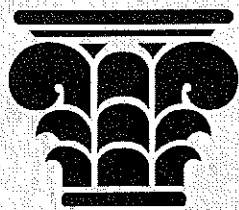


# Earth Exploration Lab Days

Teacher Packet



# Minnetrissa

---

NATURE • HISTORY • GARDENS • ART

# Contact Information

---

Minnetrista  
1200 North Minnetrista Parkway  
Muncie, Indiana 47303

Reservation Line: (765)213-3549  
[www.minnetrista.net](http://www.minnetrista.net)



Stephanie Dilk, Education Manager  
(765) 287-3528  
[sdilk@minnetrista.net](mailto:sdilk@minnetrista.net)

# Table of Contents

---

Indiana’s Academic Standards.....	4
About Minnetrista.....	5
What to Expect.....	6
Pre-Activities .....	7-8
Post-Activities.....	9-10
Bibliography and Resources.....	11

## Indiana's Academic Standards

### 3<sup>rd</sup> Grade

Language Arts	3.1.2, 3.7.1, 3.7.2, 3.7.3, 3.7.12, 3.7.15, 3.7.16
Mathematics	3.2.1
Science	3.1.2, 3.1.4, 3.1.5, 3.1.6, 3.1.8, 3.2.1, 3.2.4, 3.3.1, 3.3.5, 3.3.6, 3.3.7 3.3.8, 3.4.1, 3.4.4, 3.5.1, 3.5.1, 3.5.5, 3.6.3
Social Studies	3.3.6, 3.3.7, 3.3.10, 3.3.11

### 4<sup>th</sup> Grade

Language Arts	4.1.1, 4.7.1, 4.7.2, 4.7.4, 4.7.6, 4.7.7, 4.7.15
Mathematics	4.1.1
Science	4.1.5, 4.1.7, 4.1.8, 4.2.4, 4.2.6, 4.2.7, 4.3.2, 4.3.11, 4.3.14, 4.4.2, 4.4.3 4.4.6, 4.4.7, 4.4.9, 4.5.5, 4.6.2, 4.6.4
Social Studies	4.3.7, 4.2.4, 4.4.9

### 5<sup>th</sup> Grade

Language Arts	5.7.1, 5.7.4
Science	5.1.1, 5.1.2, 5.1.4, 5.1.5, 5.1.7, 5.2.8, 5.2.4, 5.2.7, 5.2.3, 5.3.11, 5.4.4 5.4.5, 5.4.7
Social Studies	5.2.10, 5.3.6, 5.4.9

### 6<sup>th</sup> Grade

Language Arts	6.7.3, 6.7.15
Science	6.1.5, 6.4.1, 6.4.3, 6.4.8, 6.4.9, 6.4.10, 6.7.2
Social Studies	6.3.14, 6.3.15, 6.7.3, 6.7.15

### 7<sup>th</sup> Grade

Science	7.2.3, 7.1.4, 7.1.8, 7.4.6, 7.4.7
---------	-----------------------------------

### 8<sup>th</sup> Grade

Science	8.1.4, 8.1.7, 8.1.8, 8.2.7, 8.3.15, 8.4.5, 8.4.6, 8.4.8, 8.7.7
---------	--

## **About Minnetrista**

Minnetrista is located along the banks of the White River on a campus of more than 40 acres. The Ball family purchased most of the land along the north bank of the White River between Wheeling and Granville pikes in 1893. The name chosen by the family for the property was taken from a Sioux word, "mna" (pronounced mini) which means "water," and combined with the English word, "tryst," to form "Minnetrista," or, "a gathering place by the water." Eventually the Ball brothers' children decided to turn the site of the Minnetrista home into a center to preserve the culture of the area. Ground was broken March 14, 1987 and Minnetrista opened December 10, 1988. George and Frances Ball's home, Oakhurst, was opened to the public in 1995 to provide additional educational opportunities. Minnetrista's campus now includes eight major buildings, a historic home, Nature Area, numerous gardens, sculptures and a portion of The White River Greenway.

### **Mission Statement**

Minnetrista creates awareness, understanding, and appreciation of the natural heritage and cultural heritage of East Central Indiana.

Minnetrista is a non-profit, charitable organization governed by a board of community leaders from seven counties across East Central Indiana.

### **Our Educational Values**

We believe in learning through having fun.

We adapt programs based on the audience needs.

We use teacher responses and feedback to improve our programs.

We encourage active participation by the children.

We strive to deliver accurate, researched information in our programs.

We encourage appreciation for learning.

## What to Expect

Your students will spend a full day (4 hours) on an interactive tour throughout our campus. Please prepare for the weather. The following is an outline of the tour.

### Introduction- MCC Lobby- 10 min.

Students and teachers will drop off lunches and take a restroom break if needed. A Minnetrista leader will explain what the day will look like and then distribute classes with their respective Minnetrista leader.

### Exhibit Time- "Eyes on Earth" Exhibit- 30 minutes

Students will explore the gallery, engage with the interactive components and study points of interest.

### Lunch and Carbon Footprint- 50 minutes

Students will eat their lunch and record the items in their lunch box/sack. After lunch we'll examine the carbon footprints associated with the food they consumed.

### Alternative Energy Testing- 30 minutes

Students will explore common alternative energy sources through working models.

### Nature Area Time- 30 minutes

- **Gr. 3-5:** Students will take a short hike (5-8 minutes) through our nature area to better understand the three common habitats of Indiana. They'll look at species of plants and animals that live in these habitats.
- **Gr. 6-8:** Students will take a medium length hike (15-20 minutes) through our nature area to examine it as a property that has been reclaimed and refurbished to act as a natural space. They'll discover the methods Minnetrista staff used to maintain and develop the space.

### Water Testing- Nature Area Pond- 30 minutes

- **Gr. 3-5:** Students will test the pH, turbidity and quality of life in our pond
- **Gr. 6-8:** Students will test the pH, turbidity, dissolved oxygen and phosphate content in our pond

### Geology- Classroom- 30 minutes

- **Gr. 3-5:** Chocolate Chip Mining. Using chocolate chip cookies as their "land" students will discover the effects of strip mining. Note: students will not be consuming this product
- **Gr. 6-8:** Mineral Toothpaste. Using everyday minerals, students will "invent" their own brand of toothpaste while gaining an understanding of what being a mineral means.

### Environmental Impact of Choice- 30 minutes

- **Gr. 3-5:** Recycled Kite. Students will discuss the impact of choice then create a kite using everyday items that are reduced, reused and/or recycled.
- **Gr. 6-8:** Driving Game. Students will discuss fuel efficiency through a fun simulation.

## Pre-Visit Activities

### Design Your Ideal House

#### Goal:

Students will learn basic needs of housing for human shelter

#### Objectives:

- Introduce students to thinking critically about housing needs.
- Students will identify at least two basic necessities for shelter
- Students will identify at least two amenities that are “wants” instead of “needs.”

#### Concepts:

- People have basic needs and wants
- Peoples’ basic needs have to be met before their wants
- Demonstrate that shelter by, itself, is more important than personal items
- A home is more than just four walls and a roof.

#### Activities:

Ask students design their dream house (students can also look online, if desired). When this project has been completed (or found) ask students to write down what makes the house they chose their dream house. Break the students up into small groups and discuss what they wrote. While the students are in their discussion groups, write two categories on the board: “Basic Needs” and “Amenities.” Then ask the class to pick from their list two things that they believe will fit into each category, but the item can only be listed once. Afterwards, ask the students what they believe is the difference between the two categories is. Explain to them the definition, and determine if they were correct. Once they understand the difference, look at the lists written on the board and see if they have covered all basic needs for people and if there is anything they have listed that is not a basic need. Once this is completed, asked the students if the early pioneers would have been able to find their basic needs in their environment.

The following lists are examples that might be mentioned during their discussion. There are many more items that fit each of categories.

<b>Basic Needs</b>	<b>Amenities</b>
1. Protection from weather and creatures	1. Swimming pool
2. Insulated and weather proof roof	2. Television
3. Availability of food and water	3. Size
4. Built on solid land	4. Computer/Internet
5. Proper ventilation system	5. Yard

#### Something to Consider: Are these Basic Needs or Amenities?

1. Electricity
2. Running Water
3. A bedroom/bathroom for each person
4. Air Conditioning

## Nature Cycles

### **Goal:**

Increase students' awareness of the different resources needed to create the materials or reroute the resources we use in everyday life.

### **Objective:**

- Introduce students to different natural cycles (water, rock, etc.)
- Students will identify the hierarchy of elements needed to produce different materials.
- Students will learn how people are incorporated in the complete cycle.

### **Concepts:**

- All natural materials need rain, soil, and sun in order to be produced.
- People can alter and even destroy an ecosystem or production cycle.
- People can also help preserve the environment.

### **Activity:**

Students will demonstrate their knowledge of how resources are created through a mobile or flow chart. Students can find information and pictures online or in books. They can use toys or their own drawings to create the pieces of their mobile. Once the students' mobiles are completed; they will have to answer the questions posed to them. These questions are geared to make the students aware of how people can alter their environment.

## Find the Nutrients

### **Goals:**

To create a means of seeing the mineral components in fresh water.

### **Objective:**

- Students will understand there are mineral components in fresh water.
- Students will understand the concept of evaporation and its effects.

### **Concepts:**

- There are mineral components in fresh water ecosystems.

### **Activity:**

Collect a quart of water from a pond, river or lake. Pour the water into the shallow dish and allow it to evaporate. You can gently heat the water with a hot plate to expedite the process (be sure to use an appropriate pan or dish if you do this). Document what remains in the dish after the water is gone.

## **Post-Visit Activities**

### **The Great Debate**

Students can work independently, in pairs or in groups. Ask them to determine which Indiana habitat they'd prefer to build a home in...woodlands, prairie, and wetlands (all of which they've been introduced to during their experience at Minnetrista).

You can extend this activity by asking them which materials they would build with: wood, sod, clay brick, limestone, metal, thatch, etc.

Set up a forum in your class for debate. Discuss the differing views and opinions about the choices each person/pair/group made.

Which choice is the best? Is there one correct answer? What other factors should be considered? Is the environmental impact a concern? Can we live on this Earth without leaving an impact?

### **Plant vs. Rock**

#### **Goal:**

To illustrate how natural and man made materials can clash.

#### **Objective:**

- Use a hands-on project as a means of determining how nature and man-made materials can affect one another
- Improve observation skills through note taking, journaling, graphing, etc.

#### **Concepts:**

- The natural environment can affect the human world
- The human world can affect the natural environment

#### **Activity:**

Mix plaster of paris with water using the instructions on the container. Pour the mixture into a box. This will act as your sidewalk. Spread 3-5 lima bean seeds on top of the wet plaster. This acts as the natural plant material that often grows near or in between our sidewalks. Cover the seeds with layers of damp paper towels to keep them from drying out. This will simulate the moisture in the air as well as precipitation.

Check the growth of the beans and the condition of the plaster. Note any differences in a journal or other note-taking system. How do the plants look? What does the plaster look like? Continue to check the plaster and note changes every 2 days for another week. You will see the roots of the sprouts digging into the plaster to search for food and break up the plaster in the process.

## Oxidation

### Goal:

To illustrate how weathering, especially through acid rain affects rock- both natural and in man made surfaces, such as statues and buildings.

### Objective:

- Students will have a first-hand experience conducting a safe science experiment with everyday items
- Students will use results of their experiment to help draw conclusions

### Concepts:

- Oxidation affects the metallic compounds in rocks
- This same affect can be expedited on man-made materials as acid rain increases

### Activity:

Place 2 tablespoons of water in a saucer, add 5 drops of vinegar. Place a clean nail in the saucer (it should be covered partly with the mixture of vinegar and water). Place a glass cup or jar over the nail, this will hold moist air over the nail. Return after several hours. What do you notice? The nail has begun to rust. *Iron will rust in ordinary water and moist air but the acid in the vinegar speeds up the rusting.* This illustrates the process of oxidation, sped up by the addition of acid in the moisture.

## **Bibliography and Resources**

Arnov, Boris. Water: Experiments to Understand It. Lothrop, Lee and Shepard Books, New York, 1980.

IDNR Division of Reclamation. IMCC Mineral Education Workshop Notebook.

Pfiffner, George. Earth-Friendly Toys. John Wiley and Sons, Inc., USA, 1994.

Wood, Robert W. 39 Easy Geology Experiments. Tab Books, Blue Ridge Summit, PA, 1991.

[www.emints.org/ethemes/resources/S00000755.shtml](http://www.emints.org/ethemes/resources/S00000755.shtml)

This website has some fun activities and lesson plans designed for a variety of ages. This site focuses primarily on topics pertaining to geology.

[www.theteacherscorner.net/lesson-plans/science/earth/index.htm](http://www.theteacherscorner.net/lesson-plans/science/earth/index.htm)

This website has thematic units and lesson plans on a variety of environmental science topics.

[www.teach-nology.com/teachers/lesson\\_plans/science/environment/](http://www.teach-nology.com/teachers/lesson_plans/science/environment/)

This website has a variety of lesson plans and activities correlated with Florida state standards, which should be comparable to the national standards. Activities range in degrees of difficulty and grade appropriateness.

[wilderdom.com/games/EnvironmentalActivities.html](http://wilderdom.com/games/EnvironmentalActivities.html)

This website has many suggestions of activities to do in nature, to explore it and experience it. Some of the activities go beyond what is feasible in normal classroom circumstances (such as eating bugs). But there are some great ideas that can be modified to meet your needs and state standards.