Grade 2
Unit: Material Magic
Mystery 1: “Why do we wear clothes?”

VIDEO TRANSCRIPT

EXPLORATION VIDEO 1

Hi, it's Doug! Imagine that you and your class are on a field trip together on a fishing boat out at sea. It's so much fun, nice and warm. You got your swimsuits on. You're going to go for a swim in the ocean. Suddenly, though, the boat runs into some rocks jutting out of the sea. They break a hole in the side of the boat, and the captain yells that the boat is sinking. You all have to grab life jackets and jump overboard. Splash. Now, luckily, there's a beautiful tropical island within swimming distance. So you all swim ashore. Everyone's OK. The captain of the ship says he was able to get through an emergency message sent back home before the ship sank, but help is at least a week away. That's when you start to think, oh no. Now what? You're just sitting there on this island with almost nothing. How are you going to survive for the next week? You're going to need some kind of shelter. You're going to need a place to sleep. You're going to need food. You're going to need fresh water. And most importantly, you look down and remember, oh my gosh, you're only wearing a swimsuit. Oh, it sure would have been nice to have some clothes with you. Or do you really need them? I mean, you know you're going to need food and shelter and water, but do you really need clothes? What's the point? You're somewhere nice and warm. It could be worse. At least you've got your swimsuit. That's when you get to thinking, are there any reasons you're going to wish you had the clothes with you on this island? And why

do we wear clothes anyway? I mean, is it just to keep warm or just to avoid being embarrassed? Why do people wear clothes? Have you ever thought about that? Stop and discuss what you think.

EXPLORATION VIDEO 2

So why do we wear clothes? You probably were able to think of a few different reasons. Many of those reasons have to do with the weather. Depending on if it's cold, or rainy, or hot, or if there's bugs or mosquitoes around, notice that your clothes need to be made out of different stuff. They need to be made out of different materials. Not all materials are good for the same thing. That's because each material has certain traits or properties that makes it useful. For example, in the rain, you wear a raincoat, right? Well, a raincoat is made out of a plastic material, which has the property of being waterproof meaning that water can't get through it. That's why it's such a good material to wear in the rain. But in really cold weather, you might wear a thick coat like this, which is lined with the material called wool. Wool has the property of being heat trapping, it keeps in the heat. Now let me show you something surprising. This guy lives in the hot desert and yet he's wearing a long robe. Why on earth would someone wear this in the hot desert? Well, it has to do with the properties of this material that he's wearing. This robe is made out of the material called cotton. It comes from a plant and it looks just like this. Cotton is actually the most popular material for all clothing whether you live in the desert or not. Let's explore some of its properties. Here's one reason this guy is wearing it. Cotton blocks sunlight. See that? We call this the property of being opaque, which means it doesn't let light through and that's what keeps this guy from getting sunburned, so that's partly why someone would wear a cotton robe in the desert. Now think about what else happens when you're in the sun. You sweat, right? Especially if you're walking around or working. Sweat can feel really

sticky and uncomfortable. To be comfortable, you'd like clothes that will soak up that sweat. Well, cotton is really good at just that. It can soak up that sweat. We say that cotton has the property of being absorbent, meaning it soaks up wetness. Soft is another property we want our clothing to have since we have to wear it all day. Cotton definitely has the property of being soft. It's nice and soft. In fact, because cotton is so soft, that's probably why the clothing you're wearing right now is even made out of cotton. So cotton has properties that make it very comfortable. But now just for fun, think of a situation where feeling comfortable isn't what you want. For example, a situation where you might wear a suit of armor—definitely not comfortable to wear, right? It's made out of steel, a type of metal. Steel is the same material that your kitchen pots and pans are made of. What properties does steel have? In what situation would you want to wear something like this?

EXPLORATION VIDEO 3

So you're stuck on this desert island without any clothes, except for your swimsuit. And you're going to have to figure out where you're going to sleep tonight and what you'll eat for food this week and where to get drinking water. But right now, what's most on your mind is the sun. The sun is beating down on you. It's so hot. As you stand there on the beach, the only thing you can think about is how much you want a hat. So what you're going to need to make as your first piece of clothing is a hat, to shade your head. Now up till now, you might have just thought of a hat as something fun to wear. But hats can be extremely useful. Like consider this kind of hat you might have at home If you skateboard or ride a bike. It's a helmet. A helmet is a hat made of a special thick kind of plastic. This material has properties that are like steel. It's got the property of being hard and strong. But unlike steel, this plastic material also has the property of being light, which makes it much more comfortable. Since a helmet isn't going to do you any good on

a desert island though, let's consider some hats that might be useful to you. Like what about a cowboy hat? You've probably all seen a cowboy hat before. But unless you live on a ranch or out in the desert, you might not have thought about just how useful cowboy hats are. Notice how most of this cowboy's face is covered in a shadow? A cowboy hat is great for shading your face when you're in the hot sun. That shadow is made by the hat's large brim. That's this part of the hat. To stick out like this, the brim has to have the property of being stiff. Without that property, the hat's brim would flap down into the cowboy's eyes. And cowboy hats aren't the only good hats to protect you from the sun. Like check out this one. This hat's called a bonnet, and it was worn by pioneer women. It has a stiff brim, too, to keep off the sun, just like the cowboy hat. But unlike the cowboy hat, it also has the property of being nice and soft. So it was very comfortable to wear. OK, here's one last example. This is a traditional hat to wear in the desert. This hat is very soft too. But this one doesn't have a stiff brim. It's just loose cloth tied around the head. It may not block the sun from his face very well, but it definitely blocks the sun on his neck. Along with being soft, this hat has the property of being absorbent. So it's great at soaking up sweat. So those are some different hats made of materials with different properties. But now it's your turn. You're going to design a hat for yourself to wear on your desert island. What kind of hat will you need? What properties do you think your hat needs to have?

ACTIVITY INTRODUCTION VIDEO

In today's activity, you're going to make a hat to keep you cool on a desert island. First, let's talk about the problem you have to solve. What does your hat need to do? To get an idea of what a hat should do, let's take another look at some hats made for hot weather. Each of these hats has a stiff brim that shades you, and each one has a part that goes over your head. Seems like it would be nice if that part was soft and soaked up sweat, so that you stayed dry. So you're

going to make a hat, but what materials are you going to use? You're on a desert island, after all. All you have to work with are these lunch supplies from the boat, from when a lunchbox washed up on the beach. You'll look at each thing and decide whether it will be useful in making a hat. Rather than thinking about what the thing is, I want you to think about the material it's made of, like, don't think of this paper plate as something you eat off of, or this paper bag is something to carry stuff in, just think about how these materials can help you to shade your head. Are you ready to get started? You will work with a partner to test the properties of the materials you have. Then, each of you will make a hat, helping each other out as you work. In the end, the most successful hat will be the one that does the best job of blocking the sun. OK, now, I'll walk you through the activity, step by step.

ACTIVITY STEP 1

Get these starting supplies. You'll get more supplies later. When you're done with this step, press the arrow on the right.

ACTIVITY STEP 2

Softness test: Rub each material. Answer question one on the worksheet. You do this test to decide which materials feel soft enough to go on your head.

ACTIVITY STEP 3

Get these supplies for the next step.

ACTIVITY STEP 4

Sweat-soaker test. Use the spoon to drip water on each material. Answer question two. You do this test because the part of the hat that goes on your head needs to be able to soak up sweat.

ACTIVITY STEP 5

Stiffness test. Hold each material like this to see if it droops down or stands stiff. Answer question three. You do this test because your hat's brim needs to be stiff so that it doesn't flop into your eyes.

ACTIVITY STEP 6

Take a minute to discuss.

ACTIVITY STEP 7

Get the final supplies. These will help you put your hat together.

ACTIVITY STEP 8

Make a hat that shades you from the sun. Share ideas and help your classmates. You don't have to use every material. If you're really stuck ask your teacher for an inspiration sheet.

ACTIVITY STEP 9

Your teacher will ask for volunteers to show off their hat and talk about its materials. Each person will answer these questions. What materials did you use? What properties of those materials were helpful?