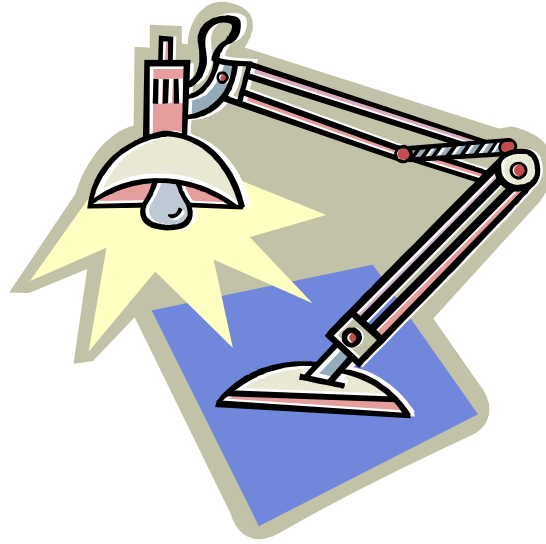


How to Build a Desk Lamp and Lamp Position to Enhance Your Study Area



by

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Introduction

This guide was created specifically for 4-H members who want to learn how to build a desk lamp and create the proper lighting atmosphere for their daily tasks. It is written based under the assumption that users of this guide will already be familiar with the basic knowledge of hand tools and lighting. It is recommended that this guide be used for the age of 13 to 18 with adult supervision.












Building a Desk Lamp

Tools

- Drill and 3/8 drill fit
- Sharp utility knife
- Flat-head screwdriver
- Safety glasses
- Hacksaw

Materials

- Lamp base (something heavy that will keep the lamp balanced and secure on your desk; preferably a piece of wood or heavy metal)
- Lamp kit (lamp cord with plug attached, lamp socket, neck, tension harp)
- Lamp rod
- Nut and bolt to fit lamp rod
- Lampshade

 <p>Lamp cord with plug</p>	 <p>Assembled socket</p>	 <p>Neck</p>
 <p>Harp</p>	 <p>Harp bottom</p>	 <p>Sleeve</p>
 <p>Socket interior</p>	 <p>Socket cap</p>	 <p>Finial</p>
 <p>Socket shell</p>	 <p>Locknut</p>	

Assembly

Note: A standard lamp kit will contain a harp, cord set, switched socket, finial and hardware. Before beginning, make sure you have all of these items in your kit. They are pictured on the previous page.

SAFETY ALERT: Put your safety glasses on now.

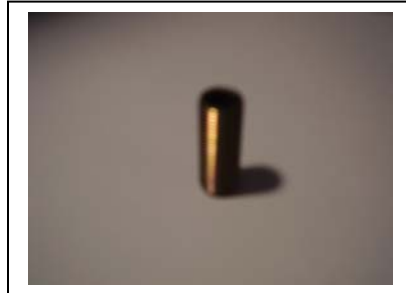
1. Drill a hole through the center of the lamp base to make room for the lamp rod and cord. Use a 3/8-inch drill bit that is appropriate for the base material. Ask an adult for help!
2. Measure the lamp rod so that it will extend about 1/2 inch above the lamp base and mark it. Use the hacksaw to cut the lamp rod at the mark.
3. Slide the lamp rod through the hole in the lamp base, holding it in place at the bottom with a washer and nut. Countersink the washer and nut to make the base flat. If you cannot countersink the washer and nut, add feet to your lamp base.
4. Screw the locknut onto the lamp rod.



5. Take the neck and hold it with the largest end down. Screw the neck onto the lamp rod about half way.



6. Screw the sleeve into the neck so that half of it sticks out.



7. Thread the lamp cord through the lamp rod from the bottom of the lamp base at least 3 inches above the top of the sleeve. Make sure the plug end of the cord extends from the bottom of the base.



8. Slide the harp bottom onto the sleeve.

9. Thread the socket cap onto the sleeve and tighten it.



10. The cord is made up of two wires.

- Pull them about 2 inches apart.
- Now use a sharp knife or wire stripper to remove about $\frac{1}{2}$ inch of the insulation from each wire. Make sure not to cut into the wire.
- Ask for help if you need it.

11. Tie an underwriter's knot in the end of the cord to prevent it from being pulled back through the lamp rod.

- Hold the lamp cord so it forms a Y. Following the shape of the Y, make a loop of each end of the wire, holding the end of one loop in front of the joined cord and end the other loop at the back of the joined cord.
- Now slip each end through the loop formed by the opposing wire and tighten the knot.
- Next pull on the plug end of the lamp cord at the base of the lamp so that the knot fits against the socket cap.



12. Follow the manufacturer's instruction to find the hot and neutral wire. **(The neutral wire often has ribbing on it.)**

- Connect the neutral wire to the silver screw on the socket.
- Next connect the hot wire to the gold screw.
- Make sure all of the wires are under the screw heads, then tighten the terminal screws with a screwdriver.



STOP: YOUR 4-H LEADER MUST CHECK THE PREVIOUS STEPS BEFORE YOU CONTINUE

SAFETY ALERT

Have your 4-H leader check the insulating sleeve of the socket top. The sleeve must be in proper position to prevent shock.

13. Place the socket shell with insulating sleeve over the lamp socket. Pull the cord back into the lamp and snap the socket shell on the cap. Listen for clicks to be sure the shell is locked in place.



14. Raise the sleeves on the harp and gently squeeze the harp together. Insert the bottoms of the harp into the harp bottom. Now lower the sleeves to secure the harp in position.



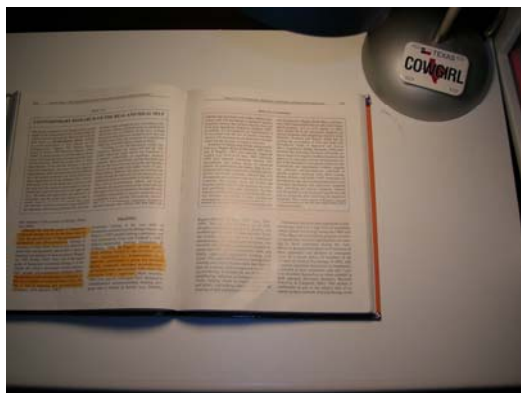
15. Add a shade to complete your new lamp and secure with the finial.



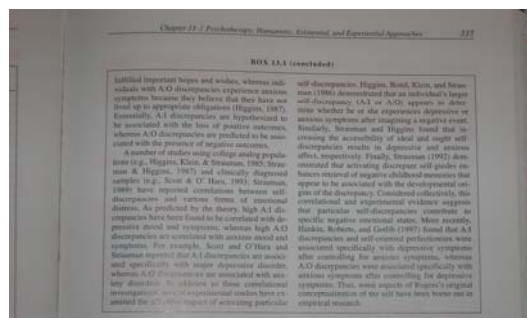
SAFETY INSTRUCTIONS: This lamp has a polarized plug (one blade is wider than the other). As a safety feature, the plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to change the outlet. Never use with an extension cord unless the plug can be fully inserted. Do not attempt to defeat this **SAFETY FEATURE**.

Creating The Perfect Study Area

1. First, properly set your desk in relationship to a window in your room. Your desk you be set at a 90° angle to your window.
 - This prevents the sun from getting in your eyes, creating contrasts and shadows on your work and creating glare on your computer screen.
2. Next, to prevent glare you should make sure your desk is not directly below your ceiling light or lamp as this could also create glare.

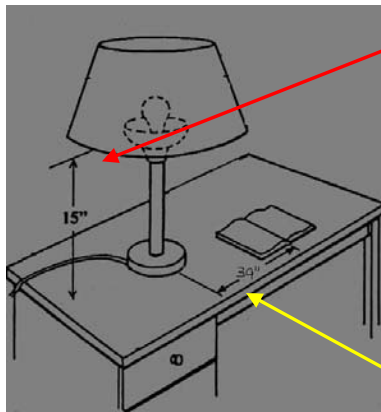


Glare produced from the light placed directly above the reading material.



Less glare is produced when the lamp is near the reading material but the light is directed to the side of the book.

3. The next step that you must concern yourself with is the placement of your lamp on your desk.



- Choose an adjustable desk lamp that provided light to your working area at a maximum height of 15 inches.
- Choose a desk lamp that has a long enough arm and flexible enough to shine where you need it.

4. Position the desk lamp no more than 39 inches from the item that is being lit.

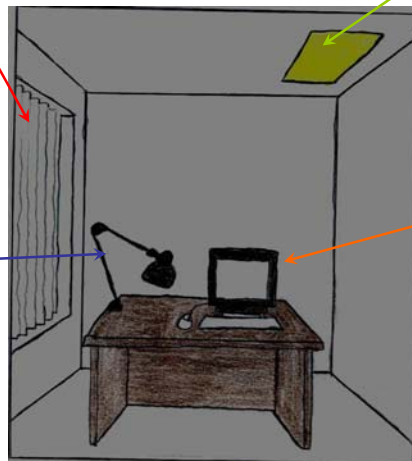
5. Also, the lamp should be positioned so that your hands will not produce a shadow across your work.

- Right handed: Place light source on left hand side of desk
- Left handed: Place light source on right hand side of desk.

This picture demonstrates how the room and desk should be set up to ensure the perfect study environment.

Blinds provide a way to block sunlight from getting in your eyes while you work.

Lamp should not shine directly on your computer screen or your paper work in order to avoid glare.



Overhead lights should not be directly above the work area.

The computer should be placed at a 90 degree angle to the window to avoid glare from sunlight.

6. The next step is to choosing the proper bulb.
- Find out information on the type of bulb that will be used in your lamp along with the wattage that will provide the best illumination.
 - Choose a bulb that illuminates very closely to natural lighting.
 - Choose a bulb that is efficient enough for your work area. Look at Table 1 for reference.

Table 1

Bulb Type	Efficiency	Price
Incandescent, Halogen	7%	\$1–6
Fluorescent	20%	\$14–22
Sodium Vapor	40%	\$10–30

Why Light Bulbs Consistently Burn Out

The following instructions will help figure out why a consistent light bulb keeps burning out. The instruction is more of a checklist to figure out what the problem is since there are multiple problems that can cause the bulb to burn out. The most typical light bulb life expectancy is 900 hours of use or ten hours a day for three months. The package the light bulb comes in will give an approximate expectancy of the particular light bulb.

Problem	Solution
Overvoltage in the house, resulting in overvoltage in the individual outlets.	Purchase a multimeter at the nearest electronic store and test the voltage coming out of the supplying source. <ul style="list-style-type: none"> ○ If the voltage is 125V or higher, contact the power company for their advice. ○ Also, a 125V or 130V bulb can be bought to be used instead.
High-wattage bulbs keep burning out in tight, enclosed fixtures.	Purchase a larger lighting fixture that will reduce the light bulbs heat accumulation. <ul style="list-style-type: none"> ○ A smaller in size bulb may solve the problem as well.
Vibration is causing the bulb to blow out.	Relocate lamp from what ever could cause vibrations to the bulb. For example, a light placed near a slamming door is not an appropriate location.



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