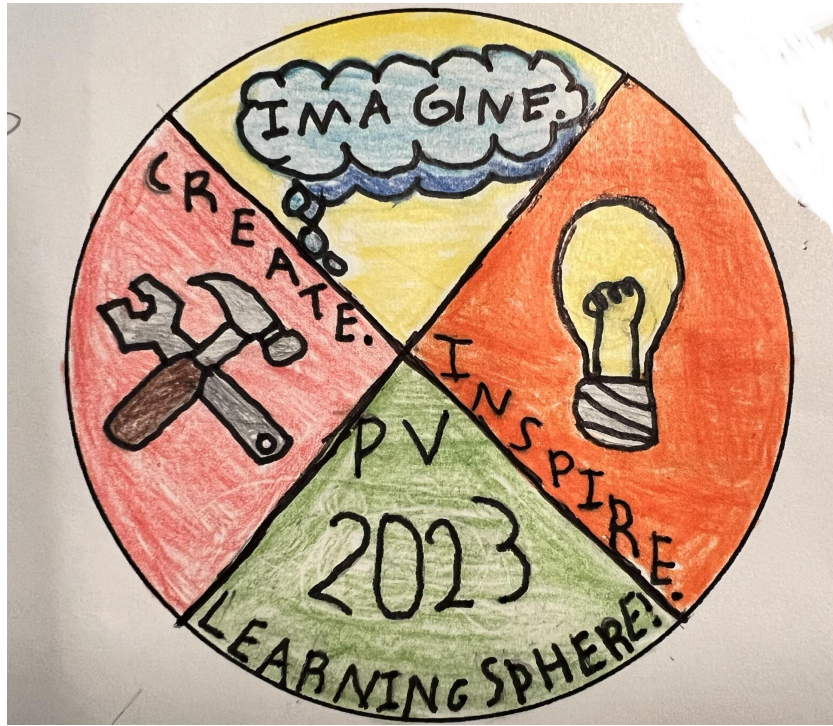


Prairie Vista Elementary LEARNINGSphere

2023

Packet 1



This year's theme by: Milana Merry, Grade 5
This year's logo by: Rosie Liskey, Grade 5

What is LEARNINGSphere?

Each year at Prairie Vista students are given the opportunity to participate in an academic fair called LearningSphere. The students create either a science experiment project or a general research project which is displayed on a presentation board. Students will present their projects to their class and to a professional from within the community. The ultimate purpose of LearningSphere is the joy found in discovering something new about a topic of interest to your child.

- If you are doing a LearningSphere project, please keep this packet for important information as you are working on your project.
- Packets 1 & 2 will be available on the Prairie Vista Website
- More information on LearningSphere can also be found on the Prairie Vista Website

LEARNINGSphere 2023

February 2, 2023

Dear Families,

Welcome to LearningSphere 2023! The LearningSphere will be held on Thursday, February 2nd. I would like to start by extending my appreciation to the LearningSphere Committee. Members of the committee include teachers, staff, and parents who work very hard to make this a meaningful educational experience for each child. The planning for LearningSphere is an evolving process in which ideas for improving the event continue to be shared and implemented.

Entering projects in this academic fair is an authentic way for children to showcase what they have learned in the process of gathering information and creating displays. Parent input is extremely important, but the goal is for each child to investigate a topic of personal interest and to complete his/her own project.

While we ask students to choose a project in an area that interests them, they have an additional choice to make if the entry is in the science category. **When entering a science project, students need to decide whether they want to do a general science research project or enter a science experiment that follows the scientific method.** There is additional information in this packet that will help clarify how the projects will differ. The top science experiment projects submitted by 3rd, 4th, and 5th grade students are eligible for entry in the Northern Indiana Regional Science and Engineering Fair at Notre Dame on Saturday, March 4, 2023.

Please encourage your child to enter a project and take advantage of the valuable opportunity to display his/her work in Prairie Vista's LearningSphere 2023.

Sincerely,

Keely Twibell
Principal

General Information

There are two types of projects that may be done, one is a **science experiment**, and the other is to **research a topic in mathematics, fine arts, social studies, media, or science**. The Scientific Process must be followed for the project to be considered as a science experiment. Professionals from within the community will act as judges to evaluate the students' projects.

In this packet, you will find information to help each child create the best LearningSphere project possible. Sample project ideas can be found under each category heading. After project ideas are approved, judging tips and project display ideas will come in a second packet for those children participating in LearningSphere. There are two types of projects that may be done, one is a science experiment, and the other is to research a topic in mathematics, fine arts, social studies, media, or science. The Scientific Process **must** be followed for the project to be considered as a science experiment.

The top science experiment projects submitted by 3rd, 4th, and 5th grade students are eligible for entry in the Northern Indiana Regional Science and Engineering Fair at Notre Dame. Recognition ribbons and certificates will be given to all students who enter a LearningSphere project.

Additional Safety Information:

1. Any project that involves drugs, firearms, or explosives are NOT permitted.
2. Any project that breaks district policy, and/or local, state, or federal laws are NOT permitted.
3. Respect all life forms. Do NOT perform an experiment that will harm humans or animals. **No pathogenic agents and tissues of any kind are allowed!!**

LearningSphere is coordinated by a committee of Prairie Vista teachers, parents, and staff. If you have any questions, please contact one of the following staff/teacher committee members: Sara Hammond, Kathryn Harris, Renee Johanson, Shelley Lebieczinski, Peggy Reisdorf, Retha Stork, or Angie Wagley.

Classroom Connections

Prairie Vista students are:

- Introduced to the basic scientific process through discussions, participation in mini-experiments, and/or having last year's participants share their experiences.
- Encouraged to participate in LearningSphere. This is a great opportunity for children who have a special interest or would benefit from an academic challenge.
- Expected to present their projects in class and will receive feedback from their teachers.

Check out the books featured in the IMC for inspiration, suggestions, or ideas! Prairie Vista posters from past LearningSpheres will be displayed in the IMC for inspiration.

For Science Experiments Only (See pages 4-7 and 16)

Have you ever thought of trying a **SCIENCE EXPERIMENT** as a LearningSphere project? If so, this is the year to do it!

This year students in grades 3, 4, and 5 have a terrific opportunity to showcase their ***science experiment*** (not research) projects beyond LearningSphere. The **Northern Indiana Regional Science and Engineering Fair (NIRSEF)** is held each year in February or March on the University of Notre Dame's campus. The top science experiment projects from Prairie Vista will be chosen to compete at the NIRSEF against students from other schools in northern Indiana. The fair offers the chance for you to show off your hard work and see what other interesting projects have been done. Moreover, you will have the chance to win awards and prizes for your efforts. In past years, many of our PV students won prizes including monetary prizes up to \$250!

What qualifies as a science experiment? Look in the packet for a specific format of the science experiment project. NIRSEF has a great website with advice and ideas: <https://sciencefair.nd.edu/exhibitor-resources/>

If you have any questions about NIRSEF, please contact Kara O'Malley at karaomalley@gmail.com, Andrea Jacko at atjacko.andrea@gmail.com or pvlarningsphere@gmail.com.

SCIENCE EXPERIMENT

As part of a **Science Experiment Project**, the student will ask a question that can be tested using the scientific process. Projects that fall into the science experiment category will follow the procedure for the Scientific Process. It is important to recognize that projects in the Science Experiment category must have a testable hypothesis. The question being tested should be researched and answered by an experiment done under controlled conditions. Examples of projects that would meet the requirements for Science Experiments are:

- What material makes the best insulator against the cold?
- Which plastic bag is the strongest?
- Which cheese grows mold the fastest?
- Which battery lasts the longest?
- Do plants grow at different rates when given different plant foods?
- Which type of diaper holds the most water?
- How does the mass of a chocolate chip cookie affect the time that it takes to bake?
- Density: Which liquid is heavier?

Projects with live vertebrate animals and/or lasers will not be considered for the Northern Indiana Regional Science and Engineering Fair at the University of Notre Dame and are not appropriate for LearningSphere Projects.

Helpful Science Websites

Great Suggestions for Understanding the Scientific Method:

<http://studyjams.scholastic.com/studyjams/jams/science/scientific-inquiry/scientific-methods.htm>

Need Help Finding a Project:

http://www.sciencebuddies.org/science-fair-projects/project_question.shtml

Science Fair Project Resources: <http://www.sciencebuddies.org/>

NOTE: Use safety on the Internet and only use the Internet with parent permission! Never write to anyone without an adult knowing about it. Be sure to let an adult know what websites you will be visiting, or have them help you search.

The Scientific Method

This is the process used for a **science experiment**. It should be followed precisely when doing a **science experiment project**. Each of the following headings must be included.

Great Suggestions for Understanding the Scientific Method:

<http://studyjams.scholastic.com/studyjams/jams/science/scientific-inquiry/scientific-methods.htm>

Problem / Purpose

- * What is your goal?
- * What are you trying to test?
- * What is the scientific question you are trying to answer?

Hypothesis

- * Explain how you think your project can demonstrate your purpose.
- * Make a prediction regarding the outcome of your experiment.
- * State the results you are predicting in measurable terms.

Procedure

- * Give a detailed explanation of how you will conduct the experiment to test your hypothesis. Your procedure should be like a recipe. Another person should be able to perform your experiment following your procedure.
- * Be clear about the variables versus the controls in the experiment.
 - Variables: Elements of the experiment that *change* to test your hypothesis
 - Controls: Elements of the experiment that *do not change*
- Be very specific about how you will measure results to prove or disprove your hypothesis. Include a regular timetable for measuring results or observing the data (for example, every hour, every day, or every week).
- * **Repeat the experiment. Follow the exact procedure again (multiple times). Collect data for each trial.**

Materials

- * List all materials and equipment that were used. This should include all of the ingredients of the procedure recipe.

Observations / Data / Results

- * Keep a detailed journal of observations, data, and results. Your journal should contain data measurements and written notes about what you are sensing (hearing, seeing, or touching) in your experiment.
- * If appropriate, photograph your project results or phases of the project to help your analysis and display the pictures on your exhibit board.
- * **Repeat the experiment. Follow the exact procedure again (multiple times). Collect data for each trial.**

Analysis

- * Explain your observations, data, and results. This is a summary of what your data has shown.
- * List the main points that you have learned.
- * Why did the results occur? What did your experiment show?
- * Was your hypothesis correct? Did your experiment prove or disprove your hypothesis? Explain.

Conclusion

- * Answer your problem/purpose statement.
- * What do your results mean?
- * What is the value of your project?

Examples for following The Scientific Method

These are examples of how to follow the Scientific Method for a *science experiment project*.

Example 1

Problem / Purpose

Can a person taste sweet, sour, salty, and bitter without the sense of smell?

Hypothesis

I think that people will NOT be able to taste sweet, salty, sour, and bitter without the sense of smell.

Procedure

-Mix solutions for each of the tastes

Sweet: ½ C. water with 2 Tablespoons sugar

Salty: ½ C. water with 2 Tablespoons fine sea salt

Sour: ½ C. water with 2 Tablespoons lemon juice

Bitter: ½ C. water with 2 Tablespoons of plain cocoa

-Test only one person at a time.

-Use a clean Q-tip to apply each solution to a subject's tongue.

-Have a person close their eyes, plug their nose, and stick out their tongue. Apply one solution to the tongue and ask what they taste. Record their response. Take photos of their expressions.

-Have the person drink water between testing each solution.

-Test the next solution in the same manner. Record their response.

-Continue this process to test all four solutions.

- (Test 8-10 people and record each of their responses)

Materials

Solutions for each taste: water, sugar, sea salt, lemon juice, plain cocoa

Small opaque cups with covers to hold each solution (so the subject cannot see what the solutions look like)

Q-tips

Cups with drinking water (for rinsing between tastings)

Camera

Observations / Data / Results

(Compare words, sounds, facial expressions, or other reactions from each person.

Chart the responses.)

Analysis

People made twisted facial expressions and said lots of “yuck!” or other unpleasant words when tasting salty. They did not react strongly to bitter, yet they couldn't tell it was cocoa until they unplugged their nose and smelled the chocolate. Sweet brought a smile to faces. Sour caused a few puckers and wrinkled foreheads, with words like “ew!” and “wow”.

Conclusion

People CAN taste sweet, salty, sour, and bitter without the sense of smell. Smell helps people differentiate specific flavors, like cherry vs. grape, but the tongue can taste sweet even without the nose.

Examples for following The Scientific Method

Example 2

Problem / Purpose

Do bean plants grow faster when grown in plain potting compost, Miracle-Gro potting compost, or plain potting compost with liquid fertilizer?

Hypothesis

I think the beans will grow fastest in Miracle-Gro potting compost.

Procedure

- Collect 18 small plant pots, 18 beans of similar size from the same batch of beans, plain potting compost, Miracle-Gro compost, and liquid fertilizer.
- Label 6 pots “water only”, 6 pots “liquid fertilizer” and label the remaining 6 pots “Miracle-Gro”
- Put equal amounts of plain potting compost in the 12 plant pots labeled “water only” and “liquid fertilizer”, and Miracle-Gro potting compost into the 6 “Miracle-Gro” plant pots.
- Place 1 bean 1cm deep into the center of the compost in each plant pot.
- Water the beans with the same volume of either water (for “water only” and “Miracle-Gro” pots) or liquid fertilizer. Place the pots on a windowsill so that they receive plenty of light.
- Continue to water the plants every other day using the same volume of either water or liquid fertilizer.
- Observe the plants daily and measure how much they grow for several weeks after germination. Observe any other changes in the plants in the different groups (difference in color, number of leaves).

Materials

Plant pots, potting compost, Miracle-Gro potting compost
Beans
Liquid fertilizer diluted as directed on the package
Ruler, camera

Observations / Data / Results

The height of plants was measured daily. Results were charted on a bar graph.
Photos of the plants were taken daily to compare the color and general health of the plants.

Analysis

Beans grown in plain compost and watered with plain water germinated fastest and were the tallest for the first 4 days after germination. After 4 days post-germination the beans planted in Miracle-Gro were taller than the other beans. Two weeks after germination, the beans grown in Miracle-Gro were tallest and looked the healthiest, followed by the beans grown in plain compost but watered with liquid fertilizer. The beans planted in plain compost and watered with plain water were shorter and looked more yellow than the other plants after 2 weeks.

Conclusion

I will use Miracle-Gro if I want to grow plants in the future. If I couldn't find Miracle-Gro then I would use a liquid fertilizer. It would be interesting to find out if the experiment would have the same results if a different type of seed was used.

General Research

For General Research Only! (See pages 8-12 and 17)

Categories and Ideas:

Students may choose a topic from within the following list of categories for their LearningSphere projects. The suggestions listed under each heading are intended to spark the imagination and spur the creative process. Feel free to use these suggestions as a starting point for your student to create their own unique ideas!

SCIENCE RESEARCH

As part of a **Science Research Project**, the student will identify an area of science that is of interest to them. They will conduct research on the topic. They should keep track of sources to cite as references. They may include formal surveys as part of their research. Their project should follow the procedure for the General Research Process. Examples of projects that would meet the requirements for Science Research are:

- How are volcanoes formed?
- What are comets made of?
- What types of birds live in a certain region?
- What is Type 2 Diabetes?
- What causes lake effect snow and what are the effects of it?
- Facts about the Great White Shark.
- What is a tornado?
- How does a battery work?

FINE ARTS

Research the history of a song.
What kind of music was popular when your grandparents were teenagers?
Compose your own song.
Choreograph your own dance.
Research the life of an artist or composer.
Produce and present a short play (include props, set, costumes).
Research and show how animation works.
Create your own comic strip or cartoon.
Research an art form and create a work of art.
Research what crafts have been practiced in this area.
Research the history of a particular type of dance.



MATHEMATICS

- ◆ Research and show an example of the use of probability.
- ◆ Collect data and show your results through the use of various graphs.
Example: Which brand of raisin cereal has the most raisins?
- ◆ Research different forms of numerical systems.
- ◆ Make a comparison of the various world currencies or time.
- ◆ Research measurement.
- ◆ What is the effect of advertisement on sales?
- ◆ Research architecture and its effects on civilization.
- ◆ Research the history of a particular type of currency.



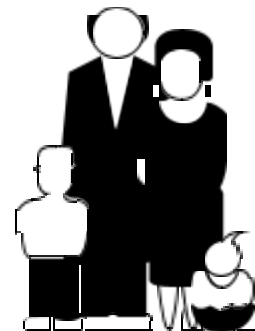
MEDIA

- ❖ Create a photographic essay using a series of photos to communicate a central theme.
- ❖ Create a slideshow on a DVD based around a central theme.
- ❖ Prepare a scrapbook-type presentation of an event using standard or digital photography.
- ❖ Prepare a sound recording in any format (musical, dramatic reading, etc.).
- ❖ Prepare a presentation using a combination of more than one visual image. This might be slides and videos, or slides. It may or may not have sound.



SOCIAL STUDIES

- Research the history of local industry.
- What legends have been told about the community?
- How have children's school clothes changed since your parents were in school?
- Research the impact of influential families on the local area.
- Research the history of an airplane.



This outline may be used for a ***General Research Project***. A research topic may be in the area of math, media, fine arts, social studies, or science. Often a research project leads many different directions. You may choose which sub-topics to explore and how you wish to display your information. Each of the following headings should be addressed.

Choose a Topic

- * Begin with an idea
- * You may choose to
 - learn about one subject
 - examine or evaluate an idea
 - create something
 - compare / contrast ideas
- * Choose a title. It should be catchy and specific.

Identify Possible Sub-Topic Ideas

- * Begin to put your ideas into categories
- * Ask questions about your topic
- * Identify some areas you want to learn about relating to your topic.

Research Your Information

- * Learn everything you can about your topic. Stay focused and organized.
- * Keep track of what you learn and your sources, which can be listed as your references.

Organize Your Information

- * Narrow the sub-topics you wish to discuss.
- * Use these sub-topics to help organize your presentation board.

Conclusions

- * Summarize your findings.
- * Did you discover something new or unexpected?
- * What did you learn from your project?
- * Are you able to apply what you learned to anything else?

References

- * List the sources used for finding your information.

Examples for General Research Projects

These are examples of how to follow the process for a ***general research project***. Once you choose your own topic, think of questions and ways to explore the subject.

Example #1

Choose a Topic

SPIDERS

(Category: Science Research)

Identify Possible Sub-Topic Ideas

What are different kinds of spiders?

Where do they live?

What do they hunt and what do they eat?

How does a spider spin a web?

Which kinds are harmful and which are harmless?

Research Your Information

Check out books on spiders.

Look up spiders on the Internet.

Explore magazine articles.

Go to pet stores or the zoo.

Talk to a spider expert.

Capture a web from outside.

Investigate!

Organize Your Information

Categories of spiders (Harmful vs. Harmless)

Spider habitats

Spinning webs

Hunting and eating habits

Conclusions

Summarize your findings. Highlight anything you find interesting or surprising.

References

List the sources used for finding your information.

Examples for General Research Projects

Example #2

Choose a Topic

WHICH IS THE FAVORITE CEREAL IN MY CLASS?

(Category: Math Research)

Identify Possible Sub-Topic Ideas

What makes a cereal taste good?

Which cereal tastes better than others? Why?

What makes a cereal healthy? Which cereal is healthier than others? Why?

Do kids like healthy cereals?

What makes cereal appealing to kids?

Research Your Information

Look up nutrition labels on the cereal boxes.

Read the ingredients. Find out what the ingredients are if you are not familiar with some of the words.

Look at the packaging. Compare the pictures and words on the boxes.

Create a way for everyone to identify which is his/her favorite cereal.

Gather and record their responses.

Organize Your Information

Create a chart to show your findings.

Show examples of the top-rated cereals on your display board.

Highlight the attractive parts of each cereal (cool box, fun characters, interesting prize, neat shapes, great crunch, turns the milk colors, etc.)

Conclusions

Discuss which cereals were top picks.

Were they healthy cereals?

Why do you think kids in your class chose these as their favorites?

What do these cereals have that appeal to kids?

Could the cereals be improved? How?

References

List the sources used for finding your information.

LEARNINGSPHERE TIMELINE

DATE	WHAT IS DUE
Friday, December 2nd	<u>Project Idea Form *</u> (This registers your project)
Tuesday, January 31st	<u>Project Entry Form **</u> (This is what the judges use to evaluate the project.) - Projects delivered to the classroom for presentation in class (unless otherwise specified by your child's teacher)
Thursday, February 2nd	<u>Day of LearningSphere</u> Students will present to a professional from within the community in person.

KEY: * Found in this first packet

** Will be distributed to students 2 weeks prior to LearningSphere

- If you are doing a LearningSphere project, please keep this packet for important information as you are working on your project.
- Packets 1 & 2 will be available on the Prairie Vista Website
- More information on LearningSphere can also be found on the Prairie Vista Website

PARENTS!

DO YOU WONDER WHAT YOU CAN DO TO HELP?

Parents often ask for ways to help make their child's LearningSphere project more valuable. Determining the right amount of parental help is the heart of the problem. How much do I help? What things should I do? Am I doing too much? These are common questions. To keep this activity as positive as possible, keep in mind the following suggestions:

1. Let your child choose a topic or subject that is of interest to him or her. Help your child talk through the subjects in which they are interested. You can then narrow the list to a workable size.
2. Help your child find research materials. You may need to help read highly technical material or put the information in terms that your child can comprehend.
3. Help your child set up an organizational method that works for them. (What will you do first? What will you do next?) Help your child make a timeline in order to complete the project by the due date.
4. Help your child decide what materials will be needed to complete the project. (Do we have the materials you need? Where will we get them?)
5. Help your child find a place to keep all their materials together.
6. Help your child organize the final display for the project on a freestanding 3-fold display board. Any writing must be in the child's own words. **Please remind your child to display their name clearly on their board!**
7. Help your child practice presenting the project.
8. The ultimate goal is to have your child be proud of their own work and accomplishments in learning!
9. Be supportive! Be positive! Have fun!

Project Idea Form Due Friday, December 2nd

IMPORTANT

You will find TWO different Project Idea Forms in this packet.
Fill out only **ONE** Project Idea form.

If you choose to do a **Science Experiment** project, refer to **green pages only**,
and complete a
Project Idea Form - Science Experiment

If you choose to do a **General Research** project, refer to **yellow pages only**,
and complete a
Project Idea Form - General Research Project

Once you have completed the form, give it to your teacher.

Do NOT use this form if you are doing a General Research Project!

Project Idea Form – Science Experiment

Due Friday, December 2nd

Name _____

Grade _____ Teacher _____

PROJECT TITLE _____

If you choose to do a Science Experiment:

- The **Scientific Method** must be followed precisely. (The Scientific Method is listed in this packet)
- Only 3rd, 4th, and 5th graders are eligible for the Regional Science and Engineering Fair.
- You will also need to do some background research in order to fully understand your experiment.
- Please answer with as much detail as possible so teachers are able to approve projects.

Problem / Purpose - What idea are you trying to test? What scientific question are you trying to answer?

Hypothesis – Make a prediction about what will happen in your experiment. What do you think you will prove or disprove?

Parent Signature _____ Date _____

----- Teacher Use Only -----

Idea Approved: Yes No

Suggestions _____

Teacher Signature _____ Date _____

TEACHERS: On the LearningSphere Google doc., record the students who will be participating and if they will be doing a General Research Project or a Science Experiment. Return this original form to the student, **AFTER** you have **APPROVED** their idea.

Project Idea Form – General Research Project

Due Friday, December 2nd

Name _____

Grade _____ Teacher _____

PROJECT TITLE _____

Please indicate the category for your research project:

- ☐ Science (These projects are not eligible for the Regional Science and Engineering Fair)
- ☐ Math
- ☐ Social Studies
- ☐ Fine Arts
- ☐ Media

If you choose to do a General Research Project:

- Narrow your topic to one specific area of research.
- Organize your research into sub-topics for display and presentation.
- Find information from a variety of resources.
- Please answer with as much detail as possible so teachers are able to approve projects correctly.

✓ **Topic** – What topic do you plan to research?

✓ **Sub-Topics** (at least 3) - What areas of your topic will you learn about? What questions do you have about your topic?

Parent Signature _____ Date _____

----- Teacher Use Only -----
Idea Approved: Yes No

Suggestions _____

Teacher Signature _____ Date _____

TEACHERS: On the LearningSphere Google doc., record the students who will be participating and if they will be doing a General Research Project or a Science Experiment. Return this original form to the student, AFTER you have APPROVED their idea.

