How to Photograph Pens using a Lightbox for under $50

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This tutorial is designed to help you build a very inexpensive, collapsible light box (photo tent) with lighting, support your camera properly, choose a decent camera and take excellent photographs for under $50.

For the light box you will need:

- Hanging file frame
- Binder clips
- XXL white tee shirt (or pillowcase or whatever, just has to be white)
- 3 keyless light fixtures
- Lamp cord
- A plug end
- 3 Light Bulbs
- Scrap lumber
- White (or other color) paper

You will also need:

- A camera (more on that later)
- A camera support (more on that also)

The hanging file frame and binder clips are available from virtually any office supply store. I am using a legal sized frame, but you could use a letter size just as well. The tee shirt should be plain white. I got mine from Goodwill. If you can only find one with a logo on it that will be fine, just put the logo on the bottom. The keyless fixtures, lamp cord, plug end and light bulbs can be purchased from most home improvement stores. Reflector bulbs work well, but just about any bulb will work fine. I use an incandescent bulb. Most cameras will "white balance" **(AWB)** to incandescent bulbs very well. **(More on this later.)** The white paper is for your background. It can really be any color you like, I just personally prefer white.

The Light Box

After you have collected the required materials, proceed as follows:

1. Assemble the hanging file frame.

2. Slide the tee shirt over the frame. One end will be open where the bottom of the shirt is located.

3. Use the binder clips to “wrap” the tee shirt around the legs of the frame so the frame is concealed.
4. Place a piece of paper in to cover the bottom and back end. I used butcher paper.

Below is a picture with the paper in place. At his point you could add whatever props you like to enhance you photo.

5. Place it in the location where you plan to take your picture.

The Lights

You want you lights to be at least 2-3" away from the fabric of the tee shirt. **You need to be cautious that the fabric does not overheat!** Assemble the bulbs into the fixtures and measure the height of the assembly. Using that dimension, determine the dimensions of the frame. Mine has inside dimension of 34" wide and 17" tall. Yours may be a little different. I used 1x6 pine for the frame, but you can use whatever you have handy.

Before you do the wiring, make sure you know how! These steps are not difficult for most DIY folks, but if you are not sure how to do it, get help! Wire up the fixtures and add a plug, then attach them to the frame. You can install a switch if you like, but you can just as easily plug and unplug the lights as needed. Keep your eyes peeled for a plain extension cord which includes the plug end. It may be more cost effective than the parts. Install the fixtures and bulbs and give it a test. If all has gone as planned, place the frame over the light box. You are ready to take a picture!

The Camera

- First read the tutorial "Pen Photography 101" written by Gerry Rhoades. (http://content.penturners.org/library/techniques/pen_photography.pdf)

It contains a wealth of useful information. A camera that does not have a manual shutter speed and/or aperture can work very well if it has "exposure compensation". While you cannot set the speed and aperture directly (the camera will choose those) you **can** adjust the exposure. As the tutorial explains, this is the ultimate goal. Correct exposure is paramount.

Most point and shoot cameras are designed for casual photography and can compensate for incandescent light very well. Most modern cameras adjust the way the camera records a scene based on what kind of light is lighting the scene. This will be called Auto White Balance (or AWB). This is a fairly standard feature. Without it, pictures taken in different lighting will take on a "hue" based on the color of the lights used. Some lights, including standard incandescent lights have what is referred to as a "warm" color. Other lights will be closer to "sunlight" or "daylight" and will produce a much "cooler" color. That, and the fact that the incandescent bulbs are relatively inexpensive, is why I chose them here. You will probably notice that the photo above looks a little weird. The camera is set to "incandescent" and I used flash. Inside the box looks relatively normal. Everything else is quite "bluish". I included the photo so you could see why you want one color of light source.

Here is a similar shot taken without flash and the camera is set to “Incandescent”.

The whites are white the blacks are black and the pen is well lit.

I would highly recommend that you consider a used camera. Many folk fall into the marketing gimmick that “newer is better”. This, at least for our purposes, is simply not true! However, it can work to your advantage, since there are lots of “older” models available for very little money. ALL the pictures in this tutorial were taken with a Nikon Coolpix L20 I purchased on EBay for $25. (Well at least all except the one with the camera in it!) It, and many hundreds of other models, will do the job nicely! When you have chosen a camera that you think would be just right, download a copy of the manual and READ IT! You need a model that has 2 specific features. “Macro”, which allows for close focus and “exposure compensation”, which lets you adjust the exposure. All the information you need to make an informed decision is in the manual. Do not be overwhelmed by claims that you need newer features or more megapixels, YOU DON’T. This is particularly true if you are primarily intending to post your pictures on the internet.

If you do buy an inexpensive used camera and use it for a while, then if you want to advance to a camera with more features, you will have learned a lot at very little expense.

Camera Support

By far, the best choice to support your camera is a tripod. It does not need to be expensive, just sturdy. Since this tutorial is based on getting the job done at the least expense, I am going to assume that you do not want to buy a tripod at the moment. Here is a good alternative.

This is a mini ballhead. I purchased this one online for less than $5. They attach to a threaded stud on the bottom (1/4 x 20). The camera attaches to the stud on top. There are many ways to support one. A hunk of lumber with a piece of all-thread glued into it would work fine. Just make sure that whatever you come up with is rock steady.

The photo shows the stud mounted in the top of a 2x2 which I stuck in a bucket of rocks. It works just fine.

Software

Remember the maximum file size at IAP for uploading to the Member Photo Albums is 500 kb. For attachments in forums; BMP, and JPG is 256K (800W x 600H), PNG is 4M (800w x 800H).

- For complete file size specifics see: (http://content.penturners.org/library/general_reference/iap_maximum_file_sizes.pdf).

The camera mentioned above takes 10 MP photos. The photos are saved a JPEG file and the default file size end up at about 2.5MB at a resolution of 300 dpi. JPEG's are perfect for our use here, but remember that most monitors can display only about 72 dpi. As you can see the image size is way bigger than is really viewable on screen. If I lost you here, don't worry! My point is simple. Cameras that take photos at above about 6 MP gain very little or nothing when it comes to viewing them on the internet.

Photo resizing is quick and easy with some free software. In fact, software to edit you photos can improve them greatly. You can resize them, remove dust spots, adjust the color balance and perform a myriad of other operations. There is also a ton of information available on the internet regarding the various programs, and new ones are made available regularly. Many are free, some are shareware available for only a small charge, and some are very expensive. Some are single purpose, some are full of features. The photos here were retouched using Gimp software (free). Look around, try out a few, and find out what works best for you.

There you go. To complete this project I spent less than $25 on parts, $25 on a camera and used free software to do the editing. I had lots of scrap lumber lying around, but if you needed to buy, it might cast you a few bucks more. I am sure there are many other ways of accomplishing the same thing, so feel free to use your imagination.