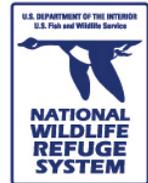


# Bird Investigation



**Grade:** 3rd  
**Group Size:** 1 class

**Season:** Spring     **Time:** 1 ½ hours  
**Ratio:** 1 adult to 5 students

## For the Teacher:

<b>Overview</b>	Students participate in a scientific investigation about birds that is driven by their own inquiry. Using the KWL model, students discuss what they know about birds, what they wonder or would like to know, and then venture into the field to investigate their questions. The lesson concludes with a discussion of what was learned and by answering the investigation questions.
<b>Subjects Covered</b>	Science, Language Arts
<b>MN Academic Standards Supported</b>	Helps support five standards in science and 10 in language arts. See sections “Minnesota Academic Standards in Science” and “Minnesota Academic Standards in Language Arts” for details.
<b>Skills Used</b>	Questioning, exploring, observing, listening, sketching, collecting data, analyzing data, forming conclusions, critical thinking, discovering, writing, reflecting, following directions, investigating
<b>Performance Objectives</b>	After completing this activity, students will be better able to... <ul style="list-style-type: none"> <li>• Suggest, investigate and answer questions about birds using appropriate tools</li> <li>• Observe birds in a quiet and reflective manner</li> <li>• Record scientific data</li> <li>• Describe two characteristics of birds</li> <li>• Locate birds in their natural habitats</li> <li>• Draw conclusions based on observations and data collected</li> <li>• Enjoy observing birds outside</li> </ul>
<b>Vocabulary</b>	Bird, wings, flight, investigation, sentence, nest, predict, results, discovery

## For the PWLC Instructor:

<b>PWLC Theme</b>	The Prairie Pothole Region
<b>Primary EE Message</b>	The prairie pothole region is valuable and in need of restoration and protection.
<b>Sub-message</b>	Wildlife: The prairie pothole region is home to a variety of resident and migratory wildlife.
<b>PWLC EE Objectives</b>	<ul style="list-style-type: none"> <li>• Use scientific methodology to explore the environment (ask questions, hypothesize, collect data, analyze data, form conclusions, and make recommendations). (Wildlife and Habitat)</li> <li>• Identify the components and functions of a given ecosystem by observing, counting, and describing the animals and plants in that ecosystem. (Wildlife and Habitat)</li> </ul>
<b>Materials</b>	Student science notebooks or paper and clipboards, pencils, bird identification guides to give to each adult leader, Identifier and bird cards, binoculars
<b>Locations</b>	Classroom, Mallard Marsh trail, Adams Pond trail, or trail to Mallard Oaks

## Background Information

The purpose of this field investigation is for 3<sup>rd</sup> graders to use a scientific methodology to form questions about birds and then investigate those questions in the field. The KWL chart will be applied to this scientific investigation as a way to organize and structure the process. The types of questions investigated in the field about birds will be driven by student inquiry. By having students decide what to learn, they are able to use

scientific investigation and critical thinking skills while practicing careful observation and data collection methods.

Birds of the prairie and associated wetlands are important because they are relatively easily viewed, they are part of the food chain, they tell us something about the habitat they live in, and they are interesting and beautiful. Students witness and wonder about the spectacle of migration first-hand.

Spring is an excellent time to observe birds at the PWLC. The peaceful and quiet winter months have melted away, and many bird species are migrating through the area. Some pass through, others stay awhile to rest and refuel for the rest of their journey north, and yet others stay to nest. Showy males are often busy singing and displaying their vivid plumage in an effort to defend territory and attract a mate. Their calls and visibility make them easy to find.

For this field investigation, binocular use is the choice of the teacher. Please consider the following points when deciding if your students will use them.

- Birds are abundant at the PWLC in spring and easily spotted with the naked eye.
- It takes time and practice to teach younger children how to use them properly.
- Students 5<sup>th</sup> grade and older have better hand/eye coordination, larger hands to hold the binoculars, more strength to hold them up, and more patience and better listening skills to learn how to use them properly.
- Binoculars give the students a more intimate experience with nature and the feeling that they are real naturalists.

Please inform PWLC staff when booking if your students will use binoculars or not.

We expect students will most likely observe (hear and/or see) the following kinds of birds during their investigation:

	<b>Early Spring</b>	<b>Mid-Spring</b>	<b>Late Spring</b>
<b>Prairie Birds</b>			
killdeer	✓	✓	✓
American goldfinches	✓	✓	✓
American crows	✓	✓	✓
bobolinks		✓	✓
clay-colored sparrows		✓	✓
<b>Wetland Birds</b>			
ducks	✓	✓	✓
red-winged blackbirds	✓	✓	✓
common yellowthroats		✓	✓
marsh wrens			✓
<b>Both Habitats</b>			
swallows	✓	✓	✓
sparrows	✓	✓	✓
gulls	✓	✓	✓
geese	✓	✓	✓

If desired, students may visit the oak savanna to observe birds such as American robins, woodpeckers, black-capped chickadees, white-breasted nuthatches, grey catbirds, and yellow-rumped warblers

Bird identification and learning bird names could become a focus of the investigation depending on students' questions. If so, students will be asked to look for clues as to what species the bird might be. This includes habitat, colors, size of bird, shape of beak, flight patterns and behaviors. Using this information and field guides, students should have some success in identifying birds.

Birds are more noticeable than mammals in the prairie. Some bird species have adapted well to changes in land use and may be found in farmland and towns as well as prairie. However, others are more choosy or specialized and may only be found on the few remaining remnants of native prairie. Conspicuous but uncommon species include marbled godwits, upland sandpipers, and greater prairie chickens. These three species depend upon native prairie for their survival. Less obvious but more common species include eastern and western meadowlarks, bobolinks, and savannah, grasshopper, and clay-colored sparrows. Probably the most abundant birds are the blackbirds, especially noticeable in spring when nesting; and in fall when migrating in large, waving flocks. Blackbird species include red-winged, yellow-headed, rusty, and Brewer's. Red-winged blackbirds commonly nest in fields removed from cultivation, followed by sedge wrens, bobolinks, common yellowthroats, and savannah sparrows. Certain species can only survive in large grassland blocks (as opposed to remnants), including meadowlarks and dickcissels. Prairie birds, therefore, can serve as indicators of particular environmental conditions.

Likewise the presence of certain wetland bird species indicates circumstances such as water depth and food availability. For example, shorter shorebirds (like killdeer) forage for food on bare ground, mudflats, or in shallow water, but those with longer legs (like greater yellowlegs) can venture into deeper areas. Dabbling ducks (like mallards) feeding in a wetland suggest shallow water, while diving ducks (like scaup) suggest a deeper basin. Students will easily observe waterfowl such as Canada geese and mallards during their visit as they fly overhead, defend their territory, and dabble for food.

The PWLC is part of the Fergus Falls Wetland Management District (District), which emphasizes waterfowl production and ensures the preservation of habitat for migratory birds, threatened and endangered native species, and resident wildlife. The District encompasses land within five counties of western Minnesota: Otter Tail, Wilkin, Wadena, Douglas, Grant. In this area, freshwater prairie wetlands and associated northern tallgrass prairie join to form a zone of transition with the northern hardwood forest. This blend of habitats provides for an impressive diversity of over 290 bird species observed within the District with about 54% of them nesting here (156 species). Agricultural changes to the landscape include the loss of most native prairie and the drainage of over 80% of the small wetlands. Nonetheless, the area remains a critical

waterfowl production and migration area - the highest waterfowl nesting density in Minnesota was recorded in the District (3.5 nests/acre).

The PWLC is located on the eastern edge of North America's Prairie Pothole Region, 300,000 square miles in size, also known as the "duck factory." Over 50% of the continent's ducks hatch from the Prairie Pothole Region. It is the complex of prairies and wetlands that makes the Prairie Pothole Region the most important breeding and nesting site for the North American population of dabbling ducks (such as mallard, wood duck, and blue-winged teal).

Some grasslands units in the District are undergoing intensive management to remove trees and shrubs along fence lines and those that are aggressively spreading through the units. These trees and shrubs would eventually spread throughout these units, leaving many upland birds without nesting habitat. Fence line trees create barriers between different habitat types, fragmenting nesting habitat available for upland birds. More wooded fence lines create habitat for species such as predators and brown-headed cowbirds which in turn decrease nest success for grassland nesting birds because they are such successful predators. By removing the trees, smaller units of grasslands can be combined into larger grassland blocks. Many wetland birds also nest in grasslands such as mallards, blue-winged teal, American bitterns, and sedge wrens. Improving the quality of grassland habitat is important for these birds, as well.

### *Teacher Preparation*

- To maximize outdoor classroom time at the PWLC,
  - Teachers may conduct steps 2 through 4 in the section "Field Investigation Procedure" at school. Upon arrival at the PWLC, teachers may provide PWLC staff with a written list of what students know and wonder for quick review before heading out into the prairie.
  - Please organize your students into small groups at school, each small group led by an adult chaperone, everyone wearing nametags.
- For a significantly more successful visit, we highly recommend conducting one or more of the suggested extensions before your visit in order to integrate this field investigation into the classroom study of birds, animals, classification, or other topics. (See section, "Teacher-Led Extensions/Adaptations/Assessment Ideas.")
- Please help save paper. Bring your students' science notebooks or journals to record their field data and discoveries in. If science notebooks are not available, please inform the PWLC staff that you will need paper and clipboards when booking your date.

### *PWLC Staff Preparation*

Gather materials. Select the start and end location as well as the most appropriate trail to use.

### *Field Investigation Procedure*

1. In a classroom, welcome students, teachers, and chaperones to the Prairie Wetlands Learning Center.
2. To begin the investigation, start a KWHL chart and ask students what they know about birds. Ask the teacher to record the responses on the white board or poster paper. Give them plenty of time to think and respond, guiding where needed, but not answering for them. Even if the information they give is incorrect, resist the temptation to correct them at this point if possible. Doing so will allow for open sharing and for you to gauge where they may need help with this topic during their visit. However, you may prompt students for specifics by asking them such things as, "How many birds live in this area? Do all birds fly exactly the same? Do all birds make the same sounds? Where do birds make their nests?"
3. Next, ask students what they wonder about birds. What questions do they have about them? They should think about questions that can be answered today by going outside and exploring. Each question should also be recorded in the column next to what they know. Again, give them ample time to think and respond. Try not to provide them with questions to investigate. Coming up with their own questions will give them more ownership in the investigation. If necessary, prompt them with questions like: "Is there something you would like to find out today about how birds fly? Where birds live?" Some of the typical questions students may generate are: How many birds can we see today? What colors are they? Do they have nests? What kinds will we see?
4. Once a sufficient list of questions is assembled, work with students to get the questions down to just a few. The number of questions to investigate is up to the judgment of the PWLC instructor based on how many of the questions can be answered from the field experience. Circle these questions and have students write them separately in their notebooks. These will be the focus on the investigation outside.
5. In the interest of time, the PWLC instructor will give student the H (How) of the KWHL. Using the chosen questions, think of four quadrants that the students can collect data for from those questions. For example, if the question is how many birds can we see today, one quadrant might be to make a list of bird species. Other possibilities are: drawing flight patterns, describe the colors of birds seen, sketch a bird and list of bird sounds heard. This data sheet will guide the investigation in the field.
6. Give rules of the trail (see Rules of the Trail document) and allow for any questions the students might have about their time outside.
7. On the trail, carefully observe the birds you see and have the students' record data in their journals. Chaperones should stay with and assist students in their groups. The PWLC instructor will be the trail leader and rotate and help all students as needed. Allow for sufficient time for students to watch birds and record data.
8. Back in the classroom, the PWLC instructor facilitates a discussion of discoveries made in the field. Students share information gathered in each quadrant. Then, students as a group answer the questions asked in the beginning of the investigation. This completes the learned (L) section of the KWHL investigation.

9. Ask them how or who they could share their discoveries with when they return home? (Tell a friend or relative, write a poem or paint a picture to give away, etc.) Encourage them to keep going outside anywhere and looking for birds. Make student bird lists in class to encourage lifelong birding habits. It's free and fun! It could be a lifetime sport! Thank them all for coming to the PWLC and invite them to return again.

## *Weather Alternatives*

Field investigations take place rain or shine. Everyone should dress appropriately for the weather. In the event of unsafe weather (lightning, high winds) or pouring rain, everyone must come indoors. PWLC staff makes every effort to make your travel worthwhile despite the weather and prepare indoor, age-appropriate plans. PWLC staff welcomes teacher input into these plans. Some possible alternatives might include:

- Go outside for a very short amount of time, even if only under the deck, to observe birds.
- Tour the exhibit area and watch prairie wetlands videos with the objective of observing birds and completing the investigation based upon those observations.
- Set up bird centers in the dining hall. Possible stations include drawing and measuring a bird from a taxidermy mount, using a field guide to identify birds (mounts), listening to bird songs from an Identifier, and dancing like various birds (see next bullet).
- Try some bird dances. Students learn how certain birds move (set to appropriate music, CD in box with other materials) with the Prairie Chicken Promenade, Hummingbird Hustle, Pigeon Strut, Sparrow Hop and the Turkey Vulture Twirl.
- Play Bird Charades. For each small group, whisper the name of a type of bird (such as duck, owl, robin, and hummingbird). Each group acts out the typical behavior of that bird while the rest of the class guesses which bird it is.

## *Teacher-Led Extensions/Adaptations/Assessment Ideas*

- Keep a bird journal in your classroom. Have students record any sightings they see outside during recess, from the classroom windows, or from home. How do their bird records change over the school year? What do any changes tell us about birds?
- Visit a nearby park or patrol the school grounds to search for neighborhood birds. What kinds do you find? How many? Are they the same or different from the ones observed at the PWLC? Why?
- Make pine cone bird feeders to take home or hang up outside. Watch the birds and squirrels that visit. Are they the same kinds you saw at the PWLC or different? Why?
- Participate in International Migratory Bird Day activities, or sponsor your own to help others learn about birds. Visit <http://www.birdday.org> for more info.
- Complete the "Migration Headache" activity from Birds! Birds! Birds! (Ranger Rick's Nature Scope series). This lesson helps students learn about migration and that not all birds are successful when they migrate.

- Read the essay, “Great Possessions” from A Sand County Almanac by Aldo Leopold to your class, adapting as appropriate for their age. Re-create the dawn chorus he describes with your students. You may use recordings (from the library, or get up early and record your own) of bird songs or let students be the birds “singing” the songs in sequence as outlined by Leopold. Discuss: Which two senses are Leopold and his dog using? What does the word possession mean? Why does Leopold call this essay “Great Possessions?”
- Check out the migratory bird trunk from the Prairie Wetlands Learning Center. It’s free! This trunk includes the curriculum Songbird Blues with a host of activities for your student to learn more about birds. The trunk also has bird books, posters, bird call song tapes and bird puppets to help inspire the curiosity of a wide variety of learning styles. For more information or to reserve the trunk, call 218-998-4480.
- Ask students to bring their pennies to school so the class can purchase a federal Duck Stamp. Create a display to show the collection of stamps over the years. The cost for one stamp is \$15, and a new stamp is issued annually. Ninety-eight cents of every dollar spent on a duck stamp is used to purchase and preserve wildlife habitat. The land of the PWLC was purchased with duck stamp funds. The duck stamp is an extremely cost-effective way to directly help address the number one issue facing birds and other wildlife, which is habitat loss. For more info about the federal duck stamp, please visit [www.fws.gov/duckstamps](http://www.fws.gov/duckstamps).
- Research various prairie wetlands birds and write reports about them. Use construction paper to create each bird. Each student creates two copies of an outline of their bird species and colors in the appropriate markings and colors. Staple the two sides together and stuff the inside with cotton or wadded up scrap paper. Display the reports and construction paper birds on the bulletin board. Allow time for students to read a report and find the correct bird.

## *2009 Minnesota Academic Standards in Science*

This lesson helps support the following state standards...

### **Strand 1 THE NATURE OF SCIENCE AND ENGINEERING**

#### **Substrand 1 The Practice of Science**

**Standard 1** Scientists work as individuals and in groups, emphasizing evidence, open communication and skepticism.

**Benchmark 1** Provide evidence to support claims other than saying “Everyone knows that,” or “I just know,” and question such reasons when given by others.

**Standard 2** Scientific inquiry is a set of interrelated processes incorporating multiple approaches that are used to pose questions about the natural world and investigate phenomena.

**Benchmark 1** Generate questions that can be answered when scientific knowledge is combined with knowledge gained from one’s own observations or investigations.

**Benchmark 3** Maintain a record of observations, procedures and explanations, being careful to distinguish between actual observations and ideas about what was observed.

**Benchmark 4** Construct reasonable explanations based on evidence collected from observations or experiments.

**Substrand 3** Interactions Among Science, Technology Engineering, Mathematics, and Society

**Standard 2** Men and women throughout the history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry.

**Benchmark 1** Understand that everybody can use evidence to learn about the natural world, identify patterns in nature, and develop tools.

**Standard 4** Tools and mathematics help scientists and engineers see more, measure more accurately, and do things that they could not otherwise accomplish.

**Benchmark 1** Use tools, including rulers, thermometers, magnifiers and simple balances, to improve observations and keep a record of the observations made.

#### **Strand 4** LIFE SCIENCE

**Substrand 1** Structure and Function in Living Systems

**Standard 1** Living things are diverse with many different characteristics that enable them to grow, reproduce and survive.

**Benchmark 1** Compare how the different structures of plants and animals serve various functions of growth, survival and reproduction.

**Benchmark 2** Identify common groups of plants and animals using observable physical characteristics, structures and behaviors.

## *2010 Minnesota Academic Standards in Language Arts*

This lesson helps support the following state standards...

**Strand** READING

**Substrand** Informational Text K-5

**Standard** Read closely to determine what the text says explicitly and to make logical inference from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

**Benchmark 3.2.1.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

**Standard** Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

**Benchmark 3.2.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

**Standard** Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the texts (e.g. a section, chapter, scene, or stanza) relate to each other and the whole.

**Benchmark 3.2.5.5** Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a

given topic efficiently.

**Standard** Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

**Benchmark 3.2.7.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

**Standard** Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the evidence and sufficiency of the evidence.

**Benchmark 3.2.8.8** Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

**Standard** Read and comprehend complex literary and informational texts independently and proficiently.

**Benchmark 3.2.10.10** By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2–3 text complexity band independently and proficiently.

**Strand** READING FOUNDATIONAL SKILLS

**Substrand** Reading Foundational Skills K-5

**Standard** Standards are not used in Foundational Skills.

**Benchmark 3.3.0.4** Read with sufficient accuracy and fluency to support comprehension.

a. Read grade-level text with purpose and understanding.

**Strand** WRITING

**Substrand** Writing K-5

**Standard** Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

**Benchmark 3.6.7.7** Conduct short research projects that build knowledge about a topic.

**Standard** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

**Benchmark 3.6.10.10** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

**Strand** SPEAKING, VIEWING, LISTENING, AND MEDIA LITERACY

**Substrand** Speaking, Viewing, Listening, and Media Literacy K-5

**Standard** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas, and expressing their own clearly and persuasively.

**Benchmark 3.8.1.1** 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. 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. e. Cooperate and compromise as appropriate for productive group discussion. f. Follow multi-step oral directions.

**Standard** Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

**Benchmark 3.8.2.2** Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

**Standard** Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

**Benchmark 3.8.3.3** Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

**Standard** Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

**Benchmark 3.8.6.6** Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

**Strand** LANGUAGE

**Substrand** Language K-5

**Standard** Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

**Benchmark 3.10.6.6** Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., After dinner that night we went looking for them).

## References and Resources

### Book and Web Sites for Adults

- [Birds in the Balance](#) by Karen Copeland-Williams
- [Birds! Birds! Birds!](#) (Ranger Rick Nature Scope series) edited by Judy Braus
- [Everything You Never Learned About Birds](#) by Rebecca Rupp
- [Lessons in a Land Ethic](#) by the Leopold Education Project
- [Sharing Nature with Children](#) by Joseph Bharat Cornell
- [Sharing the Wonder of Birds with Kids](#) by Laura Erickson
- [The Sense of Wonder](#) by Rachel Carson
- Bird Checklist of Minnesota's Prairie Pothole Region,

<http://www.npwrc.usgs.gov/resource/birds/chekbird/r3/fergusmn.htm>

- Federal Duck Stamp, [www.fws.gov/duckstamps](http://www.fws.gov/duckstamps)
- Fergus Falls Wetland Management District, <http://www.fws.gov/midwest/FergusFallsWetland/>
- Fergus Falls Wetland Management District Bird Checklist, <http://www.fws.gov/midwest/FergusFallsWetland/birds.html>
- Habitat and Population Evaluation Team, <http://www.fws.gov/midwest/hapet/>

### **Books for Children**

- An Egg is Quiet by Dianna Hutts Aston and Sylvia Long
- Animals in Flight by Steve Jenkins and Robin Page
- Beaks by Sneed Collard III
- Birds, Nests and Eggs by Mel Boring
- Counting is for the Birds by Frank Mazzola, Jr.
- Ducks Don't Get Wet by Augusta Goldin
- Ducks Nature Activity Book: Educational Games and Activities for Kids of All Ages by James Kavanagh
- From Egg to Robin by Susan Canizares
- How Birds Fly by Bobbie Kalman
- If I Were a Bird by Gladys Conklin
- Our Yard is Full of Birds by Anne Rockwell
- Today at the Blue-Bird Café, a Branchful of Birds by Deborah Ruddell
- Unbeatable Beaks by Stephen Swinburne
- Watch Me Grow, Duckling by Lisa Magloff
- Watching Water Birds by Jim Arnosky

### *Credits*

This field investigation was developed and written by Prairie Wetlands Learning Center Staff, U.S. Fish and Wildlife Service. Thanks to the following teachers for reviewing this lesson plan: Stacy Busta, Breckenridge Elementary; Lynette Ringquist, Cleveland Elementary, Fergus Falls; Deb Strege, licensed teacher, Fergus Falls.