What's to Eat

A Close Look at Food Around Our School

K-1 Classroom

Phase 2

Pursuing Our Questions
Data Collection, Analysis, and Synthesis, and Evaluation

Students interview experts to answer their questions

Students collect data by tally counting.

Phase 2 began with students investigating and gathering data to answer their questions. Students gathered data by doing field studies, observing closely, interviewing experts, setting up experiments, designing questionnaires, reading books and using the internet. They kept track of the data by recording it through sketching, taking notes, tally marks, observational drawings, photographs, and videotaping their experiences. So they could compare their current understanding with what they would find out, students predicted what they might see and find out before their field studies. They analyzed the data by making representations and graphic organizers. Students observed, discussed, theorized, tested, analyzed, and evaluated the data. They shared their findings with individual friends, in small groups or at large group meetings. The parents supported the project by sharing their time and expertise, answering questionnaires, and contributing food and recipes.

Field Studies

How does food help our body?

During phase 1, students noted what their classmates were bringing in their lunches and determined whether it was healthy. They made comments about each other's lunches.

AF: Lunchables have really neat pictures on them.
VM: Lunchables have too much fat. You aren't supposed to have fat.
AC: Candy is "junk food."

AH: I only have a few pieces.
AC: It's bad for you.

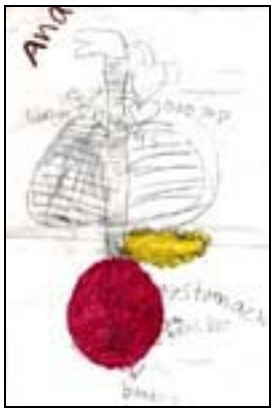
Students disagreed on whether food was "good" or "bad" for your body. At a group meeting, the class decided to brainstormed what food they thought fit into the category of "junk food." Students voted that potato chips, Rice Krispie treats, fruit roll ups, chocolate chip cookies, and Cheetos were "bad" for your body. They thought corn chips were healthy. A parent expert in the field of nutrition science was invited to talk to the class. She explained the food pyramid and that there were no "bad" foods. She told students that some food should be eaten more often and other food less often. She said some fats were necessary for a healthy body. She brought in a three-dimensional food pyramid. Students took digital photographs of their lunch and cut the picture apart placing the food in the pyramid noting whether most of their lunch was in the categories that should be eaten more often.

A child takes a picture of his lunch.

Dm refers to the food pyramid.

Undergraduate students from the College of Nursing further helped answer questions formulated in Phase 1. Students asked how do fruits, tomatoes, carrots, and milk help our body? The expert brought a video showing food going down the esophagus. With enlarged parts of the digestive system, she demonstrated how the body digests food. She explained how parts of the body need the nutrients that foods have and the body absorbs the nutrients from the food to help the heart, blood, brain and bones.

The expert explains the digestive system.



A student represents the digestive system.

How does the body process food?

The students were increasingly interested in what happens inside the body to digest food. A nutritional nurse explained to the students how teeth and saliva start the digestion process. There are juices that help digest the food in the stomach. Another nurse from a local hospital brought a puppet named Stuffee and further explained digestion.

A nutritional nurse explains the difference between small and large intestines.

Digestion of food in humans and animals was a topic that interested many students throughout the year. They continued to probe the topic and pursue answers to other digestive questions in Phase 3.

What is in foods?

The students helped cook and prepare a wide variety of foods. Before each preparation, students predicted what ingredients they thought would be in the food. For example, they made the predictions for ingredients of homemade pasta:

Predictions of Ingredients for Homemade Pasta

Prediction	Was this in the ingredients?	What didn't we predict?
Flour	Yes	Spinach
Eggs	Yes	Beets
Sugar	No	
Butter	No	
Salt	No	
Pepper	No	
Milk	No	
Food coloring	No	
Spaghetti Sauce	Yes	

After eating they compared their predictions with what they learned and they answered a questionnaire on whether they liked the taste. Some students had questions about soup and they

had an opportunity to prepare several kinds of soup. Before cooking, they predicted what ingredients they thought would taste good together. Students answered a questionnaire to see if they wanted to eat soup, and if so, did they want to have chicken in their soup. The cooks made two batches, one with meat and one without. For this soup they also made chicken broth and vegetable broth from scratch.

Students experimented with different ingredients in food. They made batches of chocolate chip cookies without chocolate chips, biscuits that exchanged salt for sugar, pancakes with no baking powder, etc. Parents shared their family cultures and traditions and introduced new foods. Most students were willing to try new tastes. Because they enjoyed tasting and eating, the culminating event included a Potluck luncheon. The students and teachers collected recipes to make a recipe book. At the end of this phase the students listed all the kinds of food they had helped prepare.

Food List

Foods We've Made

Apple sauce
Breads
Brownies
Butter
Cookies
Dip
Eggs
Jelly
Rice & Beans
Rolls
Soups
Pancakes
Pastas
Pudding
Pumpkin pie
Whipped cream
Yogurt

Students enjoy tasting exotic fruit.

Did you like the Mexican chocolate?

The students enjoyed tasting many kinds of food, but especially pizza. They wanted to know what made each pizza taste different. What were the recipes? They decided to visit the pizza shops in town to answer their question. A few children went to one pizza establishment. The expert shared the dough recipe and showed how it was mixed and flattened. The small group

found out that this shop made their pizzas with a secret sauce and a wide variety of cheeses. The secret sauce and cheeses make their pizza taste different from other pizzas.

This machine mixed the dough.

Another pizza shop brought the pizza ingredients to school. The expert demonstrated how to "throw" the dough in the air to get it big enough. The whole class participated in patting, stretching, and throwing the dough. Then he showed how the sauce and cheese and other toppings were put on the pizza. He left four large pizzas for the class to eat.

The expert demonstrates throwing a pizza.

BS works with pizza dough.

The whole class enjoyed researching a third pizza establishment. They each made their individual pizza in the kitchen by selecting the sauce and toppings.

A student works in the kitchen of a pizza shop.

The expert shows the freezer in the kitchen.

Not only did students wonder about what was in the food that they ate, they were also curious about what was in the food that animals ate. The teacher arranged a site visit to the University of Illinois feed mill. The expert showed the students how he grinds corn, beans and other grains to feed all of the animals at the university. They felt the ground corn and pellets and noted how many animals he fed.

450 cows in this barn
150 cows in the feedlot
400 cows in the next barn
100 sheep
40 horses
5000 chickens
550 sows with 8 piglets average each

The farmer explains what is in the animal's feed.

Students watch a cow eat the ground grains.

Upon returning to school, the students integrated math into their project work. They worked in small groups to answer these questions: How many cows did the farmer feed? How many piglets were there? For how many piglets and sows did he prepare feed? How many animals were there all together?

Where does food come from?

The early questionnaire (Teacher Food Questionnaire 1) revealed that many of the students thought that food came from the grocery store, factory, bakery, or farmers. Farms and farm fields surround University Primary School. The teachers posed a question to the students, "What kind of food would we find in a walk outside our school?" They predicted:

A restaurant selling:

- lasagna
- sandwiches
- French fries
- Cheese

A vending machine with:

- soda pop

- gummy worm candy
- water

A garden with:

- apples
- peaches
- oranges
- lemons
- bananas
- pears
- tomatoes
- carrots
- onions
- corn

Armed with clipboards, the students walked around the school. They found no restaurants or gardens. They did see a truck that had a picture of soda pop on the outside. They also saw a tractor and fields of corn and beans. Who eats field corn and beans? They predicted animals would eat that food, not them.

Students sketch corn on a field site visit.

Before the field trip students draw and prepare a recording sheet.

Students sort boxes into categories, beans, corn or both.

Back in the classroom, some students were using collected boxes to make a representation of a tractor seen on the field trip. The teacher pointed out the ingredients written on the side of the box. Students were surprised that corn and soybeans were in the ingredient list. Students examined all the collected boxes. They made a Venn diagram with the boxes. They also checked the pantry at their home and counted the number of foods that contained corn or beans.

Many children originally thought that food came from the grocery store. The teacher planned a field trip to a local grocery store so that students could investigate where the store gets the food and how they keep it fresh. Some students also wanted to know how the grocer wraps the meat.

The grocer shows meat being prepared for packaging.

The grocer explains how the meat is wrapped and displayed on the shelf.

Undergraduate pre-service teachers from the University of Illinois prepared lessons about food. They introduced the vocabulary herbivore, carnivore, and omnivore. Students noticed that an herbivore eats plants and a carnivore eats meat. However meat comes from animals and the animals eat plants. Students concluded that all food comes from plants. Students started asking questions about plants. How can plants make food? Several parent plant biologists talked with the students about plants. The students planted a window garden and recorded the growth of their bean seeds. They talked about photosynthesis and dissected plants and seeds to find the nutrients. They conducted an experiment to find the chlorophyll, carotenoids, anthocyanins and anthoxanthins in plants.

Plants

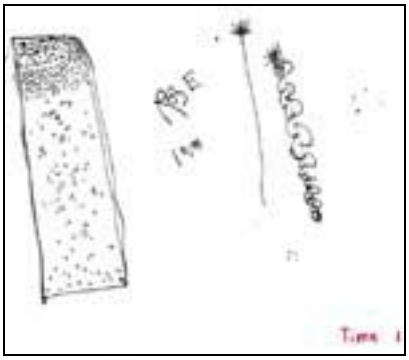
Chlorophyll	Carotenoids	Anthocyanins	Anthoxanthin
Apples	Apple	Berries	Cabbage
Broccoli	Bananas	Grapes	Mushrooms
Celery	Carrots	Plums	Onions
Cucumber	Lemons	Purple cabbage	Potatoes
Green bananas	Orange	Strawberries	Rice
Green beans	Tomatoes		
Green grapes			
Lettuce			
Lime			
Pears			
Peas			
Spinach			

Students talked about what parts of the plant they were eating. They listed on a chart what parts of their favorite foods they were eating.

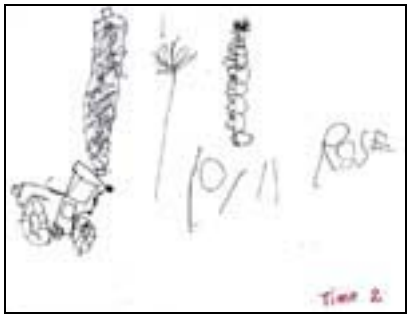
Stems, Flowers, Fruit, Roots, Leaves, and Seeds You Eat

Stems	Flowers	Fruit	Roots	Leaves	Seeds
Celery Cinnamon stick Sugar cane	Artichoke Broccoli Carrots Cauliflower Squash-flowers	Apple Banana Cantaloupe Grapes Pepper Watermelon	Beet Carrot Mashed-potatoes Potato	Lettuce Salad	Beans Black peas Cocoa seeds Green peas Peas Sunflower seeds

Students continued to gather data. They counted seeds and observed the corn and beans closely. They recorded their data by making time 1 and time 2 observational drawings of corn, beans plants, bean seeds, sprouting seeds, wheat, plants on the playground, plants in the classroom, fruits, vegetables, and other interesting food artifacts.



Time 1 Drawing - 10/8/02
RW looks at corn, wheat and a bean plant.



Time 2 drawing - 10/11/02
RW makes another drawing of corn, wheat and beans.

Student draws carefully.

CS represents a plant with rods.

Students went to the University of Illinois greenhouse to find out about unusual plants. They saw a banana tree, cocoa tree, a Venus flytrap and many other interesting unusual plants. Students' interest in plants lasted throughout the year and asked more plant questions in the next project on movement.

How are foods kept fresh?

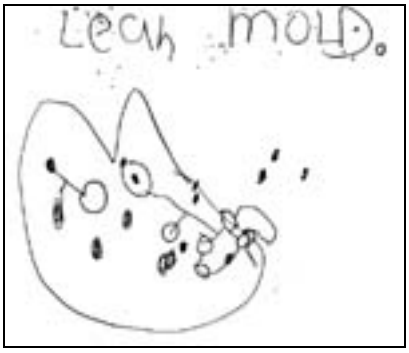
In Phase 1, only a few children articulated an awareness or interest in mold. But as the project progressed, more students began noticing and bringing artifacts to school that they had found around their homes. Students reported mold discoveries. They made observational drawings of moldy artifacts. They sorted the colors, shapes and sizes of the mold. Their questions became more specific.

Is mold good for you?
What is good and bad mold?
Why are some foods put in the refrigerator?
Why are bananas good when left out?
Why does some food need to be frozen?
How do foods get poisonous when you leave them out?
How do allergies happen?
Why is food that is good for microbes good for us?

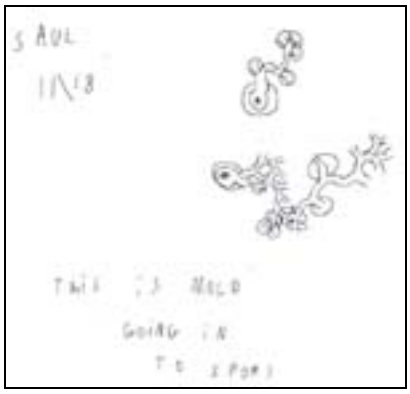
The students went on a field visit to the University of Illinois Bevier Cafeteria. The director showed many interesting pots and pans as well as how they keep the dishes and food healthy and safe for eating.

The children observe how the dishes are cleaned and sanitized.

A parent physician talked to the students about mold. She introduced spore and mycelium as new vocabulary. She explained how mold travels and how we can retard mold. She told children that some mold is helpful like penicillium. Students started making representations of mold and spores. A parent nutritionist explained about beneficial bacteria and demonstrated making yogurt and yogurt pumpkin pie.



LS makes an observational drawing of mold.



SD makes a representation of "mold going into spores."

As the semester came to a close, students wanted to share the food project with parents, friends and family. They designed ways to discuss and share what they learned about food as they moved on to Phase 3 of the project.