

00;00;15;20 – 00;00;44;26

Unknown

Greetings. I'm Dr. Debelle Williams, professional development director for Engage and Creative Minds, a nonprofit organization out of Charleston, South Carolina, where we bring arts integrated tools into classrooms all over South Carolina. Today we have three amazing lessons for you. You're going to hear from one of our very own teaching artists, Kristi Bishop, as she shares with you the process of Indigo.

00;00;45;10 – 00;01;13;26

Unknown

Indigo is a huge product that, of course, we made very, very famous here in South Carolina. And you've seen it all over our state. I'm wearing denim jeans right now as a process of indigo. So you're going to see that as well as how to make paint naturally. So stay tuned as we hear from Kristi Bishop as she share with you how you can implement this lesson in your pre-K through 12th grade classrooms.

00;01;15;02 – 00;01;37;03

Unknown

Hi, I'm Kristi Bishop. I'm a fiber artist from Charleston, South Carolina. And I'm going to be teaching you guys about Indigo today, which has a history here in South Carolina. Indigo is a blue dye that is famous around the world because up until the late 1800s was the only way to get blue for fabric and for any textile, for that matter, yarn, everything.

00;01;37;26 – 00;01;59;06

Unknown

Now, Indigo comes from the indigo plant. There are many different plants around the world. The one that was used or grown in South Carolina was Indigo, Ferrous, the fruit of Kosa, which is this dark, dark blue powder. It's very hard to say because it's very dark. Now, Indigo, that was grown in South Carolina, is native to Central and South America.

00;01;59;21 – 00;02;23;08

Unknown

And the history behind it is it was a cash crop in the 1700s from about 1740 to the 1790s. Indigo had already been growing in the Caribbean for about 50 years prior to it being cultivated in South Carolina. And the family that was very familiar with it were the Pinckney's allies. And Lucas Pinckney is the most famous name that is associated with Indigo.

00;02;23;17 – 00;02;48;14

Unknown

And that's because she was from a very prominent family, the Pinckney Eliza Eliza Lucas Pinckney was of the aristocratic planter class in

South Carolina, and her father was the governor of Barbados. So down in the Caribbean, they had seen the French and Spanish colonies had already been growing lots of indigo and making a huge profit from it, mostly from enslaved labor of natives and Africans down there, which would soon come to South Carolina as well.

00;02;49;10 – 00;03;17;16

Unknown

So at the age of 16, her father sent her to Charleston and she went to her plantation and along with two chemists and several of her enslaved Africans that had experience with Indigo, they cultivated and figured out which plant grew best, which was the fruit of Kosa and how to take the leaves. Pretty much harvest them and add them to water and beat them until the dye eventually came out of the plant.

00;03;17;28 – 00;03;45;15

Unknown

Out of the leaf, which yields this dark, dark blue powder. It is so dark, super blue. Now, indigo has it's kind of a wild card dye regular plant dyes or an animal based ones, almost all of them that are your oranges, yellows, reds, all that pretty much are like tea dyes. All you have to do is put them in either directly in water or make a sachet or tea bag out of them.

00;03;45;27 – 00;04;11;16

Unknown

All you have to do is heat them up so they are hot extraction dye. Indigo, on the other hand, is again a completely different because it is not water soluble in this powder form. That's kind of the problem that cultures all over the world throughout history have figured out how to solve in different ways. There's different recipes. Today I'll be showing the hydrous vat, which is a very stable, very common vat, and it's pretty simple to make.

00;04;12;07 – 00;04;40;01

Unknown

So we'll be using hydrous right here. I'll be wearing a mask when I open this up. Soda ash, which is an alkaline and then the Indigo powder. And I'm going to move this so I can see. So every indigo that essentially requires three ingredients you need the indigo itself, the dye powder. You need an alkaline, which is I'm using soda ash and you need a reducing agents.

00;04;40;01 – 00;05;01;25

Unknown

I'm using hydros today. Different vats have different ingredients. Some some are like fructose based. You can use actual rotten fruit in a vat for your reducing agent. There's all sorts of ways, but this is just the one we're doing today. And this is a 1 to 3 VAT, which means one part indigo, two parts soda, ash, my alkaline, three parts

hydrates.

00;05;02;09 - 00;05;47;24

Unknown

And I am measuring in grams on my scale. So first I'm going to be doing 20 grams of indigo. That's about tablespoons, about 916, almost a 20. Okay, so 20 grams. So my next step is only to wet the indigo and I'm going to be using this big mason jar. So I'm going to literally just dump the indigo in and want warm water.

00;05;47;24 - 00;06;26;26

Unknown

Water, especially for the soda ash and the fire or hydro. You want to make sure it's warm enough to dissolve it. Indigo, of course, will not dissolve. So I'm just going to stir, make sure all of that dye is thoroughly wetted. Now, I can set that aside. Next is my soda ash. All right, I'll be doing 40 grams, and this is my alkaline.

00;06;26;26 - 00;07;11;11

Unknown

All indigo that have to be alkaline like. Like a base, the opposite of an acid. And indigo that is really happy when it's at around 11, 11 and a half. And I've got way too much just now. Okay. All right. That should be good. All right, so now I'm going to dissolve the soda ash. I usually do about 200 milliliters, maybe three, just so that it's enough to dissolve it.

00;07;11;11 - 00;07;34;24

Unknown

And I don't want to put too much in here and run out of space in my indigo jar as I'm filling it. And the order of this is very important. You want to make sure you do the soda ash first, the hydrous loss you do in the wrong order. Weird things. Weird things can happen. All right. Going in.

00;07;35;21 - 00;08;32;21

Unknown

Last but not least, my hydrous and for the hydrous. You don't want to read this. Then I am going to wear a mask and it smells very strange. So that's another reason to wear a mask. All right. And this I'll be doing 60 grams. Perfect, which will go about what goes back on. And again, I'm going to dissolve it first.

00;08;32;21 - 00;08;57;00

Unknown

I can only see I've got blue all over my hands. Any time you're working with Indigo, make sure smart to wear dark clothes or something blue because it is permanent. I get a lot of questions from students and classrooms. Is it going to stain? Is it permanent? And yes, it absolutely is making it such a good dye. All right.

00;08;57;05 - 00;09;27;20

Unknown

And now we're going to go into the indigo. So what these are doing is they are working together to make the indigo water soluble so it can indigo has to dissolve in water. How it's going to dissolve in water is we have to do something called reduction. We have to take away the oxygen. And I can take the mask off so we can we need to take away Indigo.

00;09;27;20 - 00;09;55;10

Unknown

The reason it's not water soluble at this stage is because in its molecule chain like water is H₂O, hydrogen, oxygen, indigo is hydrogen, hydrogen, nitrogen and oxygen. And the oxygen is what prevents it from dissolving like any other D1. So the soda ash is made in alkaline, which all indigo needs to be an alkaline vat, and the hydrogen is what's taking away that oxygen from the indigo.

00;09;55;10 - 00;10;18;21

Unknown

So in the stage this will take maybe an hour or a couple of hours, but it isn't to go from a blue liquid to an actual green liquid, and I'll show you a vat that I did yesterday that is fully reduced, meaning there's no oxygen in this liquid. You can see the difference. So still has oxygen in the indigo.

00;10;19;03 - 00;10;48;20

Unknown

This is fully reduced. This is called Luca Indigo, Ali Al EU CEO. It's Green Indigo. It's ready to die. It's very happy. It's very, very strong. And this is a concentrated VAT. You can see they go in, it's literally going to look neon green, which is pretty magical. I think this is why people are so enthralled with indigo.

00;10;48;20 - 00;11;11;16

Unknown

It changes before your eyes like magic. So this as it comes out when when the fabric was in there, it's pretty much making a very weak bond with the Indigo. But as I take the fabric out and this is just cotton, the as it comes out, the fabric, the oxygen in the air is actually reacting and reattaching itself to the indigo molecule and going back to blue.

00;11;12;04 - 00;11;34;17

Unknown

And this is called oxidation. So in order to get really rich, deep shades of blue, you have to get your fabric dip in the indigo, take it out. If it's a small piece like 30 seconds, if it's a large piece, several minutes is best. But when you take it out, you need to make

sure it fully oxidizes. That means turns blue like completely blue.

00;11;35;12 - 00;11;59;13

Unknown

Sometimes you can even dip it in water to help it oxidize a little faster because of the oxygen and water. Now when you're done dyeing fabric and indigo, since this is such an alkaline bath, you need to neutralize the fabric when you're done, when you're done with everything. So the very end of your dyeing session and that means just dipping this in like a vinegar water bath, not a lot of vinegar, but that will help neutralize the fabric.

00;11;59;13 - 00;12;20;04

Unknown

And you can see it is slowly going from that lime green. Now it's a little darker. This will eventually be blue like a light blue. If I want darker shades, I let it fully oxidize and then I dip it back into dye. So this is you build layers and layers of blue, so dip base, not time based other natural dyes.

00;12;20;04 - 00;12;47;29

Unknown

I would leave a piece in overnight if I wanted a really dark color indigo. That's not the case. That could wash out or fade quickly. You really have to do multiple dips and look at that. So pretty. It's already getting that nice dark blue. So I'm going to let that set now. We're going to go to my big vat, right?

00;12;52;20 - 00;13;24;21

Unknown

So once you've made a concentrate like the one I have here, the stock essentially is it cause stock stock that all I need to do to make a big vat is I can pour this into either already warm water or heat it up. So basically it needs to be 45 degrees Celsius to fully go back to reduce fat status that Luca Indigo so I would pour this in let it heat to 45 degrees Celsius and it's ready to go and you can see it's a little harder to see in the metal pot versus clear liquid.

00;13;24;21 - 00;13;50;12

Unknown

But you've got this copper still on top and then the indigo, the Luca green indigo underneath that's fully reduced. And this is what I'm going to be using to dye are patterned fabric. So when you're dealing with indigo, it's very, very important that your fabric is washed ahead of time. It has to be washed because brand new fabric from the store, even if it's like literally you got a giant fabrics and you got some white muslin.

00;13;50;26 - 00;14;08;27

Unknown

It has oils and waxes on the fabric that have to come out so you can wash it in machine or you can scour it. Scouring is when you heat it up, cook it in a pot with like detergent. So it really gets everything out. And the reason for that, if I have wax and oil on this fabric, the dye cannot penetrate the fiber.

00;14;08;27 - 00;14;32;18

Unknown

So it'll just roll off kind of like a raincoat. So make sure your fabrics washed. Also make sure you have natural fabrics. So cotton linen, silk wool has to be natural and you can always do a test. A burn test helps if you're unsure of a fabric. If it melts, it's going to be polyester, plastic, acrylic. If it ashes, it's probably cotton.

00;14;32;18 - 00;14;53;06

Unknown

And if it smells kind of stinky, like burning hair, it's probably silk or wool. So that's the burn test to test out your fabric. Or you can just if you've got mystery fabric, just go for it. So I'm going to show three different folds and they're all with these block shapes used as a resist. And this is called different things around the world here.

00;14;53;06 - 00;15;10;21

Unknown

We call it tie dye and Japan, the court shrubbery, which means tie dye, West Africa. And it's also a dowry, which means tie dye. So we all call it in our own language different ways, but they all pretty much mean tie dye. And we're going to be using these shapes as resist to create our repeat patterns on fabric for samples.

00;15;10;21 - 00;15;28;16

Unknown

I like to start out with a 12 by 12 fabric because it's really nice and symmetrical to fold, and I'm going to go with a radial pattern first. That means I need to pay attention to the middle of my fabric so I'll be folding triangles. So in half on the bias corner to corner, let's make sure that was not a nice fold.

00;15;28;16 - 00;15;47;16

Unknown

Make sure my sides are parallel and then corner to corner again, corner to corner again. So I've got a nice triangle. I could do it one more time if I wanted, but I'm just going to leave it this way. You don't want to go super, teeny, tiny like this is not going to work out. It's too small, it's too thick.

00;15;47;25 - 00;16;12;20

Unknown

Indigo only dyes what it's in contact with. So it's going to tie the

edges. What you see, but not all the middle layers as much unless you give it time. So now I'm going to pick my shapes. I'm going to do these squares in a pretty messy to make a sandwich like because like my ham and lettuce, it's my bread and depending on which way you want, you place these and how you place fabric, you are going to get a different design.

00;16;12;20 - 00;16;41;25

Unknown

So I'm going to I want my points to kind of go towards the center and I need to make sure they're lined up parallel. Right. So I've got my piece ready can either use hand clamps these are they're easier for adults to for kids are kind of difficult because they're not it's hard to open these for little hands or C clamps are great these are like my best friend because they open wide are super strong I love them.

00;16;41;25 - 00;17;01;22

Unknown

I'm going to get my go ahead and clamp and clamp as many spaces as you want. There's little if you clamp just in the right here. Right. Like this, this one side, this side is going to have the most contrast. This side, the dye will get through. So everything that's sticking out is going to get dyed blue. Everything in between the wood is going to stay white.

00;17;02;22 - 00;17;43;29

Unknown

And I'm going to do two and two. So next I need to make sure I get the sweat and dip it in my water bucket and then I'm just going to drop it in. So I'm going slow when you die and Indigo, we're going to go back to that oxygen talk I was talking about earlier. You want to be as still and calm as possible in the that do not stir don't jostle it don't create waves that's not going to help die at all.

00;17;44;09 - 00;18;02;18

Unknown

You want to keep it still because when it's still, there's no oxygen getting in. If you're splashing and making a mess, oxygen is going to get into the vat and that is going to weaken it over time. So especially if you're working in a group setting, very like conscious of keeping the VAT still, we don't want indigo or oxygen getting in here.

00;18;03;13 - 00;18;23;10

Unknown

Also, you always want drip buckets. So I've got my drip bucket right here. When I take this out, I'm going to literally come to the edge close to my bucket or my bowl, and I'm going to drip on the edge because all those little water droplets all have surface area that's in contact with oxygen. And I don't want those oxygenated droplets

getting in here.

00;18;23;16 - 00;18;45;00

Unknown

Again, that's especially important in a group setting. When everyone's using the VAT, you'll keep that oxygenated indigo and this our fresh reduced vat here, nice and beautiful. Still great to use at the end of a dyeing session. I can pour this back in here, add my hydrous and my soda ash and re reduce it so I'm not actually wasting or losing any indigo.

00;18;46;20 - 00;19;24;09

Unknown

So let's go and take this out and we'll let it oxidize while I show you another fold. So I'm coming out slow and I'm going to quickly drip on the edge on the bowl. You can see it's super, super green right now. Really nice. And I'm just going to let that oxidize where it. Oh, all right. So that's just going to sit right there.

00;19;24;09 - 00;19;52;29

Unknown

We can already see this is getting more blue just from those droplets. So our next fold, this is going to be an accordion fold or fan fold. Pretty simple. And I'm going to use these sticks to create a Chevron design so you can really make pretty interesting, complex patterns, but with very simple basic folds. And there's no wrong way to fold.

00;19;52;29 - 00;20;16;17

Unknown

You can make up folds if you like, but these are kind of the basic ones that I like to work off of. So I'm going forward and back. So right now, if I were to place my blocks like that, I would have repeated bars. This way I would just have a stripe going across and this way I would have because it's going to reflect on the the folds my Chevron zigzag.

00;20;16;29 - 00;20;38;06

Unknown

Now, if I want more than one set of this fold and half, I can get two if I want it three sets, fold it into thirds right. So again, kind of do it in an accordion like that. We're going to go we're going to do two. So how many times you fold is how many different shapes you'll get.

00;20;38;22 - 00;21;11;15

Unknown

So again, I want to make sure I'm going at an angle clamp. Let's do one on each side. So it's an even pressure. I want to get my fabric. What we're going to go back into that. And this one has fully oxidized almost it's really dark green. So that's looking really good. It's

dark enough that it can go back in the vat.

00;21;11;15 - 00;21;39;07

Unknown

But you can see the big difference between here's a fabric that's had exposure to oxygen while this has been in between the folds. And this is going to slowly change as well. So I might even let that sit out a little longer, just for some better oxygen oxidation. All right. And our third fold is an accordion, but more of a tiled out grid style.

00;21;39;07 - 00;22;32;15

Unknown

So I'm going to do this little wider this time. I want to have thirds. So just accordion three times pretty easy. And then I'm going to accordion down with squares. So once so pretty much I've created nine blocks and I'm actually going to see on the shape, use it again uniform. All right. We're going to go back on and clamp again.

00;22;32;15 - 00;23;00;05

Unknown

Now, is it the questions if indigo comes off your skin? Yes, it does. It washes off pretty good nails. It will stay in your nails for like a week. That is kind of unless I have nail polish, then that'll save the fingernails. All right. So don't get the sweat. Always get your fabric wet, because if you go on with dry fabric, it can turn out very blotchy because the dye is having to what the fabric at different rates.

00;23;01;04 - 00;23;48;24

Unknown

All right. And since that goes into a drip, we'll go ahead and unclamp at this one to see our pattern. So I've got my repeat shape. Both sides. And this is cotton gauze that I got from Joann Fabrics that's really soft and takes the dye really well. And I've got my Chevron pattern, which is really nice. And I can do you actually do a final rinse in between that it helps it again oxidize a little better, a little faster if you want to save time in between, you're doing a lot of dips.

00;23;49;10 - 00;24;05;27

Unknown

If I wanted say I wanted this darker, I could always go back re fold it and re clamp it and do everything over again. So you only need one clamp if you're done dyeing. So that was just a one dip pretty light. And you can see like this was my innermost folds, so got the least amount of dye contact.

00;24;06;27 - 00;24;36;22

Unknown

Now this guy and I go ahead unfold like I have some leftover dye from

another project on here. So this is my radial pattern, which that's really cool. So I made a star nice. Yes. I'm actually pleased with that. Nice. And that was with folding the triangles in between the set and using the center as my kind of my main vantage point.

00;24;38;16 – 00;25;16;19

Unknown

And I'll do a quick rinse and I'm going to do one more with a larger piece of fabric, like a very like a long piece. And when you're using cotton and linen, so plant based fabrics, it will always dry to shades lighter. So if you like that blue dye the color of blue it as well what I always dye at two more times so that I can get a really rich deep blue.

00;25;16;19 – 00;25;59;03

Unknown

All right this ought take this out a little oxidize. Well I'm pulled my other piece. Okay so this is a nice long one. This could be a scarf, something like that. So with this piece of fabric, you go automatically, will usually fold it in half, depending on the shape and the length. So I'm just trying to make it a manageable size and I want to do the repeat tile going down.

00;25;59;03 – 00;26;39;04

Unknown

So I'm going to fold in half and then tile down. So I'm again according accordion ing this like I did on that small square, very last one and I'm going to do the sticks so sometimes you can wipe them do that. So the old towel or old t shirts, it's a good way to recycle old stuff in your house right now.

00;26;39;04 – 00;27;11;02

Unknown

I'm going to again my sandwich. So one on the bottom, one on top. And since I folded this and half hour and a half long ways and then in half and down, this is probably going to be, I'm guessing, two Xs going across or maybe V's as it is Jabari and Tie-Dye. It's one of those kind of projects that the more you do sometimes, the more surprise you get.

00;27;11;02 – 00;28;25;26

Unknown

So I'm going to clamp down here. So the clamps, so go water, I'll shoot one more. I go. Okay. All right. So our client. What? The fabric. And then in the back we go. Okay, I'm going to open this one up. So I've got my shape, my repeated pattern, and I see a little bit of color. That's some residuals from other natural naturalize, and you'll get this tile best pattern.

00;28;25;26 – 00;28;56;19

Unknown

So this one did kind of like window panes. So that's nice, simple pattern to my friends. I oxidize and here I can really see the difference between mid oxidation and fully oxidized. So the tiles are very beautiful but they won't remain there. Always turn blue if you like. Having tiles and greens then you got to use a yellow dye beforehand.

00;28;57;07 - 00;29;32;29

Unknown

Kind of solution to that the three different ways. So tile radial and then accordion we'll get all these different designs. So let's check out our final, larger piece and I'm going to slowly take this out. Even when I'm in there, you can see I see sections that haven't gotten the dye. So I actually will fan out my folds and try to get it all in there so that I can kind of have time with each layer of fabric.

00;29;34;05 - 00;30;36;07

Unknown

The larger fabric is as well. Make sure you're going to want to add more time, like in and out. It's 30 seconds. Won't be enough for bigger pieces. So I'm coming out dripping. See, I'm super blue now. Okay, I'm gonna do a quick rinse. Hmm. Let's pretend it's a diamonds. It's not just one half open the whole thing up.

00;30;36;07 - 00;30;57;27

Unknown

All right, beautiful. So a nice tile. Repeat pattern of diamonds. I really like that. This could be a little early spring scarf. Not that we wear a lot of scarves here in Charleston, but. All right. And it's still oxidizing. And if I wanted it darker, I could always refill and go back in. But I really like this blue.

00;30;58;06 - 00;31;17;08

Unknown

It's going to drive to, like, a medium priced sky blue once it's fully oxidized and dried and at home. If I'm ready to wash this, I would do a wrench in the washing machine, just a rent cycle or just in the sink. Once all the dye has run out, then it's ready to go and the dryer can go in with any of your clothes.

00;31;17;08 - 00;31;35;10

Unknown

So this can be washed just like normal. As long as all the dye has been wrenched out ahead of time. Otherwise you will get blue on stuff. But this is a very stable dye. It's beautiful and it really won't fade that much, maybe over years. That's it, you know. But thank you so much. See you next time.