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Light Right - A Crash Course In Lighting Video

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Digital video has introduced all kinds of possibilities for do-it-yourself television in schools. But with budgets stretched tighter than ever, teachers and media specialists may despair their productions may never look better than Uncle Fred's home videos. "We can't afford better cameras," is a cry I hear often.

Believe it or not, your productions can look almost as good as network television without buying new cameras. The secret is in better lighting. While broadcast television networks do use better quality cameras, the fact is the major difference between Uncle Fred's underexposed home videos and really excellent broadcast television pictures is principally lighting and exposure. Thus my goal here is to give you a crash course in the basics of video lighting, including a few tips to get around the most common problems you'll run into in your productions.

To get you up to speed, there are a few basics you must know-and a couple of myths that need debunking. Some of these may run counter to things you've been told by salesmen or "know-it-alls," but they're the bedrock of fine professional production work.

The Myths

MYTH #1: "The new digital cameras don't need as much light." Yes, this is technically true when compared to the lighting needs of cameras of a decade ago. But don't be deceived by the manufacturer's claims of light sensitivity. A camera may be rated at 1 lux, but at that light level the picture will look like horrible, grainy surveillance video.

MYTH # 2 (a variation on Myth #1): "You don't need lighting with digital camcorders." Wrong. Good video still needs to be lit right. The pictures we're used to watching on network television are all carefully lit.

The Facts

FACT #1: Cameras can't handle reality. Even the best video cameras can't handle real life-at least not the way your eyes do. Your eyes are amazing instruments that can handle a huge range of brightness. Most people can easily perceive a contrast range (the range of the darkest area to the brightest area in perception) of about 1000:1. The best video cameras can deliver a contrast range of about 250:1. Pretty average video cameras (like the ones your school probably owns) can handle a contrast range of about 100:1, which is about 1/10th the range your eyes handle effortlessly. To stay inside your camera's optimum exposure range, you'll need to compress the contrast range, either by adding ambient (fill) light or by reducing light on overexposed areas.

FACT #2 Video lighting isn't realistic. The lighting we're used to seeing in films and network video isn't usually true to life. In fact, it's often very unnatural. In most cases, it's an improvement on reality for the benefit of the camera. Where does the light come from in the night scenes? "Realistic" would be to shoot in darkness, but you might as well leave the lens cap on. How about those network interviews? In many cases, "realistic" would be to shoot using ugly overhead fluorescent lighting-just like in your classroom. A video professional would never shoot under those conditions. Instead, they use flattering, portrait-like soft light for the subject with a nice little accent in the background. When you see an expert interviewed in his office on network TV, that's not how the office is normally lit.

Okay, so how do these facts play out in the real world-your real world? As educators, there are a couple of real

world problems that you'll be dealing with all the time. Schools are usually lit by overhead fluorescents, which are often of the "cool white" variety. These are missing portions of the color spectrum and have a strong green component that makes people look sickly on video. Schools have a lot of windows, too, which present contrast problems in many pictures.

Remembering that the camera can't handle the huge contrast range our eyes are comfortable with, let's start with the windows. If you try to shoot in a room with open windows on a bright day, one of two things will happen. If you leave the camera on Auto or Manual exposure, when a window comes into the shot, the exposure control will sense too much light and close the iris down. The foreground subjects you're trying to shoot will suddenly become silhouettes. Sound familiar? The other thing that might happen if you leave the exposure on Auto or Manual is that the windows will "blow out," overexposing to a solid white that seems to glow around the subjects.

The reason this happens is the sun outside is many, many times brighter than the fluorescent lights in your room. While your eyes can handle this contrast, your camera can't. There are several solutions for this common problem. The easiest is to keep windows out of your shot. Plan your shots from a different angle whenever possible (Figure 1). If you simply must have a window in your shot, your best bet is to set the camera on Manual exposure; set the exposure so the windows are overexposed but not completely "blown out." Then add light to the interior scene as I'll describe below.

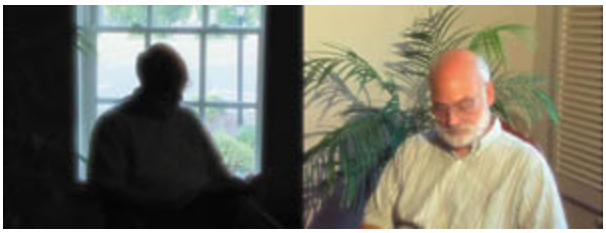

Figure 1

Okay, we've conquered one of the most common contrast problems. Now, how do we use extra lights to make the shot look better? The first rule of thumb is that good video lighting is different from architectural lighting. Architectural lighting is nearly always ceiling down, and will usually cast ugly shadows on the eyes and under the nose. Video lighting is aimed into the subject's face rather than down on the top of her head (Figure 2). This eliminates the ugly shadows and sends illumination into the eyes; seeing the subject's eyes helps your viewers connect with the subject.

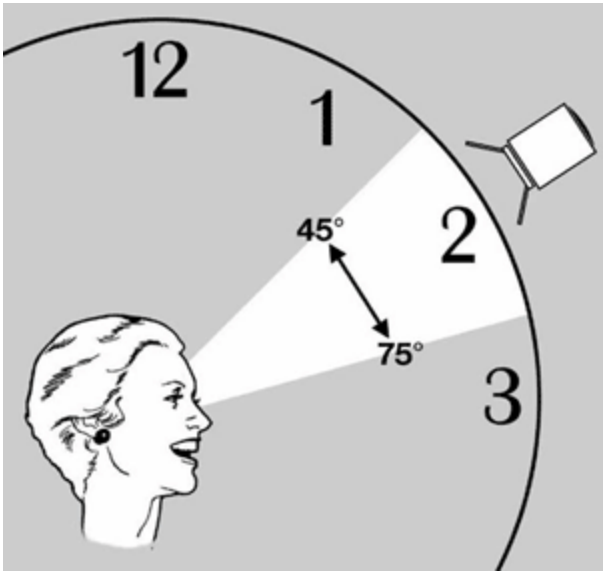

Figure 2

An easy way to do this is to use the "local news" approach-a camera-mounted light. In fact, a small on-camera light like the NRG 50350 Mite-Lite ($109.95) will light the face of the subject well. However, using a camera-

mounted light that's too strong can give that deer-in-the-headlights look that one often sees on local news. A better solution is to use a stand-mounted light three to five feet to one side of the camera.

Even if your budget is tight, a very basic light kit like the inexpensive Smith-Victor Model SV-1200 with 700-SG lights ($275) offers a lot of creative flexibility. One tip: Stay away from the slightly cheaper kits that use photoflood bulbs. Though photofloods are cheap and can be used for video, the bulbs have a very short life when compared to the quartz lamps used in professional lights. You'll pay the difference later in buying lots of photoflood bulbs, and they are guaranteed to blow right in the middle of a shoot. A more flexible kit like the Lowel VP-98 ($899, Figure 3) will give you more portability and flexibility, but may be beyond your school's budget.

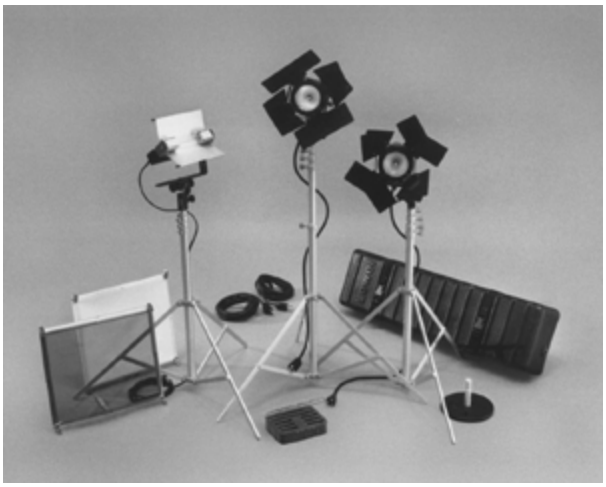

Figure 3

So what if you don't have a light kit and don't have a budget for one? You can still get some interesting video done. Does the maintenance department have a work light with a stand? These can be adapted for use, see Bruce Johnson's "Lighting on the Cheap" feature story on DV.com (registration required) for ways to use work lights for video. A work light with stand can be purchased at most home centers for less than $50.

Most schools have a variety of theatrical lights in their auditorium. Ask the person in charge if you can use one of the smaller fresnels. Fresnels are very similar to pro video lights, though not designed for rough handling and portability. They're usually rigged with a pipe clamp for mounting and also may have an odd Twist-Lok connector rather than a standard household electrical plug. Get help from a qualified person to either put a standard household plug on the light or to make an adapter-an extension cord with a female Twist-Lok connector on one end and a standard male household plug on the other.

See if the shop teacher (or some other mechanically inclined individual) can help you come up with a portable stand that will allow you to mount the light six feet or so off the floor. Such a stand could be just 1-inch iron pipe with a plywood base; the light's existing pipe clamp can be used to fasten it to the pipe. On the other hand, a basic folding light stand can be purchased from a supplier like B&H for less than $50. You can also get a special stand mount adapter that will replace the pipe clamp (known as a TVMP Adapter) from B&H or your local lighting supplier for less than $15.

A single light mounted slightly above the subject's face and off to one side of the camera will improve the look of your video immensely. It may not be a full professional lighting design, but it will look much better than overhead light from "cool white" fluorescents.

Try this: Position your interviewee in front of a window, but at an angle looking into one corner of the room and about six to eight feet from the window (Figure 4). Position the camera so the window is not "in frame" to avoid exposure problems. Now position the single light about four to five feet to the other side of the camera, and a couple of feet higher than the eyes of the subject. The light from the window will serve as a "backlight" while the single fresnel or work light will be the "key" light, or main light. Be sure in this situation to set the camera's White Balance to Indoor or Tungsten (see your camera manual for how to do this). If you leave the White Balance on Auto it will probably set to the color of sunlight and your subject will look too orange.

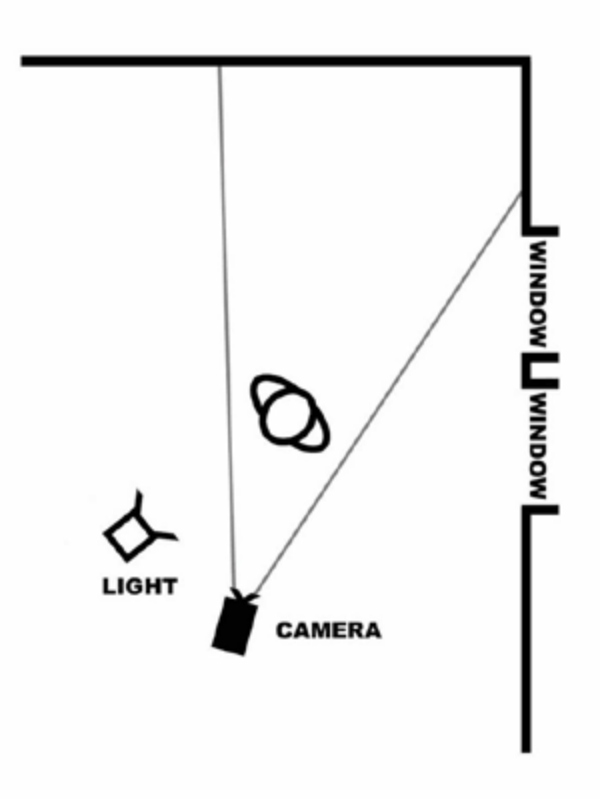

Figure 4

But what if you can't come up with a light at all? Are you doomed to making ugly video? Not necessarily. You can use sunlight and a reflector or "bounce card." This can be a simple piece of white foam core or poster board. Try this setup: Position your interviewee in front of a window, about six to eight feet from the window-but this time angled toward the window (Figure 5). Position the camera near the window pointing into the room, so the window is not "in frame" to avoid exposure problems. Now have a student hold the bounce card just outside of the shot (make sure it's really out of the shot) on the shadowed side of the subject's face. The idea here is to bounce some of the sunlight into the shadows to reduce the contrast. Here, the sunlight is the "key" light and the bounce card is the "fill" light. Set the camera's White Balance to Outdoor. This shot can look very nice with minimal equipment.

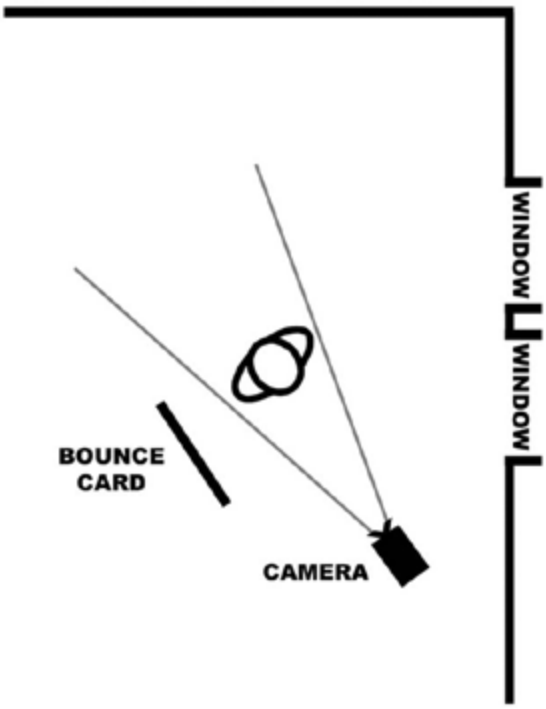

Figure 5

Once you see how much better your video shots look when they are properly lit, you may wish to learn more. Lighting expert Bill Holshevnikov has written a short booklet for Arri Lighting (a major film/video lighting manufacturer), and a PDF version is available for free download (see the Online Resourses sidebar below). This contains a number of more complex lighting setup diagrams with photos showing the resulting look.

An excellent introduction to the art of video lighting is Ross Lowell's Matters of Light and Depth (Lowell Light, 1999). My book, Lighting for Digital Video & Television, (CMP Books, 2002) is a comprehensive course that is easy enough for beginners but also includes information for experienced professionals. Both are available from major booksellers. My book, as well as my introductory video, Basic Lighting for DV, are available online at DV.com.

Happy lighting!

The Rev. John Jackman is an award-winning video and television producer. He is a contributing editor for DV magazine, and author of Lighting for Digital Video & Television. You can reach him online in the "Craft of Lighting" forum on DV.com.

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