



## Column: Elementary Explorations Snowflake Science! A Wintertime Inquiry

Kristen Poindexter

*Elementary Explorations is a recurring column in The Hoosier Science Teacher.*

Kristen Poindexter is a veteran Kindergarten teacher, and is the recipient of the 2014 National Shell Science Teaching Award and the recipient of the Presidential Award for Excellence in Math and Science Teaching. Kristen has served as HASTI's President, and has held other leadership positions in the organization. Look for her regular contributions to THST!

**Keywords:** Elementary Science Education, Snowflakes



One of our favorite wintertime studies is all about snow and how we experience it! I like to think of this study as an on-again, off-again study, because the weather will play a big part as to when you are able to do some of these activities.

I begin by finding out what my students already know about snow, their experiences with snow, when and where they have experienced snow, and their favorite things about snow. I capture most of their thinking on a KOWL chart so that I know how to move forward. A KOWL chart is made up of 4 boxes or columns where we can capture our prior knowledge (K), our observations (O), our wonderings (W), and our learning (L) at the end of our unit. I like to add in the "O" to our chart to capture what we discover when we go out in the snow or capture snowflakes so that every student in my class is able to add their ideas to our chart.

### Catching Snowflakes

After finding out what my students know, wonder, and observe about snow, we move on to catching snowflakes so that we can study them. I keep half sheets of black construction paper in the freezer all winter long so that I can grab them when the forecast calls for snow. We bundle up and each take a hand-lens and construc-

tion paper in the freezer all winter long so that I can grab them when the forecast calls for snow. We bundle up and each take a hand-lens and construction paper sheet out into the snow to catch some snowflakes. As each child catches a snowflake or two on their paper, they quickly observe it using their hand-lens to find out all they can. I also try to photograph as many as I am able so that I can print them out and have my whole class study them together.

Once we are all back inside, I print out the pictures I took while my students draw their observations of their snowflakes in their science notebooks or using the Seesaw app. We gather together to discuss what we noticed about each of the snowflakes, both those observed and those I printed out. Usually, my students start to notice that there most always seems to be a hexagon in the middle of the snowflakes. We look at more pictures of snowflakes to determine if that is most always true and notice that there are usually six branches extending from each snowflake as well. This is the point when I help them with the word branches, as they will use words like arms, legs, wings, so I help to give them the science word branches so that as we discuss snowflakes further, we will all know which part of the snowflake we are speaking about. I also like to introduce several books about snow to my students so that they are able

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Published by the Hoosier Association of Science Teachers, Inc. (<https://hasti.org/>) ISSN 2475-451x

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to do more inquiring about snow after we read and enjoy them together.

- *The Story of Snow* by Mark Cassino with John Nelson Ph.D
- *Snowflake Bentley* by Jacqueline Briggs Martin
- *The Snowflake* by Ken Libbrecht (several different books with the same title)
- [Snow](#) by Andrea Rivera
- [Other snow related books](#) on Epic!

### Building snowflakes

When we have had ample time to observe actual snowflakes and discuss them, I give my students loose parts and let them explore making snowflakes on their own. You can see (Figures 1, 2, & 3) that many students still have an undeveloped idea that snowflakes typically have 6 branches, however, they do have an understanding that those branches are there and are identical. The materials I use all came from the dollar store and were placed on a round placemat from IKEA. Other materials

that my students use to make snowflakes include pattern blocks, rocks/pebbles, jewels/rhinestones, plastic bottle caps, and straws.

### Watching the Radar, Patterns in the Weather

As part of our study of snow, we also discuss changes in the weather that happen during the winter season. We keep track of our weather daily on our classroom calendar along with noting the daily temperature each day. These methods of data collection not only enhance our math skills, they help us notice the gradual shift down in temperatures throughout the seasons.

When snow is forecast, I will often show my students how to recognize snow using the radar from the [National Weather Service](#) office located in Indianapolis, so that my students can understand, at a very primary level, how a meteorologist uses tools to help them forecast the weather. They also use patterns to determine what is likely to happen with our weather and when more severe weather, such as a blizzard or heavy snow might be moving our way. In all kinds of weather, I use it as an opportunity to learn with my students about the right clothing to wear for the weather and how to stay safe in different kinds of weather.



Figure 1. Student snowflake model



Figure 2. Student snowflake model



Figure 3. Student snowflake model

### Melting Snow

One of the ways we wrap up our unit about snow is by watching it melt! We read "[On a Snow-Melting Day: Seeking Signs of Spring](#)" by Buffy Silverman (2020) to start our conversation. When I notice the sun shining, we will either look out our classroom window or go outside to observe the snow melting. I will ask my students how they think the snow melts. They usually respond by saying that it is warm, or we stepped on it and melted it, or that the ground is warm and melted it. This is an opportunity for my students to understand one of the sun's effects on the earth. How the sun warms the snow and melts it creating runoff. Wonderopolis has a wonderful [page all about snow melting](#) for younger students.

At the end of our study, my students gather together and we spend time filling out the last column on our KOWL chart, the "L"! I give each student a sticky note or index card and ask them to draw or write about one thing they learned about snow. Before adding those to our larger chart, students share with 1-2 other classmates their new learning and listen to others' new learning as well. We celebrate by making snow either in individual bowls or our water table. One can of shaving cream mixed with one box of baking soda creates the perfect faux snow for some indoor snow fun!

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