

MINI LIGHTING LAB

I saw a puppeteer who made an old-fashioned type toy theater, with cardboard cut-out actors on stick. He lit it using led's. Perhaps a similar approach could be used to light model stage sets. I am not talking about any of the current high-cost pre made led lights, just individual led's. (I bet the commercial par-16 sized units may be getting affordable now... I wonder what the current cost is for a set of par-16 size fixture with the DMX control unit?) For the discrete led's, the low cost and small storage space may allow for multiple lighting rigs, so that several students can work at the same time with their own set.

Let me just brainstorm a bit here...

One of the issues with colored led's are their very pure colors, but perhaps white led's could be used, instead and then gelled just like a regular theatrical fixture. (The colored led's might still be useful for some pure-color fixtures)

For creating the mini-fixture, I suggest utilizing film canisters. Drill a hole in the bottom the size of the led. Then glue the led in using epoxy (or would heat dissipation be an issue?). The cap can be used as a gel holder. Cut the gel to fit snugly inside the cap. Cutting the hole in different sizes can allow you to control the size of the beam. Also, a strip of black aluminum can be glued around the output side, and then make 4 cuts to form in the foil to form barn doors as a substitute for shutters.

For mounting, and aiming, wrap copper wire around the middle of the canister a few times, and glue into place leaving a few inches of end free. Solder the tips to an alligator clip. The lighting truss is a steel strip approximately 1/2"x1/16" that the led fixture clips onto. It can also serve as the electrical ground. Each led needs its own resistor, and that can be soldered onto the ground lead and perhaps even placed inside the canister.

First, I should mention that I am not an electronics expert. Obviously, it is best to make the dimming circuit as simple as possible. An electrically efficient design is not a need for this idea, but a simple variable resistance circuit is a problem because you can't plug a varying number of led's into the same channel, even if you solve the issue of making the dimming behave linearly. This following guy made a computer illuminator using pots to adjust them. I wonder how good it was in actual use.

<http://www.dansdata.com/caselight2.htm>

I found this electronics design discussion, which discusses led dimming in depth. They discuss simpler resistance only circuits earlier in the thread. But, I understand the PWM circuit at the link below is better because I think it will allow a varying number of led's to be connected to the same dimming circuit.

<http://www.electronicpoint.com/showpost.php?p=331687&postcount=25>

Note that the circuit is shown with an ASCII illustration, and should be viewed in courier font.

I guess one method of making it really simple is to not make a dimmer at all. Rather, make the led fixtures in multiple brightness's using led's with different brightness ratings. Make only a single master dimmer if desired.