Project on Snow

School Age 2 (Senior Kindergarten): Owl-Saint John Paul II

Background

Our project took off slowly in the fall of 2015 when we noticed the children talking about different types of weather. Their interest really picked up in January 2016 when the snow started to fall. This was when our project became more focused on snow. Our whole group of 22 children, ages 5 to 6 years, were interested in discussing and playing in the snow. Throughout the project, the children would come and go as we did our activities, but we were able to maintain a general interest until we brought the project to a close in March 2016. The educators that lead the project were Amy, RECE and Kara, RECE.

Phase 1: Beginning the Project

As the snow began to fall, the children were visibly excited to play in it and share with us what they were observing and creating. We recall from the start a few children showing us how they could catch snowflakes and what they looked like! This inspired us to ask them some questions about what they thought of the snow, and the children asked some questions in return. We first asked what the children know about snow. Second, we asked what they would like to know and find out. Finally, we talked about how we could find out the information, and who we could ask.

What we know/think	What we want to know	Who we can ask
• Snow comes from clouds/ shaped inside clouds? • Happens when it's cold • Is cold, frozen • Is picked up from the ground and falls again • Christmas • Has to do with a meteorologist • Comes from God? • Is magical?	• How is a snowflake made? • How do little snowflakes turn into a lot of snow? • How/Why do penguins and polar bears live in the snow? • How/Why do bears hibernate? • Where does it snow? • Are there different types of snow? • Why is winter so long?	• Each other, our teachers, our families • Research from a book or the internet • A scientist, specifically a meteorologist

To get a more formal, structured ideas of where our interest in this topic could lead us, Amy and Kara created their own brainstorm “web” about snow (Figure 1), then gathered with the children to create another web (Figure 2) of their associations with snow. Some of the sub-topics included types of snow, animals that live in snow, houses built with snow, activities that can be done with the snow, and science-related activities such as tracking temperature and creating experiments with snow.

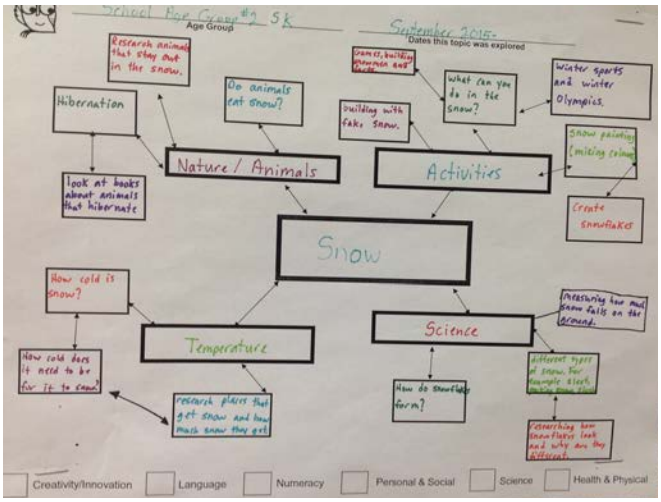


Figure 1

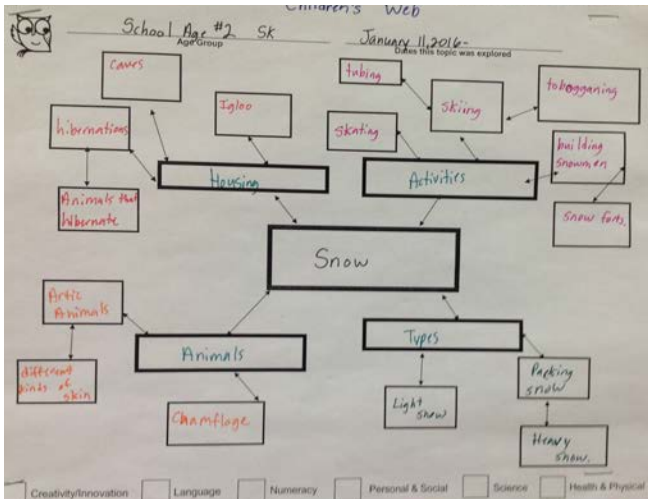


Figure 2

Phase 2: Developing the Project

To further develop our project, we set out to explore a variety of learning areas.

Science:

We began our snow project with various hands-on activities that were generally initiated by the children. To focus on the subject area of **science,** the children participated in activities or experiments such as testing out, “Is snow dirty?” by bringing inside a bucket of snow and examining the contents the next day. We found out that it indeed is dirty, so we should not eat it! This also lead into a later activity in which we brought in a new bucket of snow and made estimations of the time it would take for it to melt (see description that follows).

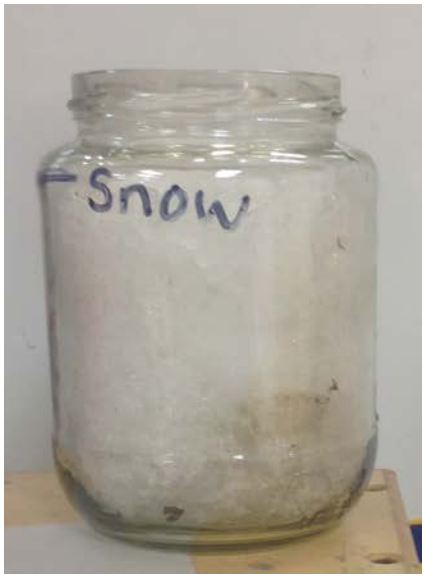


Figure 3

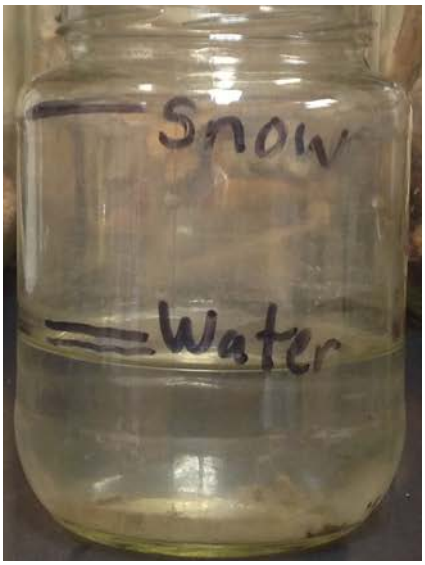


Figure 4

During outside time, we also provided magnifying glasses so that the children could investigate their wonder about snowflakes and texture of the snow (Figures 5 and 6).

Figure 5. Leah M., Lauren and Amber 5 years.

Figure 6. Amber and Leah M. 5 years.

With Amy and Kara's help, the children were able to witness and assist with the making of a snow volcano! (Figures 7 and 8) The children helped to construct a mound of snow with a hole in the top, then observed that it bubbled up and spewed red and orange colours with the baking soda, vinegar, and food dye that we added!

Figure 7. Chloe, Leah C. and Hailey 5 years

Figure 8. Lauren and Amber 5 years

As a scientific and artistic activity, we also created our own snowflake! (Figures 9 and 10) We constructed a snowflake shape with pipe-cleaners, dipped it in a solution of Borax in water, left it overnight, then came back the next day to observe that it had crystalized! It looked like a snowflake! This, combined with our magnifying glasses investigation of real snow, created the opportunity for us to compare the two with knowledge we had previously gained.

Figure 9. Keira, Colton, Myles, Nick, Lucas and Chloe 5 years

Figure 10. Leah C. 5 years and Ella 6 years

Creative & Innovative Experiences:

Our group of children shows a frequent interest in **creative and construction** activities. We concluded that they would then enjoy a variety of snow-related experiences with various open-ended materials. These included a mixture of craft items, building materials, dramatic play items, etc.

First, a simple activity occurred that involved creating snow-related drawings. We call these first and second drawings. The first drawing(s) consisted of mostly snowmen and snow figures (Figure 11). As the children's artistry and crafting developed, we observed additional representations of snow, or second drawings, that consisted of snowmen and more detail in the snowflakes (Figure 12).

Figure 11

Figure 12

The children initiated many of their own interesting experiences with the provided items, such as making an "igloo" (Figure 13) with Crazy Forts items, and acting like a polar bear (Figure 14) and penguin (Figure 15) with dress up clothes.

Figure 13. Lauryn 5 years

Figure 14. Ava and Anna 5 years

Figure 15. Maddix 5 years

With the craft items provided (string, pipe-cleaners, tape, markers, paper, clay), the children created various three-dimensional representations such as “snowman puppets” (Figure 16) and clay snowflakes and snowmen (Figures 17 and 18).

Figure 16. Leah M. and Lily 5 years

Figure 17

Figure 18. Lily and Lauren 5 years

More representations were created with actual snow! These included, of course, making snowmen and snow angels! (Figure 19) We became more advanced with our creations as the winter went on, as seen with the construction of snow “castles” (Figure 20), and snow/ice chunk figures (Figure 21).

Figure 19. Lily 5 years

Figure 20. Hailey 5 years and Ella 6 years

Figure 21. Lily and Amber 5 years

The children also initiated and participated in snow art such as “painting with snow”, which happened in two cases. First, the children used handfuls of packing snow to draw on the brick wall while on the playground. The children were able to investigate how the snow stuck or did not stick to the wall, and what designs could be made with it (Figure 22).

Also, the children used actual colour (food dye) with the snow to see if it would draw on a paper. We noticed that at first the colour did show up, but it was difficult to draw with, unlike the markers, coloured pencils, and crayons that we are used to! We observed later that the snow pictures’ colour had faded as it dried (Figure 23).

Figure 22. Chloe 5 years

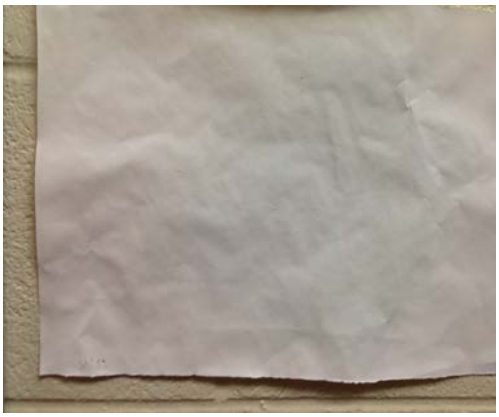


Figure 23

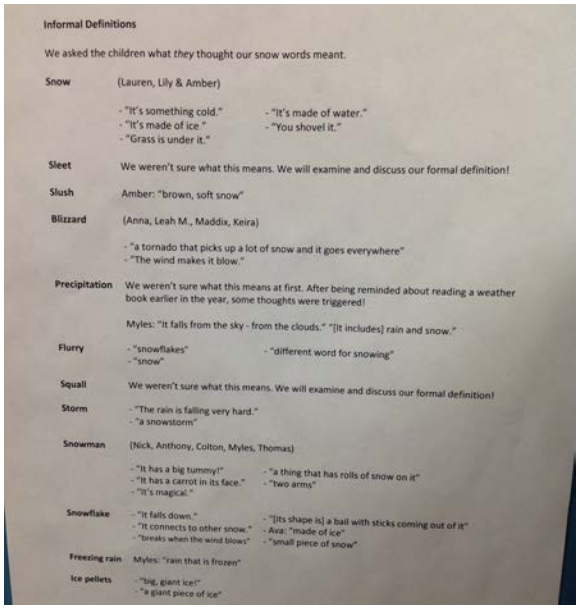
Language & Literacy:

To incorporate experiences related to **language and literacy**, the children gathered to discuss some information related to snow. The children were eager to verbalize their questions and knowledge about snow and snow terms. This is what initially began our research into snow!

We worked together to create a list of vocabulary using the children’s wonderings combined with terms we came across as we read snow and winter books (Figure 24). The children enjoyed listening to stories about snow and winter activities (such as “Snow Fight!”) and were happy to provide lots of commentary!

Figure 24

The vocabulary lists included terms with informal definitions (our ideas and explanations) and terms with formal definitions (what internet and literature searches of the terms provided us) (Figure 25 and 26).



Informal Definitions

We asked the children what *they* thought our snow words meant.

Snow (Lauren, Lily & Amber)

- "It's something cold."
- "It's made of ice."
- "Grass is under it."
- "It's made of water."
- "You shovel it."

Sleet We weren't sure what this means. We will examine and discuss our formal definition!

Slush Amber: "brown, soft snow"

Blizzard (Anna, Leah M., Maddix, Keira)

- "a tornado that picks up a lot of snow and it goes everywhere"
- "The wind makes it blow."

Precipitation We weren't sure what this means at first. After being reminded about reading a weather book earlier in the year, some thoughts were triggered!

Myles: "It falls from the sky - from the clouds." "[It includes] rain and snow."

Flurry
- "snowflakes"
- "snow"
- "different word for snowing"

Squall We weren't sure what this means. We will examine and discuss our formal definition!

Storm
- "The rain is falling very hard."
- "a snowstorm"

Snowman (Nick, Anthony, Colton, Myles, Thomas)

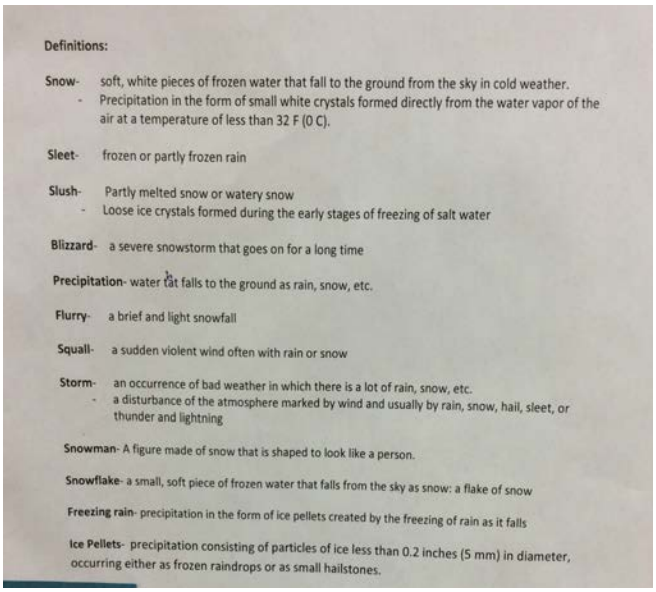
- "It has a big tummy!"
- "It has a carrot in its face."
- "It's magical."
- "a thing that has rolls of snow on it"
- "two arms"

Snowflake
- "It falls down."
- "It connects to other snow."
- "breaks when the wind blows"
- "[Its shape is] a ball with sticks coming out of it"
- Ava: "made of ice"
- "small piece of snow"

Freezing rain Myles: "rain that is frozen"

Ice pellets
- "big, giant ice!"
- "a giant piece of ice"

Figure 25



Definitions:

Snow- soft, white pieces of frozen water that fall to the ground from the sky in cold weather.
- Precipitation in the form of small white crystals formed directly from the water vapor of the air at a temperature of less than 32 F (0 C).

Sleet- frozen or partly frozen rain

Slush- Partly melted snow or watery snow
- Loose ice crystals formed during the early stages of freezing of salt water

Blizzard- a severe snowstorm that goes on for a long time

Precipitation- water that falls to the ground as rain, snow, etc.

Flurry- a brief and light snowfall

Squall- a sudden violent wind often with rain or snow

Storm- an occurrence of bad weather in which there is a lot of rain, snow, etc.
- a disturbance of the atmosphere marked by wind and usually by rain, snow, hail, sleet, or thunder and lightning

Snowman- A figure made of snow that is shaped to look like a person.

Snowflake- a small, soft piece of frozen water that falls from the sky as snow: a flake of snow

Freezing rain- precipitation in the form of ice pellets created by the freezing of rain as it falls

Ice Pellets- precipitation consisting of particles of ice less than 0.2 inches (5 mm) in diameter, occurring either as frozen raindrops or as small hailstones.

Figure 26

We also provided an open-ended activity in which the children were able to draw and write on a large piece of paper their ideas and knowledge we gained about snow. Kara helped them to read and write out small descriptions about specific areas of interest such as snowflakes and blizzards (Figure 27). We were able to use the story/research books to record the answers to many of our wonderings.

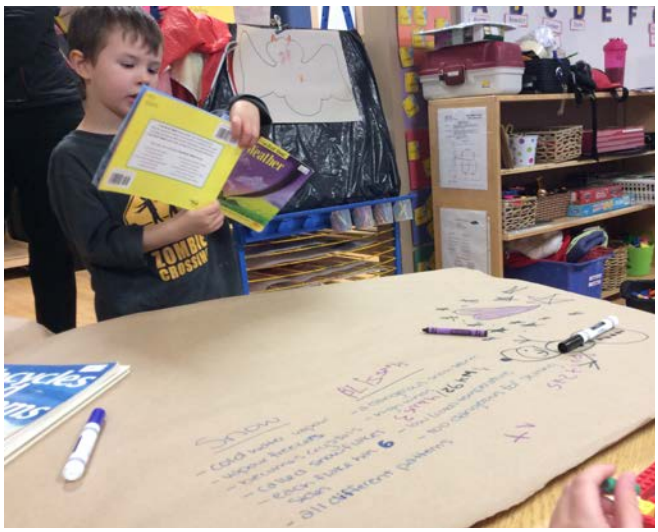
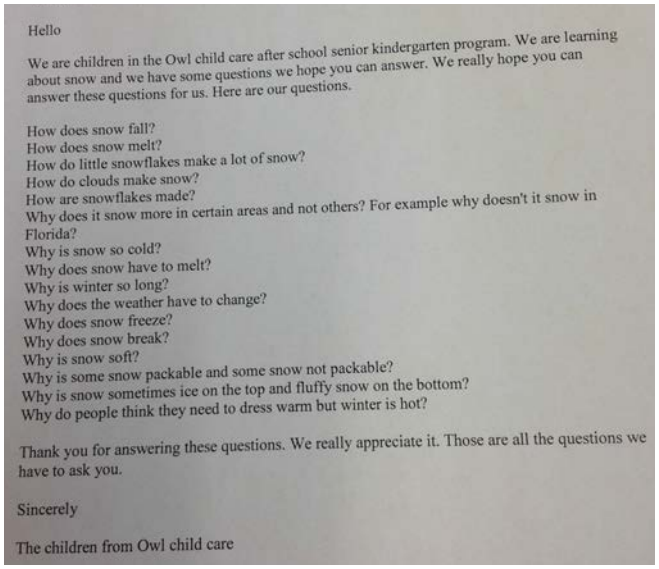


Figure 27. Myles 5 years

As our project progressed, we thought it would be interesting to involve a member of the community – a weather and snow expert! This is what we initially brainstormed, under “Who can we ask?”
Our group gathered once again to generate a list of remaining questions to ask a meteorologist (one of the terms we learned!) (Figure 28). We in fact sent our questions to a number of experts, including CTV news, University of Waterloo Weather Centre, and a meteorologist school speaker.



Hello

We are children in the Owl child care after school senior kindergarten program. We are learning about snow and we have some questions we hope you can answer. We really hope you can answer these questions for us. Here are our questions.

How does snow fall?
How does snow melt?
How do little snowflakes make a lot of snow?
How do clouds make snow?
How are snowflakes made?
Why does it snow more in certain areas and not others? For example why doesn't it snow in Florida?
Why is snow so cold?
Why does snow have to melt?
Why is winter so long?
Why does the weather have to change?
Why does snow freeze?
Why does snow break?
Why is snow soft?
Why is some snow packable and some snow not packable?
Why is snow sometimes ice on the top and fluffy snow on the bottom?
Why do people think they need to dress warm but winter is hot?

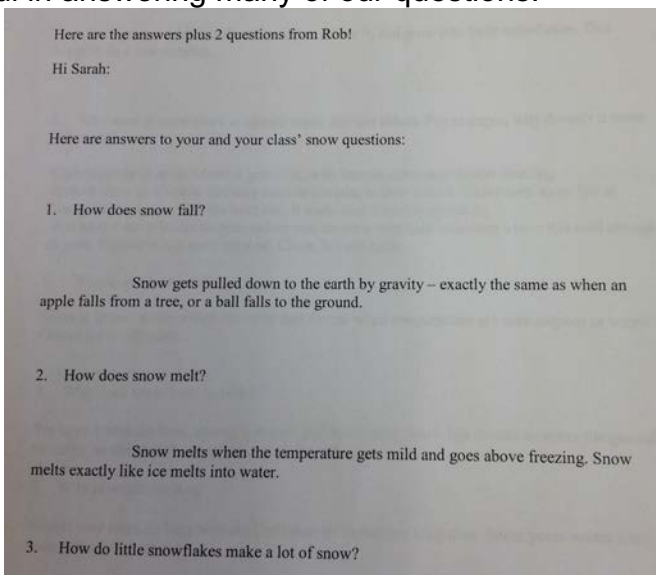
Thank you for answering these questions. We really appreciate it. Those are all the questions we have to ask you.

Sincerely

The children from Owl child care

Figure 28

We were fortunate to receive a response from a meteorologist who does talks at schools. He was enthusiastic about answering our wonder! (Figure 29). After we received our answers, we announced to the children and they were excited to hear about them! We read aloud the replies and had a small discussion. This was helpful in answering many of our questions!



Here are the answers plus 2 questions from Rob!

Hi Sarah:

Here are answers to your and your class' snow questions:

1. How does snow fall?

Snow gets pulled down to the earth by gravity – exactly the same as when an apple falls from a tree, or a ball falls to the ground.

2. How does snow melt?

Snow melts when the temperature gets mild and goes above freezing. Snow melts exactly like ice melts into water.

3. How do little snowflakes make a lot of snow?

Figure 29

A spontaneous experience involving language occurred when a group of children were creating snow figures outside. We noticed they were singing a song! Intrigued, Amy and Kara asked them to repeat it. It was a song about snow! When we arrived inside that day, we asked the children if they could again repeat the song for us so that it could be recorded. We reworked some of the lines so that it was our own!!

“We made some giant snowballs
On a winter day
We stacked them up – 1, 2, 3
And hoped that they would stay!
We found some rocks for eyes
And a carrot for a nose
We put a hat on its head
And said…
“A snowman, yay!”
But when the sun comes out
He’ll slowly melt away!”

Numeracy:

To enhance the children’s concepts of **numeracy** in ways that were integrative with our project, we involved the children in activities of interest such as creating a survey/questionnaire about favourite snow activities. We had noticed the children were previously conducting their own surveys and questionnaires on various other areas of interest, so we thought they would be engaged in a large group survey in which we could also ask for the participation of families (Figure 30). Once our survey had been conducted, we reviewed it as a group and tallied and compared our results (Figure 31). Our least favourite activities were tied between snow angel- and snowball-making, second last was sledding, in second place were snowman- and snow igloo/snow fort-making, and our favourite activity was skating!!

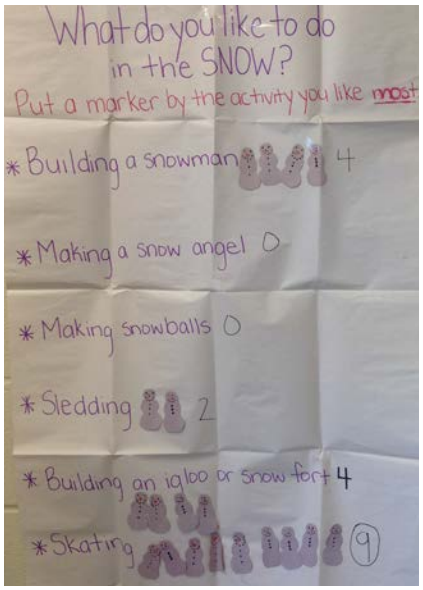


Figure 30

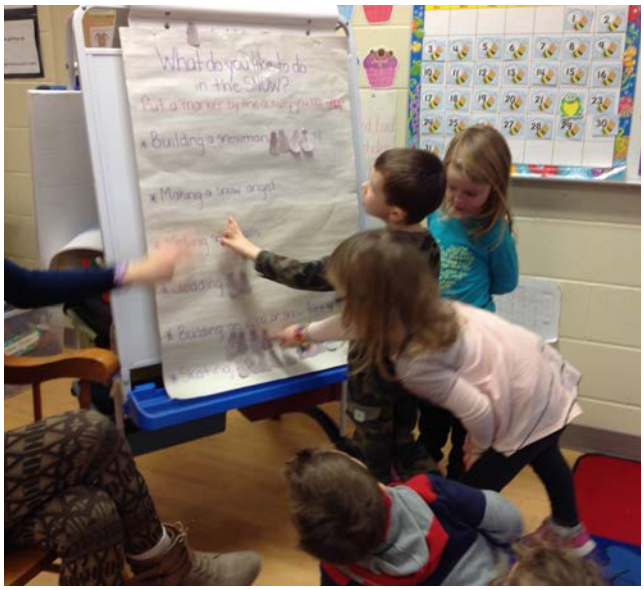


Figure 31. Myles, Colton, Lauren and Amber 5 years

Based on one of our webs, we extended our conversation and investigation into temperature. We decided it would be interesting to track temperature with an outdoor thermometer: We checked this multiple times daily (during outdoor time). We then transferred this information into a class bar graph that the children helped to fill in (Figure 32 and 33).

Figure 32. Leah C. 5 years and Leah M. 5 years

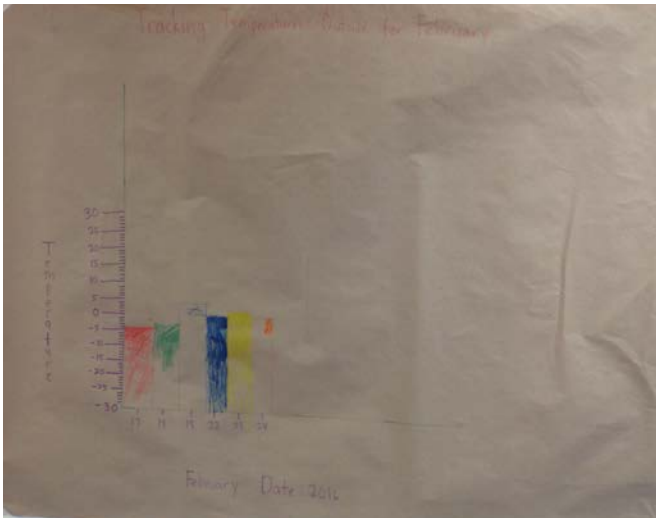


Figure 33

This ongoing activity and discussion lead to an initiative from a particular child to make their own temperature tracking graph! She used our class example and the help of Amy and Kara to draw and measure out the temperatures on her own graph. Anna worked on this activity using the daily temperatures for a week! (Figure 34 and 35)

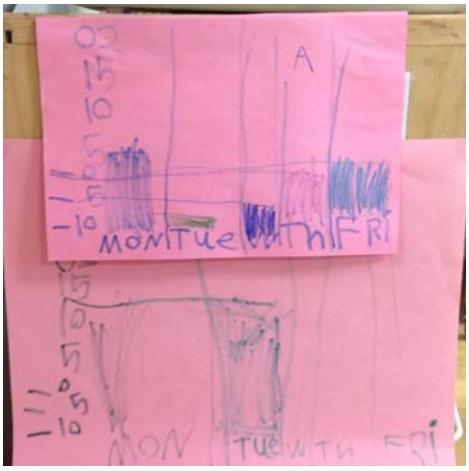


Figure 34

Figure 35. Anna 6 years

This ongoing activity helped us to practice solidifying concepts such as “What does the freezing point mean?”, “How is the weather and the consistency of the snow affected by the temperature?”, et cetera. This particular experience came toward the end of our project as a way of extending and maintaining our interest as the snow began to disappear. Now we may understand how the temperature is associated with the snow leaving us!

We were also able to turn our experiences (such as snow castle building and “How long will the snow take to melt?”) into ways of exploring mathematical concepts. Snow-castle building with Hailey and Ella began as a child-initiated, creative activity that these particular children extended into a way of exploring the concept of sequence. The girls narrated to Kara, step by step, what they did to create snow cone castles. They understood and were able to communicate what had to happen first, next, and last for the goal to be met. Trial and error also came into use as sometimes the castles would not come out fully formed or remain standing. The girls showed persistence!

Figure 36. Ella 6 years and Hailey 5 years

Figure 37. Ella 6 years and Hailey 5 years

Finally, mathematical concepts of estimation and sense of time were utilized as the children were asked “How long do you think this chunk of snow will take to melt?” Many of the children had guessed that it would be the same day, or perhaps in a much longer period of time. Our group had many different ideas! We found that after leaving the snow in our bucket, kept inside overnight, it had melted completely into water by the next day!

Health & Physical Activity:

Our snow project even provided ways of getting our group **physically active**! We noticed that children were of course quite interested in playing with the snow outside throughout the winter. More specifically, we had observed children creating inventive and active uses of the materials with the snow, such as pulling and riding on a “snow plough”! Ava and Lauryn constructed the “plough” with a sled and a shovel held at the front by the “rider” as the “driver” pushed! (Figure 38 and 39).

Figure 38. Ava and Lauryn 5 years

Figure 39. Ava and Lauryn 5 years

We saw a lot of the most popular of outdoor snow activities such as making snowmen, snow fish and snow angels! (Figure 20 and 41) The children used their physical and co-operation skills to roll balls of snow for the body, using shovels to create a pile of snow and do a repeated jumping jack motion to create snow angels!

Figure 40. Thomas, Nick and Lucas 5 years, Anthony 6 years

Personal & Social Development:

During the entirety of the snow project, our group of children were able to develop **personal and social** skills. We engaged and shared our interests, discovered new interests, and observed and co-operated with peers during all of our activities.

A particular experience that involved personal and social skills was our favourite snow and winter activities survey. This also involved families as parents were asked to take a look at our big chart paper survey with their children. The children were able to select their favourite activity, perhaps also reflecting on prior experiences with things such as skating or making a snowman. We noticed many of the children asked or observed what their peers chose, creating a discussion and opportunity to learn about the interests of others. Several children decided to select the activity that many other peers had, demonstrating how young children rely on imitation and act on peer influence.

Another way of involving personal experience and families included discussing with parents about their knowledge of snow and weather. Based on profession, some parents were asked if they could share what they know about snow. We discovered that none of our families were snow experts! This was not a problem as we were still able to hold discussions. These also included day-to-day conversations of snow activities the children participated in.

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Phase 3: Concluding the Project

As the snow began to melt away, our interest faded in snow activities and discussion. We continued to comment on it or the weather occasionally, but felt our overall project was coming to a natural close. Since we were not able to have our visit from the meteorologist, we decided to present an experience for the children that involved watching and discussing our ideas about and reactions to a local weather forecast video. We were hoping to see what knowledge the children gained throughout the project period, so before the video we asked the group about their ideas of the current weather and what their estimations or predictions were for the rest of the week. The children were able to tell us that predictions about the weather are part of what a meteorologist does. At the time, it was rainy and a storm seemed to be coming. One of the children suggested the term thunderstorm as a reply to questioning about what weather may come. After we watched the forecast, we had an involved discussion about how the freezing point works, and what weather may come of this. One friend even added additional knowledge about how a thunderstorm may occur when the temperature changes quickly. We were excited to hear the understanding and expansion of ideas that came of our snow research and experiences!

Teacher Reflections

Amy: I enjoyed witnessing the children's process as we explored our topic. The children were very excited to explore new activities and learn more about snow and how it is made. The children had a sense of wonder when the snow started to fall to the ground which sparked their interest and desire to learn more about the snow. The children continued to express their interest by exploring with a variety of activities. For example, we participated in many creative experiences, numeracy, science and literacy. During our project all the children participated in the project at the different times.

I enjoyed watching the children use the book on our shelf to help research more about snow. They took turns reading parts of the book to each other and the to the rest of the class. The Senior Kindergarteners enjoyed using the iPad to learn about the weather in the different parts of the world. The tone in the children's voices showed excitement and a sense of wonder as they were busy researching about snow.

One of the most interesting experiments we observed was when the children wanted to track the weather to see if the temperature was the same or different. The children were confused as to why the temperature was changing so much. They were determined to figure out which days it had snowed. They problem solved this by using the iPad to look back to see which days it was cold enough to snow. I enjoyed watching and participating with the children as they were fully engaged in trying to figure out the temperature.

During this project I feel that the children were able to develop a sense of well being, engagement, expression, and belonging as they challenged themselves to explore and research this topic. I enjoyed watching the children develop and gain knowledge as well as being active participants in this project. Thank you to our children for showing an interest in something that proved to be a learning experience for all.

Kara: Throughout the length of our project, I very much enjoyed witnessing and participating in the children's wonder and engagement with our topic of snow. The children demonstrated their interests, abilities, and knowledge in various ways: creative materials, construction, drama, science and math-related activities, reading and writing materials, and active and physical play.

I was able to witness the children's individual strengths, experiences, and knowledge as they applied themselves to a range of activities. This allowed the children to engage in experiences that they felt were significant to them. This could have consisted of either individual, partner, small group or large group activities, allowing the children to participate in activities of strength or interest alone or along with peers. I believe this helped to develop a sense of confidence, security, and belonging.

Children's voices were heard with limitless opportunities to wonder, question, and explore and discover answers and solutions. This created the opportunity for everyone to express themselves as individuals as they participated.

With the lengthy time-period and wide range of possible experiences, I feel that our group of children was able to develop a sense of well-being as they challenged themselves to ask, explore, and try a variety of things. I am proud of the work and participation our group contributed to this project experience, and pleased at the learning and growth we received from it!

Thank you for your interest!

Amy, Kara, and School Age 2 children ☺