technology, and by blending the methods used for each group, I think I've come up with some great insights on technology learning.

On the writing side, I served as a freelance writer for *Smart Computing*, *PC Today* and *CPU* magazines, where I published more than 30 articles on computer related topics.

As for some odds and ends, I served on the Omaha Public Schools Internet Advisory Committee, and currently act as a volunteer video media advisor to Skinner Magnet School. I was a featured speaker at the Nebraska AGPAM Conference, and I've presented at the national AAHSA Annual Meeting. In addition, I was a keynote speaker at the Nebraska Society for Healthcare Marketing and Public Relations conference, presenting ideas on Internet marketing and Web page design. I have a Masters degree in Computers in Education, but to be honest, most of my initial technical, geeky experience came from the five years I acted as the Director of Information Systems for a small software development company here in Omaha. And following that job, I did computer and network consulting for a few years, before ending up at SHF.

Whew... Ok, so I've talked a bunch about myself. The thing is, I've been blessed with lots of great experiences working with technology and students who are interested in technology. Although I never set out to be one, I guess you could say I've become a professional technology educator. But along the way, I've also become a PC geek, networking geek, web-video specialist, web site designer, and a bunch of other nerdy things that just went with the territory that my life traveled through.

So, that's it. That's me. That's who I am and where I've been. Oh, and hopefully, I'm not done yet!

Feel free to explore our sites and take in what we offer there. I also invite you to visit our main learning portal, DiscoverSkills (www.DiscoverSkills.com). And if you have any questions, feel free to shoot them my way. I'll even listen to YOUR life story, if you want to tell me!



DiscoverSkills.com is a technology learning portal created by John Lortz to assist students of all ages in understanding and using computer, photography, and mobile device technology. We do this through eBooks, video courses, and webinars.

For more information, email us at jlortz@discoverskills.com

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