

Michigan State University Extension

Tollgate Farm and Education Center

WEATHER AND ANIMAL ADAPTATIONS

Big Idea: Plants and animals have unique and diverse life cycles. They use their internal and external parts and specific behaviors to help them prepare for the coming winter.

Big Question:

- How do animals prepare for winter?
- How can we observe and measure the weather?

Michigan NGSS Performance Expectations:

K-LS1-1	Use observations to describe patterns of what plants and animals (including humans) need to survive.
K-ESS2-1	Use and share observations of local weather conditions to describe patterns over time.

Common Core ELA and Math Standards:

ELA-LITERACY.SL.K.1a-b	Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion). b. Continue a conversation through multiple exchanges.
ELA-LITERACY.SL.K.2	Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
ELA-LITERACY.SL.K.3	Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
ELA-LITERACY.RI.1.6	Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
ELA-LITERACY.SL.1.1a-c	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. c. Ask questions to clear up any confusion about the topics and texts under discussion.

ELA-LITERACY.SL.1.3	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
ELA-LITERACY.SL.2.1a-c	Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. <ul style="list-style-type: none"> a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by linking their comments to the remarks of others. c. Ask for clarification and further explanation as needed about the topics and texts under discussion.
ELA-LITERACY.SL.2.3	Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
ELA-LITERACY.SL.3.1a-d	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. <ul style="list-style-type: none"> a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). c. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. d. Explain their own ideas and understanding in light of the discussion.
ELA-LITERACY.SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
ELA-LITERACY.SL.4.1a-d	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly. <ul style="list-style-type: none"> a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others. d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
ELA-LITERACY.SL.5.1a-d	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly. <ul style="list-style-type: none"> a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others. d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
Math.Content.K.MD.1-2	Describe and compare measurable attributes. <ol style="list-style-type: none"> 1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. 2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.
Math.Content.1.OA.5-6	Add and subtract within 20. Work with addition and subtraction equations. <ul style="list-style-type: none"> • Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). • Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

Math.Content.2.OA.2	<p>Add and subtract within 20.</p> <ul style="list-style-type: none"> Fluently add and subtract within 20 using mental strategies.2 By end of Grade 2, know from memory all sums of two one-digit numbers.
Math.Content.2.MD.1-4	<p>Measure and estimate lengths in standard units.</p> <ol style="list-style-type: none"> Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. Estimate lengths using units of inches, feet, centimeters, and meters. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
Math.Content.3.MD.4	<p>Represent and interpret data.</p> <ol style="list-style-type: none"> Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
Math.Content.4.NBT.4	<p>Use place value understanding to round multi-digit whole numbers to any place.</p>

Content Outcomes:

- Understand how animals use their internal and external parts to survive.
- Understand how animals use the world around them to survive.
- Explore adaptations of animals (including humans) to a changing environment.

Program Introduction:

Welcome to Tollgate Farm! Today we will be exploring weather and animal adaptations on the farm. You will be helping us to solve a very important question: How do animals prepare for winter? And how can we observe and measure the weather?

Tollgate would like to acknowledge that the land we are meeting on today is the original homelands of the Anishinaabe tribal nations. We owe a debt of gratitude to the people who first lived on this land. We honor and respect the many diverse indigenous peoples still connected to this land on which we gather.

Rotations:

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| ● Rain Gauges & Rainfall Measurements | <i>Upper Barn</i> |
| ● Weather Measurement & Data Collection | <i>Pond, Animal Barn, Orchard</i> |
| ● Animal Coverings with Ducks and Birds | <i>Pond</i> |
| ● Animal Chores | <i>Chicken Coop</i> |

Teacher Resources

Background Information:

Last revised date: 03/22/2022

- [Weather Wiz Kids](#)
- [All About Feathers Bird Academy](#) by the Cornell Lab
- [NOAA Education](#)

Children's Literature:

- [Bear Snores On](#) by Karma Wilson
- [Feel the Wind](#) by Arthur Dorros
- [Flute's Journey](#) by Lynne Cherry
- [Oh Say Can You Say What's the Weather Today?](#) By Tish Rabe
- [Over and Under the Snow](#) by Kate Messner
- [Waiting for Winter](#) by Sebastian Meschenmoser
- [When Snow Comes](#) by Jonathan Allen
- [Winter Survival: Nature's Way of Coping with the Cold](#) by Mari Friend

CURIOSITY PHOTOS

Following are photographs and questions intended to inspire curiosity and wonder throughout the days leading up to your Tollgate visit.

How do animals prepare for the winter?







How can we observe and measure weather?





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