

Mad Scientists Light

by [tim-1138](#) on April 6, 2006

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intro: Mad Scientists Light

A Maker friendly version of the Tube Lamp by Nik Willmore. a captivating Light source suitable for normal usage and able to be dimmed down like a nice relaxing night light



step 1: Intro / Disclaimer

Disclaimer This Project involves Live electrical current and wiring, although it is not too complicated, if you are nervous about such a project i suggest you skip this one, I'm not a professional electrician, and just because i didn't burn my house down and kill myself with this setup doesn't mean it can't happen to you. Please take the proper safety precautions when working with electricity, IT CAN KILL YOU. I'm not responsible if you shock/electrocute yourself, burn your house down, burn out your eye sockets or disrupt the space time continuum. and please do not try to reproduce this project for the purpose of making money, to do so would hurt the original designer Nik Willmore whom inspired this wonderful project.*

A few years ago i saw this little beauty The Tube Lamp pop up online, designed by Nik Willmore and decided it was exactly what i needed for my little Mad scientist Laboratory. unfortunately i couldn't spare the disposable cash needed (or justify it) to purchase such an item, though i would still like to some day as his still has a captivating hold on me :)

This is project to show you how to make a much more cost effective version of the tube lamp design to get you by for the meantime. Rough estimate of the costs involved in this project is totaled at around or under \$20 depending on the supplies you choose.

NOTE: I Have updated some of the steps to help clarify some things and changed the way certain things are setup so they are more efficient and easier to understand. and from now on i also won't wait as long between doing a project, taking the pictures, and then making the write up as that leaves too much room for error :) thanks for reading.



step 2: The Base

A simple unfinished Pine box with sliding lid (Removed for this photo) That I picked up at the local arts and crafts store (Michaels) for about \$2 a box it was the perfect size to fit the four light sockets, i sanded it all down and painted it after cutting the holes for the sockets in the bottom.

to make the lamp the box was flipped over and the bottom became the top so if i have to make any adjustments or replacements i can turn the box on it's side and slide open the "Lid"



step 3: Box Continued

Outside of the simple Box I used for the base of the lamp, actually i bought two and this is the second one, i liked the finish of the other box much more so i went with that one to fashion the lamp out of.

Originally there was going to be wrap around text as you can see in the photo that was a quote "The best way to predict the future is to invent it." -- Alan Kay



step 4:

Here is the insides of the box/base where you can see the back side of the light bulb sockets as well as the back end of the dimmer switch and all the interconnecting wires. the Sockets were wired in parallel (one linking to another like a daisy chain) with one end of the power cord connected to the daisy chain of sockets, and the other end of the power cord connected to the dimmer switch.



step 5:

Another shot of the guts of this lamp.

The most expensive part of this whole project was the standard Dimmer wall switch (push in to turn on and off, rotate to dim or brighten) (the black box on the left) which ran me about \$7 at the Home supply store.

There are three wires running out of the back of the dimmer switch unit, two black and one green, the green wire is for grounding, and since the box is wood and since i didn't use a three prong grounded electrical cord i just removed the green wire.

Okay i've revised this a bit and made a much simpler and effective way to wire up the sockets, i could have sworn i wired it up one way and not another, but i completed this project a few months ago and just did the write up now, so i forgot about that change in plans sorry for the confusion

... take all the black wires coming out of the sockets and bunch them together, i used wire ties to keep them all together, do the same with the white wires coming from the sockets use a wire nut to connect all the white wires together and have them connect to one of the wires from the power cord...

connect all the black wires from the sockets together as well and wire nut them together with one of the 2 black wires coming from the dimmer switch... then connect the remaining black wire from the dimmer switch to the other wire on the power cord



step 6:

Simple 40w Tube Display Case Lightbulbs Available at most Home supply stores (I Purchased Mine at Lowes), you can also look around online and find other display case lightbulbs with different fillament patterns inside some are quite bland, but others look spectacular when dimmed down and you can trace the path of the filament in them .



step 7:

The light bulb sockets set in the cut out holes, i made sure when i cut the holes they were just too small and then lightly hand sanded them till the sockets just fit in properly with a few millimeters of the white socket exposed, then used a light bit of clear glue around the entire socket and the inside of the hole to attach it as well as a thicker ring of glue around the sockets on the inside of the box.

The light sockets themselves were purchased from Lowes and are fairly cheap as well (\$2 or so) and are designed for ceiling lamp repair and replacement.



step 8:

Heres a shot where i tried to get a close up of the insides of the bulb, didn't turn out perfect but you get the idea



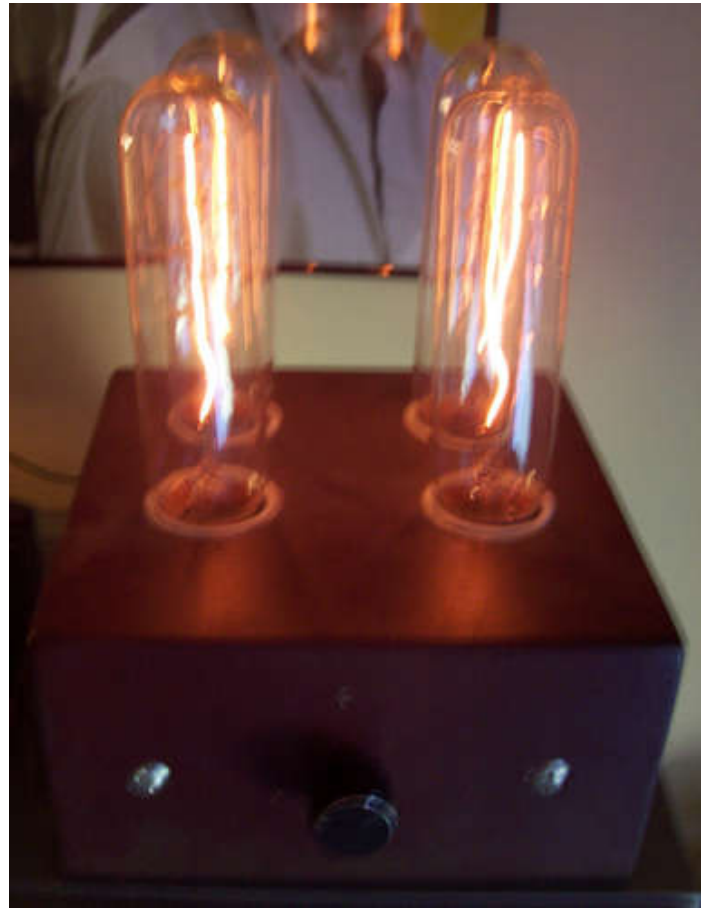
step 9: Finish

The finished Product with it's Glamour Shots, it lets off a nice glow and is certainly an eye catcher, everyone wants to know what that is and where i got it from, not bad for a lamp i made under \$20 (not included the sweat and blood you may or may not donate to said project)

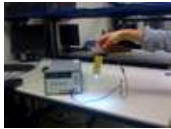
In the second shot you can see the finished product, along with a nice black Radio Knob replacing the big boring beige knob that comes with the dimmer switch.

If you liked this one, be sure to check out the smoke stack lamp instructable that i'll be posting up where i used some of the things i learned from this project, right now i'm still putting the finishing touches on that project but you can see some shots of how it's coming along in my [Flicker Photo stream](#)
Thanks for checking out my first Instructable!





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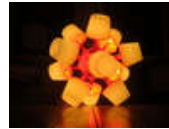
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 **Cabanaman** says: Sep 14, 2008. 11:40 PM [REPLY](#)
Problem. When I went shopping for the materials for this Instructable Walmart (suprisingly) didnt have any light sockets, instead I got one of these, thinking it was the same principle. But I encountered a problem, the dimmer is breaking the continuity of the circuit. The lights turn on fine with connected directly with the mains but when wired with the dimmer it just refuses to work. Any ideas?


 **Goodhart** says: Sep 25, 2008. 7:11 PM [REPLY](#)
it wouldn't happen to be a push on, push off dimmer, would it ? :-) Some dimmers also include "on / off" by pushing the dimmer in, and the dimmer then works by twisting the knob.


 **Cabanaman** says: Sep 25, 2008. 8:08 PM [REPLY](#)
lol No. Its just a turn dimmer. No pushing required.

 **Goodhart** says: Sep 25, 2008. 8:25 PM [REPLY](#)
do you know if it uses a triac for regulation ?


 **Cabanaman** says: Sep 25, 2008. 9:06 PM [REPLY](#)
You got me there.

 **Goodhart** says: Sep 25, 2008. 9:13 PM [REPLY](#)
The *better* dimmer switches use a triac circuit to prevent "ringing" in the bulbs. A much cheaper version is little more than a rheostat. The one thing about the rheostat, you wouldn't be able to "hook it up incorrectly" whereas the more complicated one may need everything *just* so, as it were.

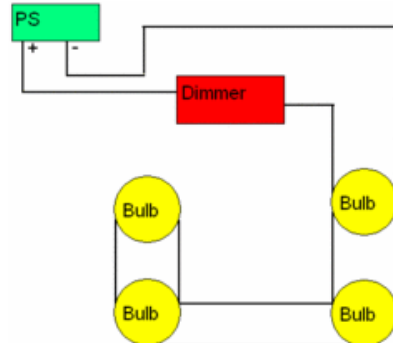
 **Cabanaman** says: Sep 25, 2008. 10:45 PM [REPLY](#)
I'm thinking the dimmer is the problem. Could it be that my bulbs are plugged into wall outlet light sockets?

 **Goodhart** says: Sep 26, 2008. 6:17 AM [REPLY](#)
Well, if those are then plugged directly into the mains, you are bypassing the circuit of the box. If you have sockets set up for those to plug into inside your circuit, and they are wired correctly, it should work.

I just thought of something else that might be a problem: you have the dimmer on the "hot" side of the line, correct ? With the bulbs, switching the polarity wouldn't matter, but the dimmer may not work on the wrong side.

 **Cabanaman** says: Sep 26, 2008. 1:44 PM [REPLY](#)
I made a rough diagram of the wiring of the light. I just can't see the problem other than a defective dimmer switch.
200 hours in MSPaint.

 **Cabanaman** says: Sep 26, 2008. 1:44 PM [REPLY](#)
Oh yeah, whoops. lol





Goodhart says:

Yeah, looks like you could be right. Either the dimmer is bad, or it requires something (another ground, etc) that is not shown. Sorry for the trip down a blind alley of hope :-)

Sep 26, 2008. 2:25 PM [REPLY](#)



viacin says:

step 1: find your wal-mart receipt

step 2: throw the dimmer fixture at the customer service rep, and stuff your receipt down his pants.

step 3: bond out of jail

step 4 : go to Home Depot and buy EVERYTHING you need at one place :D

step 5: you could also simply attach one wire to the side of the bulb, and one to the bottom... same difference.

Sep 18, 2008. 6:53 PM [REPLY](#)



Goodhart says:

Really nice....(but, your Flickr link seems not to be working).

Sep 25, 2008. 7:08 PM [REPLY](#)



mav_sd says:

This is an amazing project. I know the idea is to stay cost effective, but if cost is less of a concern to you and you are really looking for some sweet bulbs, check out www.rejuvenation.com... here's an example of their inventory. Again, great work, thanks for the great instructable!

Sep 16, 2008. 8:20 PM [REPLY](#)



viacin says:

thanks for the link and your time uploading pics. I say YOU get 5 stars :D

Sep 18, 2008. 6:54 PM [REPLY](#)



alex-sharetskiy says:

simple, yet elegant!

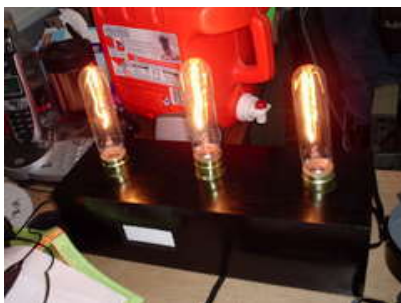
Sep 16, 2008. 9:35 PM [REPLY](#)



brokengun says:

Here is mine I built about a year and a half ago. I picked up the box at a craft store and installed a touch dimmer on the side of it. It works pretty nicely but the bulbs are unfrosted and it's hard on the eyes if your using it as a reading light. The bulbs also get pretty hot. It sure does looks cool though!

Sep 14, 2008. 10:30 PM [REPLY](#)



Two Raven says:

Bit confused here. In process of creating my own light and have the sockets and the dimmer switch....how is this plugging into the wall socket? Have a feeling I'm missing a crucial part - help!
(this is my first time working with electrical stuff, so any advice is appreciated)

Jul 26, 2008. 6:20 PM [REPLY](#)



tim-1138 says:

Sep 12, 2008. 4:53 PM [REPLY](#)

you have to make sure you put an electrical plug on the end to plug the finished creation into the wall... the cheapest way to do it is buy an extension cord and cut off the female end, wire the cut off end into the lamp and keep the male plug end the way it is and plug it right into the wall...



ya2sabes says:

Sep 12, 2008. 3:18 PM [REPLY](#)

I don't know if this has been asked or answered, but why did you go parallel instead of series? Was it so each bulb would get the max V?



tim-1138 says:

Sep 12, 2008. 4:48 PM [REPLY](#)

between the dimmer and the bulbs there was too much voltage drop off, where they didn't all light equally to the same brightness, parallel seems to give the best look and uniform brightness



Gjdj3 says:

Sep 11, 2008. 4:22 PM [REPLY](#)

Wow, I can't believe I never saw this before.

I'm definitely making one. 5 stars.



Tazzz says:

Nov 14, 2006. 11:15 PM [REPLY](#)

Wallgreens sells a "vintage style" bulb that one might want to use also. Sells for \$7 each.



TechDante says:

Sep 5, 2008. 11:07 AM [REPLY](#)

do you know if i could get these in the UK, as i am looking for vintage style bulbs



Tazzz says:

Sep 22, 2007. 4:36 PM [REPLY](#)

look



Tazzz says:

Feb 22, 2008. 7:56 AM [REPLY](#)

Nice if I may say so.



Zombie Stomp says:

Nov 15, 2006. 1:53 AM [REPLY](#)

Those look so cool, I can't wait until I can afford a set!



J-Five says:
IT'S Alive!!!!!!!

Aug 11, 2008. 2:56 PM [REPLY](#)



kingofconvenience says:
here is mine. made from some fake books.

Jan 20, 2008. 10:03 PM [REPLY](#)



cormac3050 says:
COOL

Aug 7, 2008. 10:18 AM [REPLY](#)



szechuan53 says:
Neat... you got a vote from me! You actually showed this just in time in my case, as a thermite explosion recently rendered my best table lamp useless... Although it now look like modern art due to liquified aluminum pooling around the base. I don't even know what happened to the bulb.
Yes, I'm a premature mad scientist. >_<

Aug 7, 2008. 9:57 AM [REPLY](#)



Redgerr says:
i have one word to say. WOW! that is really cool :D
thanks for showing me this lol :)

Jul 15, 2008. 5:55 AM [REPLY](#)



GorillazMiko says:
This is one of the best things ever made.

Jul 10, 2008. 9:48 PM [REPLY](#)



Xilinx says:
Going a with a heavier gauge(thicker) wire is wise. Our good friend Mr. Ohm tells us that when we lower the voltage the current goes up.

Mar 5, 2008. 10:14 PM [REPLY](#)



Derinsleep says:
that is the watt law

Jun 28, 2008. 12:32 PM [REPLY](#)



Polymorph says:

Ohms law says when the voltage goes down and the resistance stays the same, current goes down.

Apr 10, 2008. 5:49 PM [REPLY](#)



Derinsleep says:

he was talking about the watts law, incase you didnt get it:)you are right about the ohm law though

Jul 8, 2008. 11:32 AM [REPLY](#)



Tazzz says:

Jan 2, 2007. 4:36 PM [REPLY](#)

Voila, here's my finished project.



Tazzz says:

Ahhh, cool

Sep 22, 2007. 3:48 PM [REPLY](#)



daveanton says:

you mean if you do say so yourself...

Apr 24, 2008. 1:14 PM [REPLY](#)



craz meanman says:

...2 months before though.

Apr 24, 2008. 1:43 PM [REPLY](#)



Xilinx says:

It's a fuzzy pic but the next photo clearly shows them wired in parallel. All the Hot(Black wires) tied together and all the Neutral(White wires) tied together.

Mar 5, 2008. 10:08 PM [REPLY](#)

I'm not saying , I'm just saying



uhclem says:

If you're going to use a dimmer, why not mod it to animate your bulbs?

The dimmer is basically a pot connected to a triac and RC network - it adjusts the voltage at which the triac switches on and off every AC cycle. You can place an LDR (selenium photocell) in parallel with the dimmer pot and then use a light source to modulate the dimmer. A good way to do this is use a bunch of neon flicker bulbs in a light-tight box. They'll each flicker in a random fashion and the sum of their light will be picked up by the photocell, causing a random throbbing in the light output.

Oct 5, 2007. 8:04 AM [REPLY](#)

A flicker box is actually a great Halloween project to build on its own. Get yourself a largish surface-mount plastic junction box and you'll have room for the

dimmer, the lamps and an outlet, so you can plug in whatever incandescent fixture you want.



jhanezz says:

Feb 11, 2008. 11:34 AM [REPLY](#)

I love this idea but the concepts you throw out are completely foreign to me.

I get the LDR and flickering neon lights, but have now idea how to hook the neons up to AC, nor how to link up the LDR to the pot.

Can you give a novice electrician some direction on making this doable?



uhclem says:

Feb 11, 2008. 3:39 PM [REPLY](#)

Basically, you want to partially disassemble a dimmer so you can get at where the potentiometer (pot) is soldered onto the circuit board. There you will attach the leads to your LDR (use insulated wire) to the middle and one side lead of the pot. You could unsolder the pot completely but it is useful to leave in as it provides a sort of baseline brightness level adjustment. You then point the LDR at your flicker bulb(s). The flicker bulbs produce a varying light which will be picked up by the LDR and turned into a change in resistance - just like you manually twiddling the knob.



jhanezz says:

Mar 5, 2008. 8:22 PM [REPLY](#)

Hmmm. I tried this but when the LDR is connected the dimmer is completely bypassed. i.e. it doesn't dim any more.

I used a Levitron dimmer. There are a bunch of components soldered to the various leads. I assume one is the triac. As well, there are three connections at the top of the pot and three at the bottom. the components mentioned above are soldered across various of these leads. I don't have a camera about or i would take a pic.



seanhexed says:

Jan 6, 2008. 5:22 AM [REPLY](#)

Thanks for this instructable! It got me inspired, so I decided to do my on take on it. Sort of an alternate history antique type of spin on it.



sean33 says:

Jan 2, 2008. 3:55 PM [REPLY](#)

My Lamp pics

I did this project and it turned out great. I added an extra bulb for looks and build to box myself.

Enjoy!



40percentrobot says:

Dec 27, 2007. 5:01 PM [REPLY](#)

Great project!! I have made a couple so far, and I am having trouble wiring in a voltage gauge.

The gauge I bought is an old Weston 1-10 V AC gauge...

I am wondering if there was an easy way to attenuate the voltage out of the dimmer to make it compatible to the 1-10 volt AC range...

Any help would be great!



v_rancher says:

Dec 22, 2007. 12:37 AM [REPLY](#)

hey, I love that style of lamp, have been playing around with 'em a bit over the years, they're probly the most unique looking lightbulb for such common low coast availability, great job, keep it up-

dohiyi
rob =][=

[view all 181 comments](#)