

15 October 2020 – Kentucky 4-H Virtual Experience – Wiring a Lamp Socket

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00:00:34.530 --> 00:00:44.520

Torey Earle: Hi everybody, welcome to the Kentucky 4-H Virtual Experience. Today we're going to concentrate on SET, or Science, Engineering and Technology programs.

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00:00:45.330 --> 00:00:55.740

Torey Earle: My name is Torey Earle and I am an Extension Specialist for 4-H Youth Development with University of Kentucky College of Agriculture, Food and environment Cooperative Extension Service.

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00:01:10.050 --> 00:01:26.790

Torey Earle: Today is virtual experience focuses on something that is not necessarily related to an Electric Excitement curriculum book but it's related to one of our more popular State Fair projects, which is the original design either floor or table lamp.

4

00:01:28.410 --> 00:01:35.580

Torey Earle: One of the big things our judges find each year is improper wiring in the lamp socket itself.

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00:01:36.750 --> 00:01:53.430

Torey Earle: Today we're going to look at how to properly wire the lamp socket and that's going to include how to properly tie the stress relief not or the Underwriters knot in your lamp socket itself to keep the wires from having stress or being pulled out.

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00:01:55.080 --> 00:02:07.860

Torey Earle: In properly wiring your lamp socket, you're going to have a safe and very stable and functional table or floor lamp.

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00:02:09.480 --> 00:02:23.070

Torey Earle: Now as you would do this again. Always make sure before you work on anything related to an electrical project that you make sure that it is disconnected from the power source.

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00:02:24.720 --> 00:02:28.440

Torey Earle: Now let's get started. Wiring our lamp socket.

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00:02:30.120 --> 00:02:35.460

Torey Earle: The tools and materials that you'll want to have on hand to learn about installing

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00:02:36.510 --> 00:02:47.130

Torey Earle: And wiring the lamp socket correctly or first of all a lamp socket. Now, these can be readily found at a local hardware store, or you can order them online.

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00:02:49.410 --> 00:03:01.260

Torey Earle: You'll want to have some lamp cord. Now this that I have is a 16 gauge by two lamp cord or 16 - 2

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00:03:03.600 --> 00:03:05.940

Torey Earle: You'll want to have a screwdriver

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00:03:07.470 --> 00:03:08.790

Torey Earle: A pair wire strippers.

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00:03:10.950 --> 00:03:18.750

Torey Earle: A knife or other sharp tool to split the wire, the lamp cord wire so you can pull it apart.

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00:03:20.250 --> 00:03:23.160

Torey Earle: And you may also want to have a pair of needle nose pliers

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00:03:25.950 --> 00:03:37.290

Torey Earle: In getting these supplies ready, make sure that you have everything you need before you start. So, that way you don't have to stop in the middle and go get something else.

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00:03:45.030 --> 00:04:03.030

Torey Earle: One of the more important things and properly wiring a lamp socket is to make sure that you have strain relief on your cord. That means if the cord gets pull it does not pull the connection away from the lamp socket itself.

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00:04:04.350 --> 00:04:08.670

Torey Earle: The proper way to do that is to tie an Underwriters knot

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00:04:10.140 --> 00:04:16.260

Torey Earle: Underwriters knot is not a complex, not the tie, but it does take a little practice.

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00:04:18.240 --> 00:04:20.520

Torey Earle: What you will do is you will take

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00:04:21.780 --> 00:04:24.660

Torey Earle: Your lamp cord which is split

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00:04:26.580 --> 00:04:31.590

Torey Earle: Take the right-hand side and form a loop.

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00:04:32.910 --> 00:04:37.770

Torey Earle: Behind the left-hand side and bring it up.

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00:04:39.750 --> 00:04:40.200

Torey Earle: So,

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00:04:41.790 --> 00:04:50.160

Torey Earle: Then they'll take the left-hand side, come over the right-hand side and back through

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00:04:51.240 --> 00:04:51.930

Torey Earle: The loop.

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00:04:55.410 --> 00:04:56.730

Torey Earle: On the right-hand side.

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00:04:58.260 --> 00:04:58.860

Torey Earle: Then

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00:05:00.360 --> 00:05:05.370

Torey Earle: Pull it like so. And that gives you a strain relief not

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00:05:07.590 --> 00:05:11.490

Torey Earle: That will not pull back down through the base of your lamp socket.

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00:05:13.560 --> 00:05:15.390

Torey Earle: When we start wiring.

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00:05:16.560 --> 00:05:23.970

Torey Earle: Our lamp cord to the socket itself we'll tie this knot again and I'll show you how it works for strain relief.

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00:05:25.980 --> 00:05:29.220

Torey Earle: In order to properly wire your lamp socket.

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00:05:30.660 --> 00:05:38.040

Torey Earle: One of the things you're going to have to do is make sure that you have a lamp socket and let's look at the structure of that to begin with.

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00:05:39.540 --> 00:05:42.750

Torey Earle: This is the base that the lamp socket will snap into

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00:05:43.800 --> 00:05:53.550

Torey Earle: Your lamp cord will come up through the bottom of it into this area and then be wired directly to the switch itself.

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00:05:55.440 --> 00:05:59.700

Torey Earle: This is a protective covering around the lamp socket itself.

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00:06:01.530 --> 00:06:06.300

Torey Earle: And we can take our switch out of that and let's take a close look at our switch

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00:06:07.380 --> 00:06:19.410

Torey Earle: You'll notice that it's got two screws on it. It has one silver screw and one gold or brass colored screw the brass colored screw is for the hot wire.

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00:06:20.370 --> 00:06:33.570

Torey Earle: And it connects directly to the tab that is in the bottom of the switch itself. If you look at a light bulb, it will have a small button on the bottom of it. And that's what will touch this tab.

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00:06:35.190 --> 00:06:44.820

Torey Earle: The silver screw connects to the metal casing that the light bulb screws down into this is our return

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00:06:46.380 --> 00:07:04.530

Torey Earle: And it will take the electricity that flows through the brass screw into this tab flows through the bulb and returns back through this metal casing and the silver screw back to our ground.

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00:07:07.350 --> 00:07:07.830

Torey Earle: Now,

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00:07:10.050 --> 00:07:23.340

Torey Earle: In order to properly wire this, you're going to have to make sure that the hot wire or the inlet wire connects to the brass crew.

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00:07:24.480 --> 00:07:31.500

Torey Earle: And they return wire, or the neutral wire connects to the silver screw.

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00:07:33.180 --> 00:07:43.920

Torey Earle: I have a way that I go about doing that. And this is a small piece of 16 – 2 lamp cord.

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00:07:46.590 --> 00:07:51.780

Torey Earle: And I don't know if you can see it in the video or not, but one side

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00:07:52.950 --> 00:07:58.860

Torey Earle: Of the cord has ridges on it and the other side is smooth.

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00:08:01.980 --> 00:08:04.680

Torey Earle: The smooth side also has

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00:08:06.450 --> 00:08:08.850

Torey Earle: Printing embedded in it.

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00:08:10.650 --> 00:08:11.760

Torey Earle: What I like to do

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00:08:13.170 --> 00:08:21.900

Torey Earle: Is make sure that I pay close attention to which side I wire to my lamp socket.

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00:08:24.330 --> 00:08:28.320

Torey Earle: I will usually wire the side with the printing to

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00:08:29.910 --> 00:08:41.580

Torey Earle: The hot side or the brass screw and that will be really important for our next segment, which will be putting a plug on the end of our lamp cord.

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00:08:44.160 --> 00:08:54.750

Torey Earle: I usually or will commonly wire the side that has the ridges on it to my negative are my return screw or neutral screwed.

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00:08:58.530 --> 00:09:03.870

Torey Earle: To start doing this, you're probably going to want to get your parents help

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00:09:04.890 --> 00:09:06.630

Torey Earle: Because I'm going to take

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00:09:08.040 --> 00:09:17.340

Torey Earle: A sharp object, a knife and I'm going to start by very carefully splitting the end of the lamp cord.

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00:09:18.870 --> 00:09:20.880

Torey Earle: In order to separate the two wires.

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00:09:21.960 --> 00:09:25.200

Torey Earle: Once you split it. You can pull it apart.

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00:09:26.370 --> 00:09:31.050

Torey Earle: And you will have two separate wires to work with. As we talked about earlier.

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00:09:32.250 --> 00:09:36.930

Torey Earle: To get strain relief to keep the wires from being pulled

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00:09:38.010 --> 00:09:41.160

Torey Earle: You're going to tie you and Underwriters knot

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00:09:42.840 --> 00:09:56.640

Torey Earle: First thing you will do to run your wires up through the lamp socket base and this will usually be attached to a riser that runs through your lamp itself.

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00:09:59.070 --> 00:10:03.810

Torey Earle: And then our Underwriters knot you remember we do a loop.

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00:10:07.350 --> 00:10:08.310

Torey Earle: Behind

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00:10:14.610 --> 00:10:18.480

Torey Earle: Take the right wire loop it behind the left wire.

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00:10:20.280 --> 00:10:24.570

Torey Earle: Take the left wire, bring it around the right wire.

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00:10:25.950 --> 00:10:33.810

Torey Earle: And through, or excuse me around the left wire and through the loop in the right wire and pull tight.

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00:10:39.000 --> 00:10:50.220

Torey Earle: As I pull this down, you'll be able to see that this does not allow the wires to pull down and give some strain relief on

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00:10:51.240 --> 00:10:53.460

Torey Earle: The wires that are going to the lab socket itself.

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00:10:57.540 --> 00:10:58.830

Torey Earle: What I want to do now.

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00:10:59.880 --> 00:11:02.970

Torey Earle: Is I want to trim these wires to the same length.

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00:11:08.370 --> 00:11:12.870

Torey Earle: So, I can then attach them to my screws on my lamp socket.

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00:11:15.600 --> 00:11:16.770

Torey Earle: pulleys tight.

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00:11:18.330 --> 00:11:19.290

Torey Earle: Making sure

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00:11:21.210 --> 00:11:26.760

Torey Earle: That everything is snug down in my base.

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00:11:29.100 --> 00:11:37.920

Torey Earle: As I said, this is a 16-gauge wire. I'm going to look at my wire strippers and I'm going to go to

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00:11:40.620 --> 00:11:42.270

Torey Earle: The 16 gauge

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00:11:44.340 --> 00:11:45.390

Torey Earle: Stripping feature.

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00:11:50.070 --> 00:11:54.270

Torey Earle: I'm going to clamp on the wire. Do a couple of turns.

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00:11:55.560 --> 00:11:57.030

Torey Earle: And pull the installation off.

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00:11:59.280 --> 00:12:10.290

Torey Earle: I've got about an inch worth of wire here and on lamp cord, this is stranded wire. So you'll want to twist it so it doesn't fray.

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00:12:13.350 --> 00:12:23.310

Torey Earle: Now some prefabricated lamp cords will have this wire with a little bit of solder on it and that's called tinning the wire.

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00:12:24.540 --> 00:12:29.820

Torey Earle: So it won't fray that it's been twisted and then it's been tinned so it won't fray

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00:12:31.740 --> 00:12:37.080

Torey Earle: We haven't tinned this wire. So we're just going to twist it and make sure that it doesn't fray out

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00:12:38.370 --> 00:12:41.910

Torey Earle: We're going to do the same thing with our other wire.

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00:12:43.110 --> 00:12:46.050

Torey Earle: Leave about an inch, three quarters of an inch to an inch

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00:12:47.550 --> 00:12:48.840

Torey Earle: Do a couple of turns.

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00:12:51.090 --> 00:12:57.540

Torey Earle: And then strip our installation off the wire and then twisted so it does not fray out.

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00:12:59.580 --> 00:13:05.790

Torey Earle: Now, look at my wire. This is the one. This is the side of the wire that has the printing on it.

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00:13:07.050 --> 00:13:08.040

Torey Earle: So I will make

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00:13:09.450 --> 00:13:13.080

Torey Earle: A small loop in it like that.

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00:13:15.600 --> 00:13:17.070

Torey Earle: Going to take my screwdriver

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00:13:18.180 --> 00:13:19.530

Torey Earle: I'm going to loosen

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00:13:21.840 --> 00:13:23.490

Torey Earle: The gold colored screw.

97

00:13:25.860 --> 00:13:31.020

Torey Earle: And then I'm going to loop that wire around that gold colored screw.

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00:13:33.090 --> 00:13:36.150

Torey Earle: In the direction that the screw will tighten

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00:13:37.410 --> 00:13:41.160

Torey Earle: Because that way when I tighten the screw down

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00:13:48.030 --> 00:13:58.530

Torey Earle: It pulls the wire underneath the screw instead of pushing it out, which would happen if I put it, opposite the way the wire or the screw tightened.

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00:14:02.280 --> 00:14:05.700

Torey Earle: Going to make another loop in my neutral wire.

102

00:14:09.090 --> 00:14:09.840

Torey Earle: Loosen

103

00:14:11.520 --> 00:14:12.540

Torey Earle: The neutral screw.

104

00:14:16.020 --> 00:14:17.040

Torey Earle: Put it around.

105

00:14:18.120 --> 00:14:20.730

Torey Earle: The direction the screw tightens.

106

00:14:23.160 --> 00:14:24.840

Torey Earle: And tighten it down.

107

00:14:26.220 --> 00:14:26.820

Torey Earle: Now,

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00:14:29.820 --> 00:14:30.360

Torey Earle: I have

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00:14:31.650 --> 00:14:32.430

Torey Earle: My neutral.

110

00:14:33.930 --> 00:14:35.010

Torey Earle: My hot wire.

111

00:14:36.210 --> 00:14:37.410

Torey Earle: My Underwriters knot

112

00:14:40.110 --> 00:14:40.860

Torey Earle: I will then

113

00:14:44.310 --> 00:14:46.590

Torey Earle: Slide the protective cap over the switch.

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00:14:47.760 --> 00:14:48.390

Torey Earle: And

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00:14:50.880 --> 00:14:51.600

Torey Earle: Snap.

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00:14:53.400 --> 00:14:56.190

Torey Earle: My base in place which the base will be on

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00:14:58.380 --> 00:15:00.480

Torey Earle: A riser are coming up through the center of your lamp.

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00:15:02.640 --> 00:15:05.490

Torey Earle: Want to make sure that you get it on nice and snug.

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00:15:08.940 --> 00:15:10.170

Torey Earle: And that

120

00:15:11.550 --> 00:15:13.890

Torey Earle: Is a properly wired lamp socket.

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00:15:16.980 --> 00:15:27.030

Torey Earle: Now that we have a properly wired lamp socket. In our next session will look at how to install the plug on the other end of our lamp cord.

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00:15:28.110 --> 00:15:41.280

Torey Earle: In addition to that, we will also look at how to install a plug on a little heavier duty cord as well. So, I hope you've enjoyed today and look forward to working with you next time on installing a plug.

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00:15:43.140 --> 00:16:01.410

Torey Earle: Thank you for joining me today for the Kentucky 4-H virtual experience focused on Science, Engineering and Technology. For more information about the 4-H program, please check out your local University of Kentucky Cooperative Extension Service.