

A Guide to the Prairie Science Class

An Education Partnership Between
The Prairie Wetlands Learning Center
And
The Fergus Falls Independent School District 544



Our Model: Lewis and Clark's Corps of Discovery

With the words below, President Thomas Jefferson set in motion the Lewis and Clark expedition of 1804-1806. The Corps of Discovery, as it would be called, epitomized the rising glory of the United States--its sense of limitless possibilities and unparalleled opportunities.

Washington D.C., June 20, 1803

To Meriwether Lewis Esquire, Captain of the first regiment of Infantry of the United States of America.

The Object of your mission is to explore the Missouri river & such principal stream of it as by it's course and communication with the waters of the Pacific ocean, whether the Columbia, Oregon, Colorado or any other river may offer the most direct & practicable water communication across this continent for the purpose of commerce.

On May 14, 1804, the Expedition for North West Discovery, consisting of more than 30 enlisted men, plus a number of hired hands, embarked from their winter camp near St. Louis, bound for the Pacific Ocean at the mouth of the Columbia River. After two years, four months, and ten days, the Corps of Discovery returned triumphantly to St. Louis on September 23, 1806.

The Corps of Discovery and the Prairie Science Class

I will cheerfully join you in an 'official Charrector' as mentioned in your letter, and partake of the dangers, difficulties, and fatigues, and I anticipate the honors & rewards of the result of such an enterprise...

Clark to Lewis, July 29, 1803

Explore and **discover** are key words for Prairie Science Class (PSC) students for they have much in common with this legendary legion of explorers and discoverers.

- The Corps of Discovery prepared for their journey and PSC students use time in the Learning Center to prepare for their outdoor explorations and maximize their learning.
- They were scientists, and so are PSC students.
- The Corps explored and discovered. PSC students explore the prairie and make discoveries every day.
- Some of the equipment used by the Corps of Discovery included mathematical instruments (compass, thermometers), clothing (knapsacks, warm weather clothing), and a traveling library (books on botany, history, minerals, astronomy, scientific classification, as well as dictionaries and maps). The PSC uses modern versions of the same types of instruments, clothing, and books including field guides.

- They observed the world around them. They measured and mapped. PSC students measure and map the land and its plants in their outdoor classroom.
- They kept journals and field notes and sketches. PSC students record their field observations in their journals as well.
- They worked together as a disciplined team. Each member filled crucial roles depending upon their abilities to lead, hunt, interpret other languages, cut wood, and share specialized craftsman skills. The PSC team consists of teachers who lead and students who participate and learn as well as PWLC staff that periodically lead and assist in the field.
- The Corps of Discovery was supported as a cooperative effort between the U.S. military, the U.S. executive office of the President, and fortunately for them, numerous Native tribes. A broader team supports the PSC as well. It is a partnership between the U.S. Fish and Wildlife Service's Prairie Wetlands Learning Center (PWLC) and the Fergus Falls Independent School District 544. Additional partners include the Friends of the Prairie Wetlands Learning Center, Fergus Falls Wetland Management District, U.S. Fish and Wildlife Service Region 3 Office, Fergus Falls Education Foundation, Mildred R. Thompson PWLC Prairie Science Magnet Class Endowment Fund, Fergus Falls Fish and Game Club, Fergus Falls Fish and Game Club Foundation, and Toyota Foundation. Additional contributors have included Bittenbender Family, Otter Tail Power Company, Ottertail Coaches, Toshiba Foundation, the Minnesota Department of Natural Resources, and the National Fish and Wildlife Foundation.

Because of the close parallels, PSC students become an extension of the original Corps and are named the Corps of Discovery II (2003-4), Corps of Discovery III (2004-5), Corps of Discovery IV (2005-6), and so on.

Mission and Goals

So come forth, into the light of things, let Nature be your teacher.
William Wordsworth, 1770-1850, English Poet

The mission of the Cleveland Elementary School Prairie Science Class is to use the local prairie wetlands ecosystem as an integrating and motivating context to engage 4th and 5th grade students in science, applied math, critical thinking, problem solving, and writing through real world, field-based learning experiences.

Or, to parallel President Jefferson's directive to Lewis and Clark and follow the PSC's established model:

The Object of the PSC mission is to explore the Prairie Pothole Ecosystem and such principal locality as the Prairie Wetlands Learning Center by its course of study in streams of multiple subject areas which flow together and offer the most

direct and practicable method of teaching across this continent for the purpose of effective student learning.

The goals of the Prairie Science Class are to:

- Develop students' knowledge and skills in science, language arts, health, and applied math, through an integrated, field-based study of the local prairie wetlands ecosystem.
- Increase student motivation and engagement through the use of authentic projects, field-based learning experiences, and a relevant local context.
- Develop students' problem-solving, and communication skills, through research projects involving gathering, organizing, processing, and communicating information about the prairie wetlands environment.
- Develop students' character skills and foster a stewardship ethic and a sense of civic responsibility, as the local environment becomes the avenue for emphasizing attitudes of respect, responsibility, and cooperation.

Partnership Coordination

The human community and the natural community will go into the future as a single sacred community or we will both experience disaster on the way.

Thomas Berry, born 1914, Eco-Theologian

Currently, four ISD 544 teachers are stationed at the Prairie Wetlands Learning Center. Four ISD 544 counterpart teachers are at Fergus Falls Public Schools Cleveland Elementary School. They teach the Prairie Science Class students when they are not at the Prairie Wetlands Learning Center (PWLC). Four Student Conservation Association interns – Environmental Education Fellows -- assist PSC teachers three to four days per week. Four environmental education specialists from the PWLC assist with the Prairie Science Class on a one day per week basis. One of those four provide daily, behind-the-scenes support and coordination between both sets of staffs (teachers and PWLC).

The PWLC employee liaison and one teacher on a rotating basis provide PSC teachers with a weekly lesson plan for each Tuesday that all staff teach together. The liaison also provides the PSC staff with the weekly PWLC calendar schedule. Effort is made by both partners to remedy any conflict of use of indoor and outdoor teaching spaces and equipment needs. PSC teachers and staff can use PWLC equipment when available. The school district supplies PSC's office supplies and janitorial services for the education wing during the school year (and during summer when Targeted Services uses the facility). The PSC uses a school district photocopier located at the PWLC.

PSC teachers schedule any PWLC educational programs through the PWLC scheduler. The PWLC visitor's services manager assigns PWLC staff to teach.

Special programs may be scheduled directly between PSC teachers and appropriate PWLC staff, in communication with the PWLC liaison.

PWLC staff must meet the needs of groups visiting the PWLC for field trips from other schools as well as other assigned projects. However, there is an ongoing, daily need for PSC adult field leaders and whenever PWLC staff members are available to assist, and they contact PSC Teachers directly and schedule their time on the PWLC staff calendar in communication with the PWLC liaison.

The PWLC employee liaison coordinates and administers PSC evaluation plans and needs with other PSC team members including PWLC park rangers and interns, PSC teachers and student teachers, and Cleveland Elementary principal.

Overall Program Operation

*Earth, in the dazzling variety of its life, is still a little-known planet. . . .
Microwildernesses exist in a handful of soil collected almost anywhere on earth.
They are ... still unvisited.... A lifetime can be spent in a Magellanic voyage
around the trunk of a single tree.*

Edward O. Wilson, born 1929, American Naturalist

Two hundred sixteen 4th and 5th grade students spend about 2 ½ hours at the PWLC daily, 108 students in the morning from 8:25 am – 11:00 am and 108 students in the afternoon from 12:50 pm – 3:05 pm. Students spend the rest of the school day at Cleveland Elementary School in Fergus Falls, where the remainder of math concepts, reading, social studies, physical education, lunch and music are covered.

While the Prairie Science Class is housed in the Center's education wing classrooms, much of the learning time is spent in the field. The environmental education programs traditionally offered by the Prairie Wetlands Learning Center continue, with the Prairie Science Class complementing, rather than replacing, the existing environmental education programs offered to schools and other educational groups.

Indoors

*While we are born with a sense of curiosity and wonder, and our early years are full of the adventure they bring, I know such inherent joys are often lost.
I also know that, being deep within us, their latent glow can be fanned to flame again by awareness and an open mind.*

Sigurd Olson, 1899-1982, American Naturalist

Arrival and Dismissal

The PWLC uses the same procedure as Cleveland School to ensure student safety and security.

- Most PSC students ride the bus to the PWLC from home or school and back to school or home. When necessary, parents are strongly encouraged to drop off and pick up their students at the secondary school busing hub. Parents are strongly discouraged from dropping off and picking up their students at the PWLC.
- Students may be dropped off or picked up by parents due to tardiness, illness, appointments, or any other reasons. Parents park in marked parking spots, not at the curb or on the sidewalk.
- Parents do not drop-off or meet their child at the curbside while remaining in the vehicle. Parents must physically escort their child from the parking lot to their child's classroom. Students and parents use the main entrance upon arrival as all other exterior doors are locked.
- The student's classroom is the designated waiting spot for students expecting a ride. Parents must sign their child in and out on the log in their child's classroom.
- Parents arriving unannounced to drop off items for their child leave them with a PWLC employee at the reception desk. That employee will deliver the items to the student.
- Students riding the bus have assigned seating and are encouraged to watch weather and sky conditions on the ride to and from the center.
- They are greeted by PSC student teachers, interns, and teachers upon arrival from Cleveland school, and they walk across the deck, down the deck stairs, and enter the Education wing classroom doors. On the way, each class pauses for a few minutes to "get in the moment" of the prairie wetlands. (Students stand quietly and observe.)
- They store their jackets in their cubby in the hallway on hooks near each PSC classroom.
- The morning class recites the pledge of allegiance. In both morning and afternoon sessions, teachers take attendance and students record current weather conditions each day. This start to each class is called PAW (pledge-attendance-weather).
- PSC teachers report attendance to the PWLC receptionist daily for the PWLC program attendance log and communicate attendance information directly with the Cleveland School principal.

Texts

- PSC textbooks are Writers Express for Language Arts and Discovery Works for Science. They also use The Lewis and Clark Expedition, Join the Corps of Discovery to Explore Uncharted Territory by Carol A. Johnson. These texts are used to augment the outdoor classroom where phenology often directs field work activities.

Classroom Management

- PSC students must always stay with their class or small group while at the Center. They may not go upstairs alone, shop, or visit the office or exhibits without a PSC adult. They must be escorted by a teacher or parent to and from the parking lot.
- Students must have a teacher/support staff in sight at all times; students are not unsupervised at any time.

Adult Identification

- All PSC staff have an easily visible badge/ID; students are to interact with adults wearing the badge or FWS uniform only.

Injuries

- Student injuries are handled in the same manner as injuries on other PWLC programs.
- Minor/common hazard injuries such as stings are treated by PSC teacher or staff; more serious injuries are handled according to school district policies.
- The PWLC receptionist fills out necessary FWS forms on a case-by-case basis.

Missing Students

- Missing students are handled according to PWLC procedures for missing students (see PWLC operations manual).

Parent Communication

- PSC teachers provide a letter to parents describing common hazards/risks associated with the field-based nature of this program. The letter asks parents to list any health concerns that staff should be aware of (and if this information can be shared with PWLC staff).
- PSC teachers provide information from this guide to parents in September during parent orientation night or through their child. It is also available from the PWLC web site.
- PSC teachers also provide newsletters to parents, PWLC staff, and key stakeholders.

Emergencies

- In order to effectively handle emergencies, the PSC teachers carry cell phones. PWLC staff carries radios.
- In accordance with school district policy, the PSC must be prepared for emergencies and periodically engage in fire drills and tornado drills. ISD 544 is required to perform five fire drills each year in each school at any time. Should a student pull a fire alarm, and it is not a planned drill, it can be counted as one of the five drills. ISD 544 is responsible for coordinating when these drills take place.

- Fire exits include the PSC classroom doors, the greenhouse entrance, the greenhouse, the PSC reception area doors, and additional exits in the visitor center and dormitory. Students and staff meet near the barn in the event of a fire or fire drill.
- During a tornado warning or drill, the PSC students, teachers and staff walk to the link to the dormitory and use the lower level dorm hallway.
- Code Yellow and Code Red lockdown drills coincide with the Cleveland school drills. For Code Yellow, students remain in the classroom with the doors locked and instruction will continue as normal. For Code Red, students remain in the locked classroom, blinds will be drawn, lights turned off, and absolute silence maintained by all individuals. ISD 544 generally performs three code red lockdown drills and two code yellow lockdown drills each year. ISD 544 is responsible for coordinating when these drills take place.
- Prior to walking on ice in wetlands, and periodically through winter, PSC teachers and PWLC staff work together to check the safety of the ice. Any staff crossing ice carries ice safety equipment, and additional materials are maintained in the education wing storage room. (Please see the PWLC operations guide for details on the ice safety policy.)

Phone

- PWLC refers parent phone calls relating to the PSC to the Cleveland School receptionist: 218-998-0544, ext. 1400.
- Messages are delivered in person or by radio when phone calls are of an emergency nature.

Holidays and Teacher Absence

- During Federal holidays, the PSC operates as usual, and the PSC teachers are responsible for opening and closing the building.
- In the event of a PSC Teacher absence, it is the responsibility of the Cleveland School principal, or the PSC Teacher to ensure a substitute is scheduled.

Outdoors

If a child is to keep alive his inborn sense of wonder, he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in.

Rachel Carson, American Scientist and Naturalist

Field Group Structure

- PSC students spend some time in the field every day, even in the rain and cold and snow, even if only for ten minutes. As long as the weather is safe (no lightning or weather warnings for example), learning can take place in the outdoor classroom.

- Whenever possible, students are split into small groups led by one adult for field work.
- Composition of groups may change weekly depending upon availability of adults.
- Because of special individual needs, certain students may sometimes be assigned with certain PSC Teachers.

Preparation

- Adult leaders must be sure to count the number of students in their small group before entering the field and return with the same number.
- Adults also bring a form of communication into the field whenever possible such as a radio or cell phone in case of an emergency (which is highly unlikely but best to be prepared for). They must be sure to turn on their phones and radios each time they enter the field.
- Adult leaders also carry a small first aid kit for minor cuts, scrapes, splinters, or bee stings. Students who are allergic to bee stings are expected to carry and administer their own antidote.

Field Instructions

- PSC teachers and/or FWS staff provide specific instructions to students for field activities. Examples may include a Seton Watch, measuring distances on land or lengths of plants or animals, Discovery Hikes, monarch tagging, duck banding, etc. However, care is taken to avoid getting too patterned with field activities.

Use of Trails – We Practice Leave No Trace Principles

- Students must use official trails in spring and summer to protect ground-nesting birds.
- Students may walk off-trail in fall and winter during field activities as directed by their adult leader. In the absence of snow, students fan out so new trails do not develop which fragment habitat and provide easier access for predators to waterfowl nests. In snow, students travel single file due to the effort needed to break trail. They may trade off leading to increase travel efficiency.

Communication in the Field

- PSC teachers train students in the use of hand signals for trail travel.
- Adult leaders determine and communicate a signal to the students indicating the end of independent field work.
- When sitting or laying in dense cover, adult leaders remind students to notice who and where their immediate neighbors are located. They are also reminded to keep their eyes open.

Concluding Field Experiences

- Field work may end with thoughtful reflections and sharing during circle time, a journal walk or swap, share-pairs, etc.
- Everyone in the small group sits in a circle, usually in the field. Sitting in a circle, all are equally important. A circle represents the cycles of life (seasons, days/nights, sun/moon, nests, burrows, etc.).
- A talking stick (or rock or grass or whatever is handy and selected) is passed around the circle. The person holding the talking stick may speak to share a discovery, surprise, or celebration. Students are typically encouraged to share using complete sentences instead of one-word answers.
- To show respect and attentiveness to the speaker, all other students give good eye contact to that person and sit quietly.

Field Protocol

The essence is to travel gracefully rather than to arrive.

Enos Mills, 1870-1922, American Naturalist

Goal

When learning in the outdoors, the PSC practices behavior that allows observation, thinking, and communication by all who use the outdoor learning site, and that shows the PSC respects and protects all parts of the natural world. We call this Leave No Trace (LNT). PSC teacher and PWLC staff train students in the principles and practice of LNT, and everyone is expected to adopt these practices in the field as a matter of routine positive behavior towards the land.

On the Trail, PSC Students ...

- Carry their clipboard, journal, and pencil in traveling position. The clip chomps down on the pencil, perpendicular to it. This way we leave no trace of our pencils in the field.
- Walk heel-toe and pick up their knees as while stepping to leave no trace of sound when walking.
- Walk without speaking to leave no trace of their voices on the trail.
- Walk slowly and quietly behind the field leader on established trails.
- Spread out off-trail in fall so we don't create additional trails through the prairie. They leave no permanent trace that they passed through an area.
- Watch and obey signals and directions from their field leader.
- Keep hands to self and leave others alone.
- Practice getting in the moment.
- Practice naturalist skills. A naturalist is quiet, curious, respectful, inquisitive (questioning), observant, full of wonder, patient, and prepared.
- Look for surprises, beauty, delight, and intricate design.
- Practice observing or thinking silently, without moving, each time they go outside if possible. This promotes observation, patience, concentration,

thought, artistic expression, communication and judgment. The Seton watch is an effective example of this.

- Leave the PWLC and habitat better than they found it.
- Limit use of human-made markers and materials to keep the prairie looking natural.
- Protect wildlife, plants, and animal homes.
- Wait outside the PWLC for instructions upon returning to the education wing. Clean feet if needed on the boot brush.
- Walk inside quietly (low voices) as others are using the education wing. Hang up coat/boots if needed. Return to their seats.

On the Trail, PSC Adult Field Leaders ...

- Bring only a **few** handy devices placed in your hand, pocket, or backpack for safety, communication with other field leaders, to help focus attention, and to make concepts easier to understand: first aid kit, radio or cell phone, needed equipment, map, camera, pencils, clipboard, seasonal field guides.
- Coordinate watches and return times. Be responsible for getting groups back on time.
- Count the number of students in their group before going into the field and return with the same number.
- Set clear expectations and check for understanding.
- Have a focus. Remember leaders cannot teach students everything about any topic. Keep the main idea or learning objective in mind.
- Establish clear boundaries and encourage everyone to participate, share duties, practice observing, record and report, and return when done.
- Think of creative ways to hold your group's attention while moving from site to site. Have a walking question such as something to count on the way to the destination. Or ask students to look for surprises, beauty, delight, or intricate design.
- Try walking backwards en route to the destination. It requires a slower pace, and the leader can observe behavior in the group as needed.
- Agree on and practice signals to stop, listen to leader, be quiet, observe something, discuss (such as snapping fingers, quiet coyote, etc.).
- Pass it on (walking by and handing off).
- Pass half the group by a point of interest. Then double back to the middle to discuss the item once everyone has arrived.
- Stand and stare at something without talking to get the students' attention and wait till the group is all quiet.
- Make sure everyone is able to see (one circle or squatting inside circle) and provide comfortable positions. Stand so the sun is in their face (not the students' faces). Squinting is uncomfortable and a distraction to student attention.
- Avoid wearing sunglasses when possible. A cap provides a visor to shade your eyes while allowing students to maintain eye contact.

- Deal with distractions (solve them or accept them).
- Remember that the oak savannah could be a place of risk due to the potential of falling branches.
- Share their enthusiasm. Nothing is more contagious than enthusiasm. Sometimes students need a reminder that it is a good thing to be excited about learning.
- Encourage curiosity and ask questions. Encourage students to ask questions and point out what they see. It is okay to say, “I don’t know” – field leaders do not need to know all of the answers to questions. The students do not see field leaders as the only source of knowledge. Let them ask AND answer questions. This encourages critical thinking and participation in the activity. Give the group at least five seconds to think before you give them the answer or before you call on someone. This allows students time to think more deeply about your question and consider several alternative answers. Encourage students to write down their questions and make some observations that may help them to answer their own questions back in the Learning Center.
- Acknowledge respectful behavior. Encourage students to engage in cooperation by working together, in caring and respect by showing concern for others and the environment, and in responsibility by being accountable for their individual actions. Thank students who are being respectful of nature and others.
- Take advantage of teachable moments offered by the outdoor classroom can offer.
- Inform PSC Teachers of any significant behavior issues as well as commendable behavior so that appropriate consequences and rewards may be given (agenda marks and pencils, for example).

The PSC Respects and Protects Nature (We Leave No Trace)

- **Off trail:** Follow instructions given by the adult leader. Fan out across the landscape to avoid creating trails for nest predators.
- **Observing:** observe quickly for things that move - record as you notice things. Things to look for size, shape, color, action, location - don’t forget sound, smell, and feel. Because of many different allergies, tasting is not allowed.
- **Collecting:** Generally the PSC does not collect; the exception is for prairie restoration and other short-term study as needed. Leave things where they are – but pick up litter.
- **Restoration:** The PSC is involved with prairie habitat restoration, a major learning activity.

PSC Students Care for Equipment

- **Personal equipment.** Students use hooks. Book bags are stored beneath hooks, other personal items go in cubbies as well.

- **Group equipment** (such as thermometers, meter sticks, clipboards, rulers). Students share responsibilities. Everyone is able to do the task at some point, and everyone is responsible to make sure the equipment comes back from the field.
- **Special equipment.** Students learn how to use it, protect it in the field, and return to the classroom (ex: binoculars, skis, snowshoes).

Weather Adjustments

- **Rain gear** includes rain jacket, mud boots, and rain pants. Learning happens in the rain too. If weather conditions are unsafe (such as lightning is sighted), the PSC stays indoors.
- **Cold/snow.** The PSC dresses for cold (using the Big 7: insulated boots, scarves, snow pants, winter coat, winter mittens or gloves, and stocking caps). The PSC students and staff check each other for signs of overexposure to cold and question one another about the level of coldness. The PSC never “cries wolf;” that is not acceptable. The PSC stays inside if wind chill values are colder than -15 degrees F.
- **Bugs.** The PSC brushes away bugs rather than swatting them or using repellent- it’s quieter and less painful! During the school year, the possibility of biting insects is greatly reduced.

Resources

And the world cannot be discovered by a journey of miles, no matter how long, but only by a spiritual journey, very arduous and humbling and joyful, by which we arrive at the ground at our feet, and learn to be at home.

Wendell Berry, born 1934, American Poet

- www.lewis-clark.org
- www.pbs.org/lewisandclark
- <http://www.fws.gov/midwest/pwlc>
- The Nature Fakir’s Handbook, Presentation Skills for Interpretive Naturalists, by Kathleen Harris Regnier
- Lewis and Clark, the Adventure Into the West by John Hinde Curteich, Inc.
- Past Experience with the Prairie Science Class



The Grand Show

This grand show is eternal.
It is always sunrise somewhere;
The dew is never all dried at once;
A shower is forever falling;
Vapor is ever rising.
Eternal sunrise, eternal sunset, eternal dawn and gloaming,
on sea and continents and islands,
each in its turn,
as the round earth rolls.

John Muir, American Naturalist, 1838-1914