Transcript for *The Snowy Day* by Ezra Jack Keats (Viking Press, an Imprint of Penguin Random House)

Introduction (approximately 0:00 – 4:27)

Hi everyone! It's Colleen from the KU Natural History Museum, and I'm so excited for today's Story Book Science. I do want to give an opportunity for folks to join us. So, we are going to wait just a little bit for them. While we wait, though, I want to talk about the book we're reading today, which is *The Snowy Day*! This is one of my favorite books. So I'm very excited to read it, and talk about it.

And while we wait, I want us to look at the cover of the book together. So we know the title of the book is *The Snowy Day*. And we can see on the cover there's a young boy, and he is walking in snow. We can see that he has made tracks, or impressions or markings, of his feet in the snow.

So when you hear *The Snowy Day*, and when you look at the cover of this book, what do you think of? When you hear the word snow, what do you think of?

For me, I think of cold weather. And when I look at this book, I think that I'm correct when I think that because this young boy is wearing a winter coat. So, he is wearing clothes to keep him warm in the cold weather.

Now, what do you think would happen to snow if it got warm? What do you think would happen to that snow?

We're going to talk about that when we read the book, and we're going to talk about that after we read the book. But I want you to think about that, while we're waiting for folks to join us, and while we're waiting, or while we're reading the book. That's what I want you to think about. What happens to snow when it gets warm? Alright?

So I'm going to put this down.

Now, I'm going to go ahead and get started, and other folks can join us when they can.

Before we start our reading, the first thing we have to do is go over our Story Book Science guidelines. So we're not in the museum, but we are going to follow our museum rules. So what that means is if you have a question or if you have a comment, you should feel free to ask that question or make that comment. But you need to make sure that you use kind and considerate words. If you respond to someone's question or comment, you also need to make sure to use kind and considerate words. We want to make sure that this space is welcoming and inclusive and open to all. And to do that, we use kind and considerate words. So can you use those kind and considerate words for me? Excellent! Thank you so much!

Alright, welcome to Story Book Science! Today, we are reading the book *The Snowy Day*. This book is by Ezra Jack Keats, and it is being read with permission from Penguin Random House, specifically, the imprint Viking Press. So thank you to them for the permission to read this book. Now, I've mentioned before, this is one of my favorite books. I'm so excited to read the book! And I'm so excited that we get to explore snow, and all of

these amazing things about snow, and what can happen to snow if it gets exposed to warmth. Do you know what happens to snow if it gets warm? What do you think happens to snow when it gets warm?

Alright! So, make sure you think about that question. And any thoughts you have, any answers to that question, you store them, and you keep them for when we discuss it later. Okay? Alright!

Now, the last thing I want to mention is that if you have any questions, please feel free to ask them, just know that I may not be able to see them until the very end, and only if there's time. Also, if you need a partial transcript of this reading, it will be made available a little later today or very early tomorrow morning. So if you are looking for that, that can be found on the museum's website.

But, I think it's time to start our reading. Are you ready? Alright!

The Snowy Day.

Reading from *The Snowy Day* (approximately 4:28 – 10:31)

The Snowy Day *includes copyrighted materials, and we do not have permission to include the written text of the book in this transcript.*

Conclusion (approximately 10:32 – 23:53)

The end.

Oh, I'm so glad I got to read this book with you all! It's one of my favorites. I love thinking about waking up and having a big field outside full of snow. It's one of my favorite things. So when we read this book, that's exactly what happened to the young boy, Peter. He woke up, and there was snow outside. He went, and he explored. He made tracks. And he even discovered what happens to snow when it gets cold, or when it gets cold, but then what also happens to it when it gets warm. So how snow can change.

Now, when we talk about this book, the first thing we have to talk about is snow.

Now, what is snow? Snow is a form of precipitation. So what that means is snow is a form of water that forms in clouds and then falls to the ground. Now, snow is unique in that it is a solid. Snow is ice crystals.

So for snow to form, it has to be really cold. And when I say really cold, I mean very cold. It has to be freezing! So, for snow to form, for those ice crystals to form, it has to be zero degrees Celsius, or 32 degrees Fahrenheit. And at that temperature, in clouds, water vapor, which is a gas, it transforms into the solid ice crystal. Alright? And, as it continues to be that temperature, more water vapor transforms into more solid ice crystals. And those crystals kind of clump together and form snowflakes, which then fall to the ground.

Now, when we think of snow, I always think of kind of really small white flakes that fall from the ground. But if we were to look at an image that's been magnified. So if we looked at snow really, really, really close up, this is what it would look like. So these snowflakes, they're symmetrical. And what that means is one side is exactly the same as the other side. So if we look at this snowflake, and I were to draw a line right through the center, one side would look the exact same as the other side. So snowflakes are symmetrical, and they have these six sides to them. Alright? And sometimes those snowflakes, they can clump together. And they fall as a really big clump of snowflakes. But when we think of snowflakes, this is the image that we should be thinking of. That symmetrical, six-sided shape. Alright?

I'm going to put this down.

So when we talk about snow, we know it has to be very, very cold. Freezing, in fact, for those ice crystals to form. And then they fall to the ground.

Now, when we talk about snow, as we read in the book, and as we, we're going to continue to talk about, it doesn't always stay that solid ice crystal. Sometimes it changes. Like in the book, we saw that it went from that snowball, that packed snow, all of those ice crystals. And then it transformed! It melted and formed a liquid. So when we talk about snow, when we talk about how it transforms from solid to liquids, what we're talking about are states of matter. And states of matter are a very important word that we're going to be talking about. So we're going to put it on the wall, underneath our vocabulary words. Because it's very important for us to know.

So, the states of matter. Alright. So, so far, we've discussed ice crystals as a solid. So solids are one of the states of matter that we'll be talking about. We've also mentioned liquids, specifically, liquid water that the solid ice crystals can melt and transform into liquids. So, liquid is another state of matter. And lastly, we're going to talk about gas. And we've briefly mentioned gas. We briefly mentioned water vapor, which is what transforms into the solid ice crystal in the first place when it's really, really cold in the clouds. So we'll also talk about gas as a state of matter. Alright!

So, we're going to talk about these states of matter. And how something like water, so, frozen snow, liquid water, and even water vapor, how it's all water, but it's a different state of matter depending on how the things that make up that water are acting. Alright?

So, the things that make up the water are called atoms. And they act differently depending if it's a solid, a liquid, or a gas.

So we're going to first talk about solids. And I want you to think of snow. I want you to think of solid ice crystals. So, this is what the atoms in solid ice crystals, so in snow, would look like. These atoms, the things that make up the snow, they're really, really close together. They're, you know, as close as they possibly could be, and they're moving just a little bit. Now to help me remember this, what I like to think of is that these atoms that make up the ice crystals, it is so cold that they want to be as close together as possible. And because it's so cold, they're moving just a little bit. It's almost like they're shivering. Alright?

So these atoms in the solid ice crystals, very close together, just moving a little bit because it's so cold. Alright? Perfect!

But then, what we read in the book was that it can get warm. And the solid ice crystals can transform into liquid water. And the atoms, they're acting a little differently because of that. So the atoms of liquid water, they're moving around just a little bit more. They're weaving in and around each other. They have room to move around in their container, and they take the shape of that container. So this is what that would look like. Another way we can imagine this is looking at a water bottle like this. This is my water bottle. There's water inside. And if I were to, move the water bottle like that, you might notice that the water's sloshing in the bottle. So the atoms, the things that make up the liquid water, they're moving around, weaving in and around each other, and they're sloshing around the walls of the container. Alright? I'll do that one more time, so listen really closely! Alright? So I'm going to put that down.

Because the last state of matter we have to talk about is gas. Now, with gases, what happens is that the atoms, the things that make up the gas, they are bouncing off the walls. They are flying, bouncing off the walls of their container. So it looks something like this. The atoms are moving really, really fast, moving much faster than the atoms of a liquid. And they're moving farther apart from one another because they're going so quickly. Alright?

And the reason why these atoms act differently in solid, liquid, and gas, is because of the amount of energy. So when we talked about solids, when we talked about solid ice crystals, we talked about how cold it is. Alright? So it's so cold, those atoms are very close together and they're shivering just a little bit. But then, as we read in the book, and as we talked about, solids transform to liquids when there's more energy. And one form of energy is heat. So if it's warm, if there Is no longer that cold environment, what happens is the solid can transform to a liquid. And then those atoms, they can move a little bit more. There's more energy for them to weave in and around each other. Alright? And then, if you have even more energy, so if it gets really, really warm, the liquid transforms to a gas. And then those atoms, they are flying around. They're bouncing off the walls. They are moving very, very far apart from each other because there's so much energy! Alright?

So the more energy, the more movement of atoms. And that's why these states of matter, they differ because of how the atoms move.

Now, the reason this is important for us to know is because it helps explain why snow acts the way it does. Now, yesterday, I wanted to do an experiment. I wanted to see what would happen to snow when it gets warm. But I don't live in a place where it snowed recently. It hasn't been cold enough. So, to represent snow in an experiment, I had an ice cube that looked like this. So, yesterday, I put an ice cube in a cup. And I just kept it on my kitchen table. I wanted to see what would happen. So it was no longer in the freezer. And it was on the kitchen table exposed to warmth. Alright? So there was more energy. What do you think happened to that ice cube when there was more energy? So what do you think happened, based on what we know about snow and warm weather, based on what we know about the states of matter? What do you think happened to that solid ice cube when it was placed on the kitchen table?

It melted! So, just as a reminder, this is what the ice cube looked like when I first took it out of the freezer. It was a solid ice cube. And then when I left it on the kitchen table, overnight, it became a liquid water. And you can see the water moving in the container. So it's atoms are weaving in and around each other. Alright?

Now, the other thing I want to share is that I didn't just put an ice cube on my kitchen table. I wanted to do a different experiment. And that different experiment was to put an ice cube out of the freezer in a cup, but I wanted to put it outside, just to see what would happen. And what happened was it melted a little bit during the day when the sun was outside. But then overnight, it refroze! So, that ice cube, it's a little smaller than the one I took out of the freezer. This is that ice cube. It's a little smaller. But, it refroze. And that's because it was cold enough. So, what happened was, there was an increase of energy in the form of heat that caused the ice cube to melt a little bit, but then it got cold again. And because that happened, the atoms that had been a liquid, they then transformed back into a solid. So you can move from different states of matter, and it just depends on how much energy is present. Alright?

Now, I had a wonderful time reading the book *The Snowy Day* with you, and it was so much fun to talk about snow and states of matter and look at the results of the experiment we started yesterday. But it is the end of Story Book Science. This is our last live reading of the year, but next week, Kestrel and Prakriti are going to have an activity, a STEM Challenge, for you based on some of the books that we've read this month. So, stick around for that. That will be next week at 10am, here on the Facebook page. And I hope to see you soon! Bye!