University Primary School
2003 NAGC Curriculum Competition

How to Stay Safe and Well: Queries into Food and Fire

A Report on Two Projects
(click on projects below)

What's to Eat?
A Close Look at Food Around Our School

K/1 Classroom

NAGC CURRICULUM COMPETITION - 2003 -

Exploring Fire Safety

Pre-K Classroom

NAGC CURRICULUM COMPETITION - 2003 -

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The Project Approach

The Project Approach shares common features of curriculum design with what are considered effective practices in gifted education:

- Emphasis on challenging and intellectually engaging material.
- Role of teacher as facilitator of learning.
- Attention to students' interests and learning styles.
- Means of exhibiting strengths and talents of individuals.
- Introduction to inquiry in various fields of study (e.g., acting as young investigators in a particular field).
- Assumed high expectations and capability of students.
- Authentic learning and "real audiences."

For more information about the Project Approach, see the following:

The Project Approach — Dr. Lilian G. Katz, University of Illinois

Project Approach Home Page — Dr. Sylvia Chard, University of Alberta

Issues in Selecting Topics for Projects — Lilian G. Katz and Sylvia C. Chard

ERIC/EECE Digests on topics related to the Project Approach

- Another look at what young children should be learning
- The Benefits of Mixed-Age Grouping
- Child-Initiated Learning Activities for Young Children Living in Poverty
- The Contribution of Documentation to the Quality of Early Childhood Education
- A Developmental Approach to Assessment of Young Children
- Developmentally Appropriate Practice: What Does Research Tell Us?
- Encouraging Creativity in Early Childhood Classrooms
- Integrate, Don't Isolate--Computers in the Early Childhood Classroom
- Problem Solving in Early Childhood Classrooms
- Reggio Emilia: Some Lessons for U.S. Educators
- Resource Rooms for Children: An Innovative Curricular Tool
- Teaching Young Children about Native Americans

Dissemination

.ppt	Challenging Mathematics: Data Collection in Kindergarten
.ppt	Let's Talk: Facilitating Thinking Through Group Discussions
.ppt	Opportunities to Respond: The Literacy Rich Environment
.html	General Learning Activities for Project Investigations Step by Step Planning Calendar
.ppt	Challenging Young Learners Using the Project Approach
.ppt	Young Investigators and Problem Solving

Related Links

Inquiry Based Learning - Bertram Bruce, Professor, University of Illinois
http://inquiry.uiuc.edu/

National Association for the Education of Young Children (NAEYC)
http://www.naeyc.org/

National Association for Gifted Children (NAGC)
http://www.nagc.org

ERIC Clearinghouse on Elementary and Early Childhood Education
http://ericeece.org

ERIC Clearinghouse on Disabilities and Gifted Education
http://ericec.org

General Learning Activities for Project Investigations

Phase 1

1 **Opening Event** Share a personal story, read a book, share a class experience to begin discussion of project topic with children.	2 **Brainstorm Ideas** Children list ideas from life experiences that relate to topic as the teacher writes. Begin a topic web.	3 **Categorize Ideas** Revisit with children to form categories of similar ideas. Share project topic with parents.	4 **Label Categories** Children debate best name of categories. Children develop Topic Web I.	5 **Share Personal Stories** Group Meeting: Share students' personal experiences with the project topic.
6 **Illustrate Stories** Children draw, write, dictate, or dramatize to represent and share their prior experiences.	7 **Share Stories** Children share their representations of stories, noting similarities or differences.	8 **Collect Data** Develop surveys to find out what classmates already think they know and understand about the topic.	9 **Represent Findings** Children represent their findings using math and science organizers.	10 **Articulate Questions** The teacher and the children voice their "wonderings" about the topic. Children dictate questions that they would like to answer about the topic.

Phase 2

11 **Group Planning** In discussion, children think about what to do, where to go, who to ask to find answers to their questions.	12 **Make Predictions** Before doing field work (site visits, experiments, observations, etc.) children predict (draw or dictate) what they might see or collect during field work.	13 **Engage in Field Work*** Children collect data to answer questions. (e.g. drawing, asking experts questions, collecting artifacts, counting, and taking pictures) ***This may take weeks!**	14 **Debrief** Children share experiences and compare findings with predictions.	15 **Create Representations** Children represent their findings using a variety of means such as drawings, writings, constructions, paintings, and/or math and science organizers.
16 **Share** Progress on representations is shared with classmates offering suggestions.	17 **Plans for Visiting Expert** Children decide interview questions. Teacher charts predictions of the answers.	18 **Expert Visitor** Children ask questions and make drawings of answers or any artifacts.	19 **Debrief** Children compare experts' answers to their predictions.	20 **Continue Investigation** Additional days may be needed to continue to investigate. Additional experts, field-site visits and/or same site may be revisited.

Phase 3

21 **Representations** Sharing representations continues. Encourage	22 **Articulate What Children Have Learned** Group Discussion:	23 **Brainstorm Second Topic Web** Children list ideas of "what they now know"	24 **Label and Categorize Ideas** Children form categories of similar	25 **Plan for Sharing** Plan the culminating event and make invitations for the

a variety of medium including, dramatic play, music, plays, & invented games.	What have they learned about the topic.	about the topic. Begin to develop Topic Web II.	findings, understandings, and ideas. Children debate and name the categories. Children complete their Topic Web II.	chosen audience.
26 **Project Highlights** Each child prepares to share the story of the learning achieved by the class by using posters, reports, plays, museum format, explanations, songs, and/or videos, etc. They may choose to work individually, in a small group or prepare a whole class presentation.	27 **Imaginative Activity** Children may engage in more expressive activities using their new understanding in poetry, stories, pretend drawings, etc. Progress on their display is shared with classmates.	28 **Display** Children contribute to the class display. Work from all the phases is displayed to show the children's growth in understanding.	29 **Culmination** Parents, and other students visit to view the displays and hear children share what they have learned about the project.	30 **Evaluation** Children, parents and teachers reflect on the project.

Exploring Fire Safety

Preschool Classroom

Project Objectives

There are two different types of objectives articulated and identified in this project entitled, *Exploring Fire Safety*. General objectives for project-investigations are common across all topics. They are aligned with best practices and high quality curriculum as described by the National Association of the Education of Young Children and the National Association for the Gifted. General objectives reflect the process of inquiry and the students' engagement in in-depth studies.

Specific content objectives for each project investigation emerge initially out of topic webs and are formulated and reformulated by the students' questions, the teachers' guidance, and the shifting interests of the students as the project progresses. The degree to which a child experiences depth and complexity of a topic may be different depending upon the diversity of skills and abilities of the students. Not all children master each objective, but respond to the tasks and progress at their own level. Outcomes are varied and children demonstrate different levels of content and skill mastery. General and specific objectives relate to the Illinois Learning Standards for early elementary students.

General Objectives for Project Investigations

1. Students will engage in an in-depth study of a topic.
2. Students will pursue first hand investigations.
    - Students will engage actively in data collection.
    - Students will become more proficient in organizing data.
    - Students will learn and utilize different modes for representing data.
3. Students will think critically and reflectively.
    - Students will engage actively in discussions of the topic, exchange ideas, debate, etc.
    - Students will formulate questions.
    - Students will evaluate their experiences in many ways and participate in culminating activities.
4. Students will relive and renew experiences they have had with various subject domains.
5. Students will increase their ability to use primary and secondary resources.
6. Students will increase their vocabulary.
7. Students will learn and apply new modes of inquiry including questioning and hypothesizing, reforming of hypotheses, interviewing, surveying, and observing.
8. Students will increase their modes of representing their ideas (observational drawings, graphs, Venn diagrams, displays).
9. Students will uncover facts and principles in various subject domains.
10. Students will be exposed to numerous and varied instructional strategies such as the following:

- Whole group instruction and discussion
- Small group instruction and discussion
- Interviews with experts
- Field trips
- Field studies
- Student-initiated projects such as constructions, surveys, representations
- Personal conversations with teachers or other student experts
- Experimentation

11. Students will strengthen their dispositions to be interested in relevant and worthwhile phenomena.

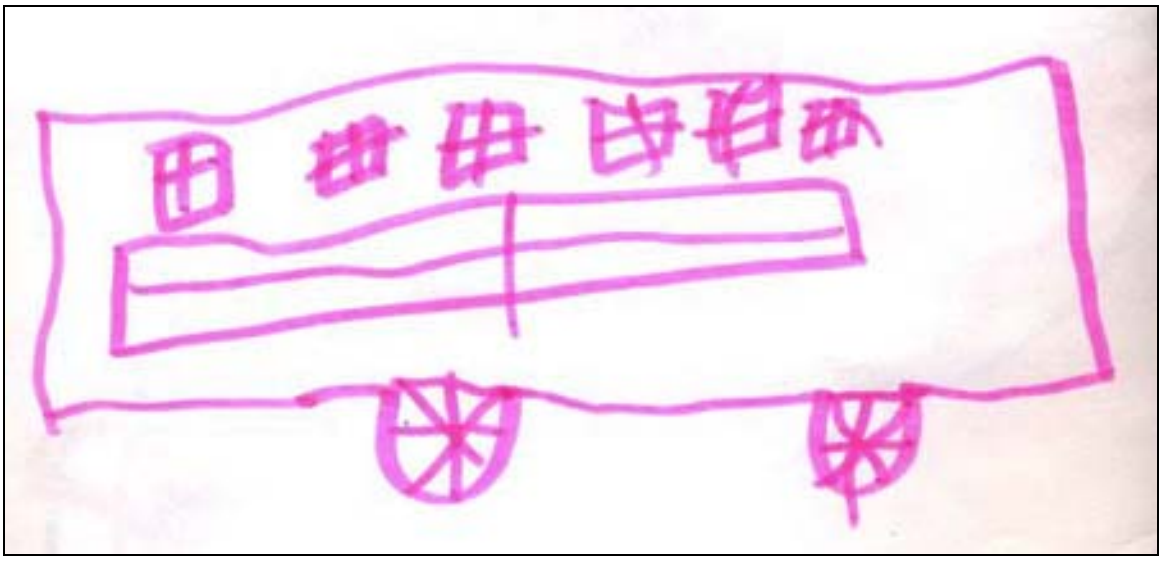
Specific Content Objectives for Fire Safety

1. Students will investigate causes of fire.
2. Students will learn how to keep themselves safe in case of a fire.
3. Students will learn about equipment that fire fighters use.
4. Students will gain an understanding of fire extinguishers and smoke alarms and where they are located in homes and public buildings.
5. Students will increase their vocabulary and understanding of terms associated with fire safety.
6. Students will gain an awareness of the role fire fighters play in our community.

Exploring Fire Safety

Preschool Classroom
November 2002 – March 2003

Overview



Beginning the Project

One September morning the preschoolers had to evacuate the building because smoke was detected near our classroom. The class participated in the fire evacuation and waited patiently outside for the fire truck and fire fighters to arrive. After they gave an all clear, the children wanted to get a closer look at the fire truck. Students went out to the fire truck and asked the fire fighters questions about fires. The fire fighters answered questions and let the teachers take pictures of everyone near the fire truck.

During October, the preschool class visited the local mall and participated in various activities for Fire Safety Awareness Month. Urbana fire fighters set up stations that students visited to learn about fire safety. Students watched a video, saw a puppet presentation, listened to the fire fighters sing a rap song about putting out fires, observed a fire fighter putting on equipment to go fight a fire and lastly, slid down a fire pole. Fire fighters distributed fire hats at the fire safety awareness exhibit. The teachers brought extra hats back to include in the dramatic playroom.

As time passed, teachers noticed that fire safety was still foremost in the students' minds. Fire trucks they saw as they drove to school intrigued them. Teachers noticed that the students began wearing fire hats in the dramatic playroom. This play initiated the idea that fire safety is an important topic for students to study. In November, the teachers held a team-planning meeting and created a teacher web of fire safety possibilities for study.

Teachers wanted to know what the students already understood about the topic fire safety. This was explored in the first phase of the project. To begin the project, teachers shared personal stories about fires. The students took turns sharing memory stories about their experiences with fire safety, too. During large group meetings, students brainstormed what they knew about fire and fire safety (Student Fire Safety Topic Web 1). This helped the teachers assess students' basic understandings. Teachers questioned students about all aspects of fire safety. They probed the students to find out what starts a fire. They asked how we use fires and how do you put out a fire. Also, the teachers inquired about things that alert us to fire or smoke in a room. Did the children know the answers to these questions? Teachers were interested in students' misconceptions about fire and wanted to know what children would like to investigate about fire safety.

Teachers chose clay, play dough, and boxes and junk for students to express their memories about fire or fire safety equipment. Students shared their creations at large group. As they told their stories, students asked more questions, giving the group more avenues to pursue. The teachers wrote the questions on sentence strips and placed them on the wall for everyone to read. These questions became the starting point to further explore the topic of fire safety.

The student created her memory of a fire coat out of paper.

This student wears his fire hat that he made from memory.

Developing the Project

To facilitate small group work, the teachers categorized students' questions into three basic areas to pursue:

1. What causes a fire?
2. Where do we find smoke alarms and fire extinguishers?
3. What equipment does a fire fighter use?

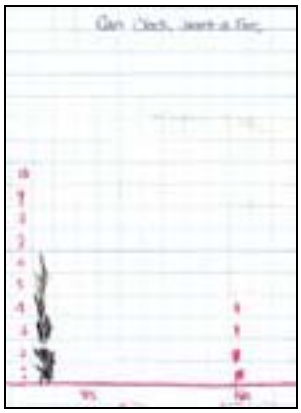
The students chose one of the questions to pursue further and formed small study groups. As time went, on other small groups formed to answer additional questions about fire safety. Each morning, children chose from a variety of activities to explore the topic of fire safety during project/activity time.

They collected data in many ways. Students formed surveys to answer their questions. Teachers invited guest speakers to come to the classroom to talk with the children. Those interested in fire extinguishers and smoke alarms began exploring the safety features of the building in which our school is located. Students took walking tours of the building to find the smoke alarms and fire extinguishers. They took digital photographs of the building's fire safety equipment.

The whole class went to a local Fire Station. Teachers documented the field trip by taking digital video. Children drew observational sketches of the various fire equipment that they saw. They made a representation of a fire truck using boxes and junk.

During project/activity time, students created surveys and redesigned the question about what causes a fire. They not only asked parents and students from the preschool room for their opinions but they also approached students in the kindergarten-first grade room next door. Teachers helped students conduct experiments that demonstrated the relationship of air to fire. Students were eager to share their new knowledge with their peers and parents.

The child surveyed classmates if they thought a clock could start a fire?



This child shared his survey data in graph form.

Concluding the Project

The students redesigned the dramatic playroom into a working fire station. They worked for two weeks during project/activity time to plan and implement their changes. The students built the equipment needed for a firehouse to operate by using materials in the classroom. Children created a computer, a computer mouse and telephone from boxes and junk materials. They used large pieces of cardboard for beds. Children designed and put together pillows and blankets out of fleece and cotton batting. They placed a fire pole in one corner of the room. Their hung their ear hung on pegs while they waited for a fire call. Once back from a fire call, the fire fighters wrote a report. The teachers assisted in writing the details of the call on chart paper. It was placed in the room for everyone to read. The teacher created an iMovie that captured their dramatic play in this area: "A Day in the Life of a Fire Fighter."

Other students created fire trucks, fire extinguishers, smoke alarms, fire coats and fire helmets from boxes and junk materials. One small group made a model house with the proper safety equipment in it. Another small group of children wrote and dramatized a play about using fire safety tips. The teaching assistant videotaped their play and created an iMovie entitled, "Greatest Fire Safety Movie."

To conclude the fire safety project, the students and teachers invited family members and friends to see their movies. The children lead their parents around the room to see the walls that displayed the process of the fire safety investigations. Students also shared collective books about their newly gained knowledge of fire safety.

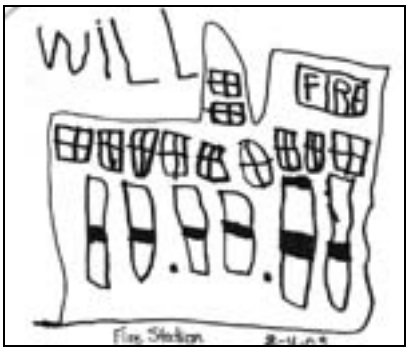
The student demonstrates the fire hose on the fire truck.

The student slides down the fire pole.

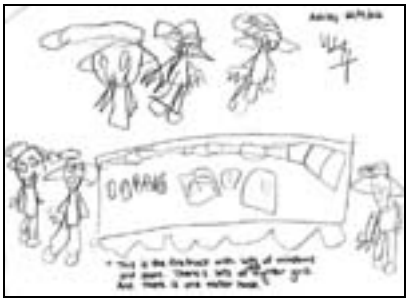
What did the children learn?

At the conclusion of the fire safety project, the teachers noted that the students became very aware of what to do in case of a fire. Students became familiar with vocabulary associated with fire safety. They talked about smoke detectors, fire extinguishers, and tools that fire fighters used. They learned how to escape from their homes and other buildings. They practiced crawling low where they could escape the rising smoke. They dramatized "stop, drop, and roll," if their clothes caught on fire.

Many students became intrigued with the life of a fire fighter. They gained an understanding of what is in a fire station and how fire fighters live during their 24-hour shifts. They learned that fire fighters could be women as well as men. They also became familiar with the protective clothing worn by fire fighters. Most importantly, students gained an appreciation of the danger of fire, and how to keep themselves safe. They now tell others not to touch matches or a fire!



This is the student's drawing of the Champaign Fire Station



This student drew female fire fighters around the fire truck.

Exploring Fire Safety

Preschool Classroom

Phase 1

A parent donated a "pop-up" fire truck to use in the dramatic playroom as we began the fire safety project.

The topic of fire and fire safety was intriguing. Teachers knew that they could not let children start fires at school. So what could preschool students learn about fire? The children really seemed interested in the concept of fire and more so, fire safety.

Teachers were interested, too. The staff had an expert speak to them about fire safety before school began. The expert shared a video on fires and how to be safe. Teachers were amazed at how quickly a fire can take over and destroy a room.

In September, students and teachers had to evacuate the classroom because there was a small fire in another part of the building. Unfortunately, no fire alarm or smoke detector warned the students about the fire. The fire marshal came to the classroom and requested everyone to go outside. The teachers took attendance and waited for an all-clear sign from the fire fighters. As the fire fighters were leaving, they gave the students permission to examine the fire truck. The fire truck enthralled the children. The fire fighters explained a few things about the truck. The children were very interested.

In October, the preschool teachers took the children to a local shopping mall to see an exhibit commemorating Fire Safety Month. The children rotated among several stations that explained various aspects of fire safety. They watched a fire fighter put on and explain each piece of his equipment. The students watched a puppet show and listened to local fire fighters perform a rap song. They took a close look at a brand new fire truck. And last but not least, the children slid down a fire pole.

The two activities sparked a curiosity and enthusiasm for community helpers such as fire fighters. Several children dressed up as fire fighters for Halloween. They liked wearing their costumes to school.

When planning began for the next project, the teachers inquired about the children's interests during a large group meeting. Children responded:

KM: fire trucks
ER: pictures
WK: smoke alarm
ML: fish
IF: metals
CB: fire safety
TM: butterflies
JG: fire
RS: Santa
MP: plates
ER: dogs
MJ: fish in aquarium
BL: fire alarm
MJ: ladybugs

There was a major interest in fire equipment and fire safety. The teachers decided to pursue the topic of fire safety.

In November, the preschool teachers (head teacher, and two assistants) began the project by brainstorming their ideas about fire safety. They categorized their ideas and physically manipulated their ideas (on sticky notes) on chart paper to create a Teacher Fire Safety Topic Web. They hung their web on the bulletin board to share with students and parents the next day. The teachers also generated a list of "Essential Learnings" or "Big Ideas" that they wanted students to gain through their investigation of Fire Safety. Their "Big Ideas" included:

*Fire can be useful, but also dangerous.
*There are fire safety items in your home.
*There are some ways that you can protect yourself when faced with a fire.
*Fire fighters help rescue and save us during a fire.
*Fire fighters are specially trained and use special equipment to put out fires.

In Phase I, the teachers planned for ways to find out what students had already experienced and understood about fire safety. Teachers began large group meetings with discussions about fire. The teachers tape-recorded the sessions to capture group discussion and to determine what students understood about fire.

T: What do you know about fire? Have any of you had any experiences with fire?
WK: Smoke alarm. It makes itself go off when smoke comes from a fire.
TK: You need water to go on a fire to make it go away.
T: Why do you need the water?
JG: Fire.
T: What do you do with it?
JG: Water. Go away.

T: Water makes fire go away?
JG: Yeah.
KM: We were trying to make a fire. But when we were outside, we couldn't.
T: I heard that some people were trying to make a bonfire outside.
KM: But we couldn't. We were trying to use rocks to make a fire.

Students held some misconceptions about what starts a fire. The teacher noted this as a question to pursue further. The next day, the teacher asked for other students to share their experiences with fire.

TM: Firemen come to rescue people and put the fire out with a fire hose. And they have all this water. This water puts the fire out.
T: Where do you get this water?
TM: From the sink and a fire hose. I have more. (to say)
MJ (interrupting): Water lets out fire. Fire burns wood. Fire can kill anything except water.
T: Can fire kill us?
MJ: Yep.
WK: Stop, drop and roll. Fire can kill you.
IPL: I know how to make fire. Two smooth rocks or matches or a stick.
TK: Smoke goes with fire.
ESR: If you put the smoke into the fire.
T: Do you put smoke into fire? Is there fire in smoke?
Everyone : Yes, yes, yes."
RS: A fire alarm tells you when there's a fire.
NS: Fire can make you burn.

From the conversation, it seemed that some students had experience learning about safety tips such as "stop, drop, and roll," and knew about fire alarms. Others were curious about the relationship between smoke and fire. Some students held misconceptions about where the water comes from that puts out fires. One student told a joke that introduced the concept that "Big People" handle fire:

ES: Why did the fire burn the house?
T: I don't know, why did the fire burn the house?
ES: Because it fell down.
MJ: The smoke and the fire go together.
ML: It burns you. Big people can do it.

Their discussion stopped because it was time to go home. All of the students had opportunities to share their ideas about fire, but some chose not to speak into the tape recorder. The teachers continued the discussion the next day to probe further about what students understood about fire.

MP: Fire can burn your hand.
RM: My daddy makes fire in a fireplace. *Good Night Moon* had a fire in the fireplace.
EG: We have a fireplace at our house.

T. What do you put in there?
EG: Fire.
NH: I have a fireplace at my house. Make fire. My dad puts some fire and you watch the fire go on when it's night.
IF: Fire is hot.

This discussion introduced the idea that people make fires in their houses and also that fires are hot and can burn you. The next day, the teacher asked them to recount their experience in the fall when the fire truck came to the school.

T: Do you remember the day that the fire truck came? Why did the firemen come to our school?
TM: A fire drill.
T: Do you remember what happened that day?
WK: Because we were just practicing.
T: We were not just practicing. WK's dad took me out in the hallway. "Sniff, sniff. I think something is on fire," he said. There was a fire but we didn't hear an alarm. Someone came to our class and told us to leave. Where did we go for a safe place?
AW: We go in the hallway.
T: That's right if there's a tornado. But what do we do for a fire?
AW: We go outside to the field.
IPL: We go outside where we have races.
T: What does the teacher do then?
RS: Make sure everyone's okay.
IF: Make sure everyone's there.
WK: Just say they're okay.
ESR: A lady was coming and she had a lot of stuff to do.
T: I'll tell you what I do. I take attendance. If you are not here, I find a fire fighter to go find you.

The teachers gleaned from this discussion that the students were confused about the difference between a tornado drill and a fire drill. They also were not aware why the teachers took attendance during the fire drill. The teachers reviewed the procedures of other fire drills that took place during the school year.

The teachers designed several choices for students to pursue during project/activity time that would elicit more of their current knowledge and understandings about fire safety. One choice was to write or dictate "fire rules." Students also made books about what they know about fire safety or fire.

Teachers placed chalk and colored pencils at the writing table for them to illustrate their experience stories. Students finger-painted with yellow, red, and orange to represent fire. The next day, they cut out their finger-painted flames and put them in their pictures about fire.

This student used chalk to draw a raging fire.

The student finger-painted flames to illustrate his story, "The house is on fire. Flames are shooting out of the windows!"

One child wanted to practice STOP, DROP and ROLL. This became a choice for other students to do while the student supervised. At the next large group meeting time, students shared their activities with the rest of the group.

AW: There are lots of fire rules. We talked about rules.
RS: We made books about fire. But I didn't finish mine today.
KM: We drew pictures.
RM: I drawed a picture of fire with chalk.
WK: Stop, drop and roll practice.
BL: We drew fire.

To find out more about their experiences with fire, the teacher asked students if they had a fireplace in their homes.

MJ: Yes, in the living room.
ER: Yes, in the room.
BL: No
WK: Yes, in my living room.
ES: Yes.

The teacher then decided to make a video of a fire roaring in her home fireplace. She could not take the children on a field study to see a fire because it would not be safe. Before she showed the video in class, she asked the students to make predictions about the color of the fire. Some children had no idea what color to predict.

BL: nothing
WK: nothing
ER: nothing
MJ: I think fire is orange.
TM: It's red.

During a rainy day recess the next day, the whole group of children watched the video and looked for colors in the fire. Later during project/activity time, a small group of students drew their own fire pictures. They used the materials that teachers put on the art table: watercolor pencils, water and watercolor paper. After watching the fire video, the students reported the colors that they saw in the fire and they shared their pictures.

WK: Fire is yellow.
ER: It's orange fire.
BL: My fire is red.
MJ: Fire is black.
ES: I can draw a fire.

The teachers also made play dough and clay available during project/activity time for students to make three-dimensional representations of fire and fire safety. Children shaped the clay and play dough into fire hats, firehouses, and fire axes.

A student molds the play dough to make a fire hat from her memory.

A play dough fire hat is created from memory.

Teachers or adult volunteers facilitated students' writing and recording of their memories. In many cases, the students dictated stories that the adults wrote down for them. The teacher typed the stories later in the day and left space for students to add their illustration the next day. During large group time, the children shared their stories by reading them aloud or having a teacher read for them while they held up their illustrations. Sometimes students drew their pictures first and then went to an adult to give their dictation. The teachers shared some of their illustrations and memory stories on the classroom project display wall.

This student reads his memory stories about fire to the class.

As students continued to share their experiences and memories, the teachers probed their thinking to uncover their misconceptions. Students had many ideas about what is on a fire truck and what is at the fire station.

ER: Sometimes they use the ladder for fire station.
WK: There are fire stations.
ER: Sometimes boats are on fire. Then they have to stop, drop and roll. But boats do not know how to do this. So people need to help the boats.
MJ: Gas can make a fire. If you put gas on the fire, you can make a bigger fire.
WK: When there is a fire on you . . . Do STOP, DROP and ROLL.
AW: Pumpkins use fire.

The teachers documented what individual children knew about fire safety. Obviously, MJ had experience with building fires outside and using gasoline or lighter fluid. WK knew what to do if his clothing caught on fire. ER misunderstood how fires were put out on boats. AW knew that pumpkins use fire. Upon further questioning, AW explained that she meant that jack-o-lanterns needed a candle to provide light.

In one group meeting, students discussed jobs that involved fire. They listed a fire-eater, fire dancer and fire juggler. No one had seen any of these in person but had watched them on television or on videotape. In another group meeting, students held a discussion about fire trucks.

ER: There is fire truck a lot by my house.
KM: There's a lot by our house.
JG: Some are yellow.
IF: Airports have fire trucks.
ER: Some are red.
MP: Some are green in Chicago. The hose is green.

The students used construction paper to create memory representations of fire hats and fire coats. One child wanted fasteners for his coat and suggested Velcro strips. The teacher found some Velcro in the cabinet and soon the jackets closed nicely. The children brainstormed how to

attach the sleeves to the body of the jacket. Finally, they discovered that large unwound paper clips would allow them to clip the sleeve to the jacket.

This student is modeling his paper fire hat.

A fire hat created from memory covers this fire fighter's entire face.

A fire coat with arms created from a child's memory of a fire fighter's gear.

This memory creation is a fire coat that has red stripes to reflect during a fire.

During large group meeting, the student explained how he made his fire jacket.

During Phase 1 teachers evaluated and documented what students knew. They listened to conversations, read their memory stories, and observed the children's drawings for details that illuminated understandings and misconceptions.

The teachers concluded Phase 1 by asking the students to brainstorm their ideas about fire safety into a web (Student Fire Safety Topic Web 1). This provided a baseline for their experiences as well as their understandings about fire. The students' initials were placed next to their ideas. During the discussion of their ideas for the web, students began asking questions. The teachers wrote them on sentence strips to make them visible for everyone.

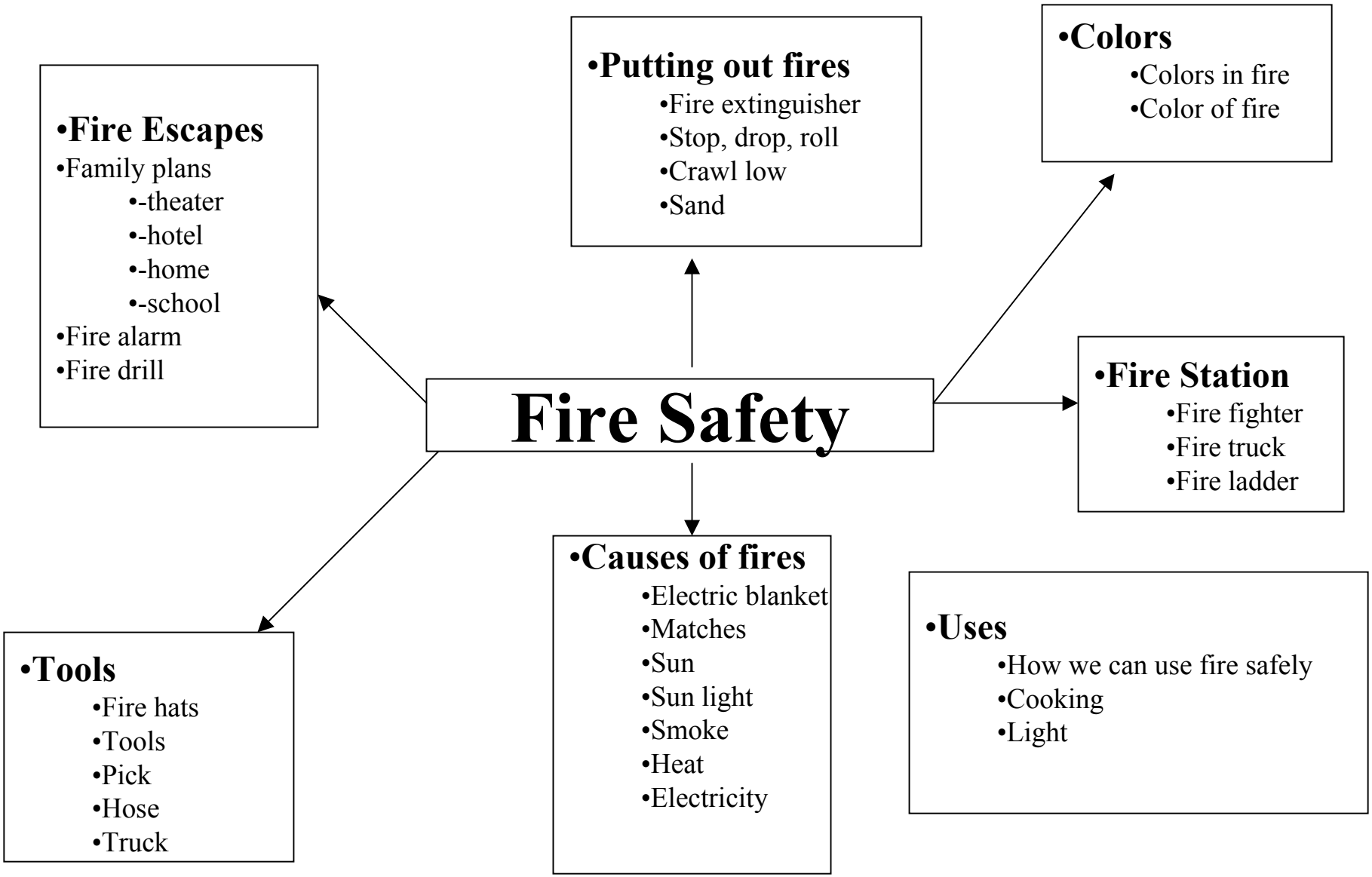
What equipment is used in fire fighting?
What starts a fire?
What is a fire?
What is at the fire station?
What is a smoke alarm?
What is a fire extinguisher?

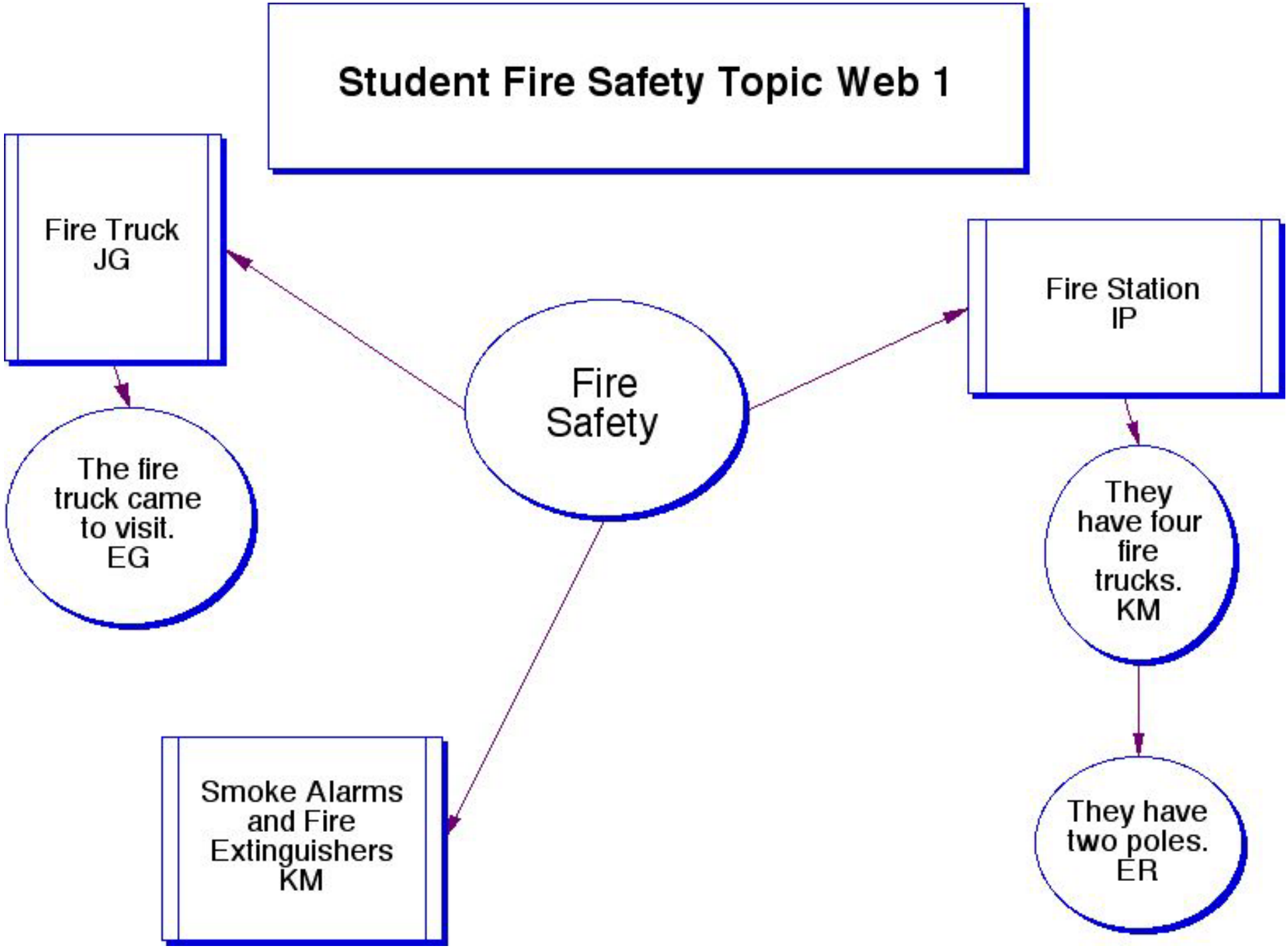
TK was interested in finding out what starts a fire. Other students were most interested in finding out about fire detectors and fire extinguishers. Some children just wanted to share their knowledge. WK wanted to share how to "stop, drop and roll."

The teachers helped the students categorize their questions to put children with similar interests together. The teachers reformulated the three main questions to make them researchable for young students. These questions guided the next phase of the project.

1. **What can catch fire?**
2. **Where do we find smoke alarms and fire extinguishers?**
3. **What equipment does a fire fighter use?**

Teacher Fire Safety Topic Web




Student Fire Safety Topic Web 1
Fire Truck
JG
Fire Station
IP
Fire
Safety
The fire
truck came
to visit.
EG
They
have four
fire
trucks.
KM
Smoke Alarms
and Fire
Extinguishers
KM
They have
two poles.
ER

Exploring Fire Safety

Preschool Classroom

Phase 2

The fire fighter talks with the class and answers students' questions.

Child's drawing of a fire fighter and a child being saved.

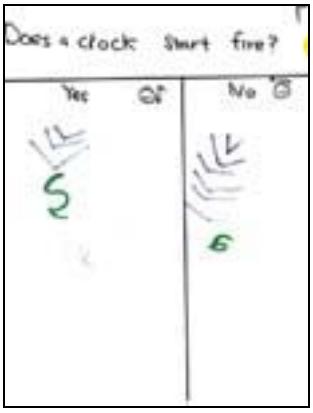
Students became active investigators in Phase 2 of the project. Small groups of students pursued one of the three researchable questions that guided the study. They collected data in many ways. They created surveys, interviewed experts, conducted experiments, and went on field studies. The morning choice board indicated their numerous studies and activities.

What can catch fire?

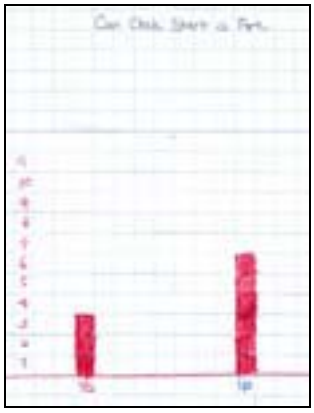
One group of children was curious about what could catch fire. To ascertain what they already understood about this question, the teacher asked them to make a collage with two categories: *What Catches Fire* and *What Doesn't Catch Fire*. They chatted with each other as they cut pictures out of magazines for their collages. When one child found a picture of ice, they discussed whether or not ice could catch fire.

TM: Maybe it will catch. Ice will melt.
IL: No fire won't catch because it is made of water.
RM: No because one time my father made fire of firewood and newspaper.
EMR No because ice is the same as snow.
IL: Snow is different from ice. If wax has a hole, it might catch!

After sharing their collages with one another, one child asked, "Does a clock start a fire?" The student created a questionnaire to find out what other people thought about clocks starting fires. The students asked their fellow preschoolers as well as the kindergarten-first graders next door. The students tallied the information and represented their findings in the form of a bar graph.



This is the student's questionnaire, "Does a clock start a fire?"



Twice as many students responded that a clock did *not* start a fire than responded that it did.

The teacher wondered why he wanted to ask the question about clocks starting fires. He told her that he saw a movie where a clock ticked and started a fire when it exploded. In the child's eyes, the clock DID start the fire.

Students wondered not only what burns, but how things catch fire. By questioning the fire fighters, children learned that fires need air and fuel to burn. The teacher set up an experiment to demonstrate this concept. For safety reasons, she put a candle inside a tall glass globe, and lit the candle. The children predicted what would happen if she placed a lid on the globe.

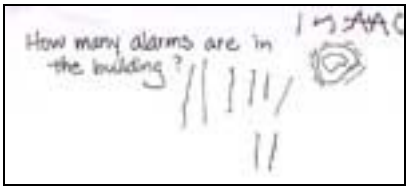
WK: It will burn the glass.
RM: Smoke will disappear.
TM: The lid will be caught on fire.
ER: Fire or flame will be gone.
IF: Smoke will disappear.

When they placed the lid on the candle, the children watched the flame flicker out slowly. The students concluded that air was not available for the candle. The teacher introduced the word oxygen in place of "air." The students shared their new knowledge at the next large group meeting. IF explained to the group, "When you put the top on the candle, the fire disappears because there is no oxygen."

Where do we find smoke detectors and fire extinguishers?

Students were curious about the safety features of the school because there is a very old fire extinguisher hanging by the door in their room. The teachers asked the students to predict and draw a picture of what they might find in the building. Before they left the classroom, they made a chart to tally the number of smoke detectors and fire extinguishers that they found. They

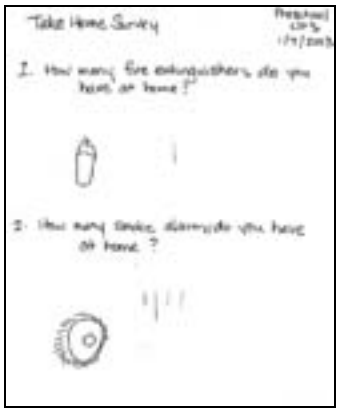
walked throughout the school that is housed in the ground floor of a campus building to look for smoke alarms and fire extinguishers. One student found seven fire extinguishers and placed tally marks on her chart to count them. Another student found eight smoke detectors on his tour. The students sketched fire extinguishers and smoke detectors that they found in the classroom.



The student tallied how many smoke detectors he found in the building.

The child drew the smoke alarm ringing.

Students created and sent home a survey to their parents to ask them how many fire extinguishers and smoke detectors they have in their own homes.



The student tallied the smoke detectors and fire extinguishers they found in their home.

The children compiled the data and made bar graphs to share their results. They used wooden cubes to visually represent the number of smoke detectors and fire extinguishers that students found in their homes. The students practiced using one-to-one correspondence as they counted a wooden cube to represent each tally mark. They found that most of the families had three smoke detectors and one fire extinguisher.

A student adds cubes to the graph to show how many homes have smoke alarms.

Children work together to add cubes to the graph to illustrate how many fire extinguishers are in the homes of the preschool students.

Students were also interested in where smoke detectors and fire extinguishers were located in their homes. To help the students collect their data, the teachers sent home a child-friendly camera to take pictures of their smoke detectors and fire extinguishers. They found smoke detectors in various places from the attic to the basement. They found fire extinguishers in a basement, a laundry room, and a kitchen. Students shared their photographs at a large group meeting. The teacher included them in the final display.

One group decided to make a large representation of a fire extinguisher from boxes and junk. Members of the group listed the materials needed:

WK: A sprayer
MJ: A gold handle
MJ: Water
WK Meter/clock
IF: Cylinder shaped container (silver, red, yellow, big cardboard)
MP: Sticker with instructions

The children drew pictures of how their fire extinguishers should look. They used the fire extinguisher in their classroom as their model.

The fire extinguisher in the classroom.

A small group created this representation of the fire extinguisher using boxes and junk

Some decided to make representations of smoke detectors and took another tour of the school to get a better idea of how they looked. Upon their return, they created three-dimensional representations of smoke alarms from boxes and junk materials.

Students found the smoke detector on the ceiling.

Representations of smoke detectors made out of boxes and junk.

What equipment does a fire fighter use?

The teachers invited several guest speakers into the classroom to help the students answer their questions about fire fighters and their equipment. These speakers sparked their interest in what they might find in a fire station.

Student Experts

When fire safety project began, three children wanted to bring their play fire coats and fire helmets to school. They wanted to talk to the whole group about fire safety. The teacher met with the three students and each chose a different topic to share. They took the role of a fire fighter seriously. WK demonstrated how his fire helmet shield went up and down. He ended his talk with "If your clothes catch on fire, STOP, DROP and ROLL." AW spoke about getting safely out of a house or school and calling 911. She said, **"**If there is a fire you go outside and to a neighbor's house. Then you call 911. Then the fire truck comes and puts out the fire. They can see your number on 911 so they know where you live.**"** RS demonstrated the various parts of the fire coat. The students became our first "fire experts." When "Fire Fighter WK" shared his outfit at a large group meeting, the students wanted to talk about it.

CB: I notice green and yellow.
RS: I have one like that. It's all yellow. But I don't have a helmet.
KM I like your fire fighter costume.

When RS and WK both wore their "fire fighting" outfits on another day, the children compared and contrasted the two. The teachers recorded their observations on videotape.

KM: They are almost the same. But their buckles are different.
IPL: RS has orange buckles. WK has yellow buckles.
AW: They are not the same. One kind of lights up. This one doesn't. (She points to the two coats and talked about the reflective tape.)

The children compared their fire fighter coats in front of the class.

One of the teachers interviewed the two student firefighters during project/activity time. This was another opportunity for the teacher to evaluate what the students were learning about fire safety.

T: What do you think fire fighters do?
RS: Put out fires. They have the most important job just because they save people.
WK: They put out fires.
T: What is special about your clothing?
WK: So I won't get burned.
T: Why is it important?
WK: It just is. I learned you can get burned.

Fire Fighter Eddie

Teachers asked students if they had questions for Fire Fighter Eddie during a large group meeting several days before his visit. Some children made comments instead of asking a question. In subsequent group meetings, the teachers asked the children if they had any other questions or comments for Fire Fighter Eddie. The teachers documented their comments and questions on chart paper.

WK Pumpkins use fire.
TK: Do you wear hats?
MJ: Fire on you. Do stop, drop and roll.
ER: Does hot water start a fire?
KC: Does everything that is hot start a fire?
RS: Can a table that is hot start a fire?
IP: Do you push a button to hear the bells on a fire truck?

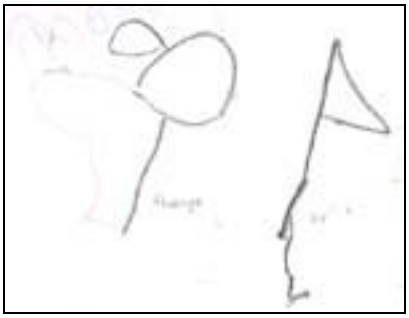
When Fire Fighter Eddie visited, he brought his gear and equipment. He passed around the helmet, gloves and coat for everyone to touch. He pointed out that the coat kept him warm in the winter but cool from a fire. There were Velcro pieces attached to keep the fire coat closed tightly. Fire Fighter Eddie pointed out how great this invention was! Our students insisted on using Velcro for their representation of fire coats, too!

One student asked if the fire fighter wore a hat. Eddie said that it's called a helmet. He placed a fireproof hood on his head. TK thought he looked like a ghost with it on his head. Eddie explained that it protected his ears and face from a fire. Then he placed his helmet over the hood. Before he left, he answered the students' questions.

ER: Does hot water start a fire?
E: No but it can burn you. See my helmet and how it is made. The back of it keeps hot water from dripping down my neck and burning me.
IP: Do you push a button to hear the bells on a fire truck?
E: Yes, red buttons.

Then he asked the children what a siren sounds like. The group responded enthusiastically. They knew how a siren sounded! Fire Fighter Eddie let the children take his coat into the dark bathroom to see how well the reflective tapes worked with a flashlight shining on them. Fire Fighter Eddie stressed that fire is a tool not a toy. He told the children that they have to be very careful with it. He went over the name of each tool and its use: helmet, gloves, badge, axe and coat before he left. Children made memory drawings the next day of the tools that Fire Fighter Eddie shared with the class.

This is a sketch of the equipment that Fire Fighter Eddie brought to share with the class.



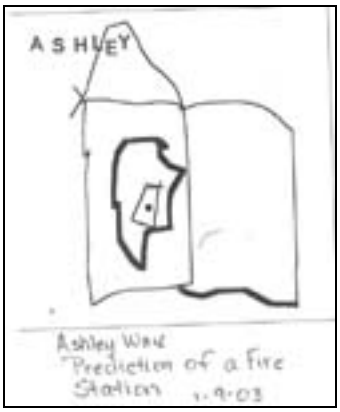
This student drew the flashlight and the axe.

Trip to the Fire Station

To prepare for our visit to the fire station, the children predicted what color a fire truck would be. Various colors were written on the chart paper and children had an opportunity during the morning project/activity time to place a tally mark on the chart paper.

Red: IIIIIIIIIIII
Blue: IIII
Yellow: II
White: I

In a small group activity, children used Kidpix on the computer to draw pictures of what they predicted the fire station would look like. The teachers and children discussed the results of their predictions and shared their pictures at the end of the morning during the last group meeting.



This student used KidPix to draw a prediction of how the fire station would look.

A three-year old's KidPix drawing of the fire station.

In January, the class visited the main fire station located in downtown Champaign, IL. Two fire fighting experts talked with the students. A fire specialist educator at the station presented a puppet show to begin their tour. Then students practiced crawling under the "smoke" (represented by a blanket) to get out of the room safely. Next, they toured the fire station with Fire Fighter Mike. He showed them their living quarters the dining and kitchen area. The fire fighter opened the refrigerators so that the students could see the contents. The students learned that fire fighters pay for their own food and snack items. The number of refrigerators and stoves in the fire station amazed the children. MJ noticed the huge table in the dining area where all the fire fighters sit together to eat.

At the fire station, the children practice crawling under the "smoke."

As the students went into the garage to view the fire trucks the alarm went off alerting us that someone had called 911. Fire Fighter Mike jumped into his gear and boarded the fire truck. Other fire fighters joined him quickly. When the fire truck came back the children examined and touched the truck. Three students measured themselves against the height of the tires.

The fire fighter's pants are lined up and ready next to the truck.

Children measure how tall the tires are on the fire truck.

Children get help holding the heavy hose as they try to flip the switch to the on position.

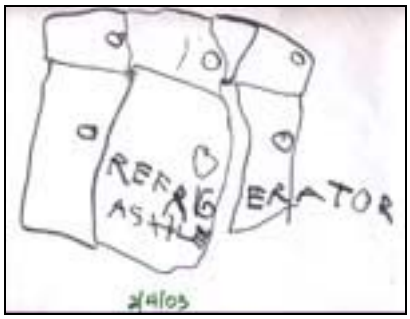
The children held the water hose and flipped the valve release pretending to let the water flow. Fire Fighter Mike dressed in each layer and explained why each item was important in protecting the fire fighters. Students asked Mike more questions.

KM: How do fire fighters put out fires without water?
NS: Do fire fighters hug their moms?
IL & RS: How do they make special suits for walking through a fire?
JG: How do the doors go up and the fire truck goes out at the fire station?
RM: How does a siren work?

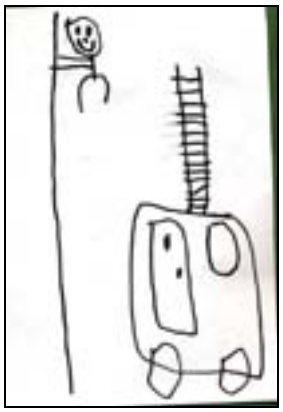
The fire fighter explains the safety features of his clothing.

The fire fighter has everything on but his gloves!

After visiting the fire station, children created memory drawings of their trip. At the large group meeting, the students decided that they wanted to turn their dramatic playroom into a fire station. But to make an accurate representation of the fire station, they still had more questions to ask experts.



Student draws the three refrigerators located at the fire station.



The student draws the firefighter sliding down the pole at the fire station.

Fire Fighter Richard

In preparation for Fire Fighter Richard's visit, the students generated questions. Before his visit, the teacher asked him to focus on fire extinguishers and smoke detectors. This would give the group exploring these two items more information. He brought fire extinguishers and smoke detectors to share with the students. During his talk, the teacher recorded his responses to the children's questions.

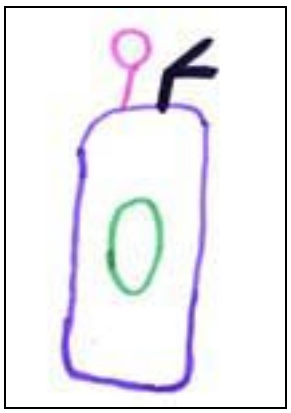
The teacher reads over the questions that students generated for Fire Fighter Richard.

Students' Interview Questions	Fire Fighter Richard's Responses
MJJ: How do you get into a building that is on fire?	Keys, axe or a saw will let us get in the building. Sometimes we take windows out to climb in the building.
EGC: Are you a fire fighter?	Yes, I have been for 23 years. My dad was a fire fighter, too. I work 24 hours on and 48 hours off.
RS: Are you a fire chief?	I am a division chief.
KJM: Do any fires not get put out?	No every fire gets put out.
WK: Why are there foam guns?	Foam fights gas and alcohol fires. It acts like a blanket to smother it out.
CB: How do you put out a fire? What tools do you use?	Water and chemicals are used to put out a fire. Some of the tools are a ladder, saw, axe, prying tools and ladder truck.
IL: Why do you decide to save people?	It is our main job to make sure everyone is okay.
NS: Do you have smoke alarms when there is a fire?	Smoke alarms give you the biggest chance of catching a fire when it is still small. Every house is required to have one.
RM: Where do you sleep at the fire station?	In a bedroom. There's a living room, kitchen and more bedrooms.
IF: How does a fire start?	Someone does something they shouldn't have. It might be too many outlets or a cooking grease fire.

Students had more questions once Fire Fighter Richard arrived. At the end of his talk, Richard answered their final questions.

WK: What if the fire is at the fire station?
R: That would be bad. We are like MacDonald's (the restaurant). There is a fire station just five minutes away from anybody's house. We spread the stations out to cover everyone.
AW: Do you have two ladders or one ladder?
NS: Do you have a zillion fire trucks?
MSJ: Do firemen write letters to children?

After Fire Fighter Richard left, the children drew pictures of what they remembered from his visit. Many students drew the fire extinguishers to represent the ones he brought with him.



This is a student's drawing of a fire extinguisher.

This is a student's drawing of a fire extinguisher.

All of the classroom visitors brought reading material for the students and their parents. The fliers covered important safety information such as checking their smoke detectors to see if they are working properly, having a fire extinguisher near the kitchen or in a basement, and when to call 911. The fire fighters also told the children to practice getting out of their homes in case of fire. They instructed the children to work with their parents to develop an evacuation plan in case of fire in their home. Students learned that fire fighters are here to protect and save them.

Volunteer Fire Fighter Alan

One day a parent who was observing the school shared with the teacher that he was a volunteer fire fighter. The teacher asked him to speak to the class about his experiences. When it was time for the first group meeting the teacher introduced him to the students. They were worried because they did not have time to prepare questions. The teacher reassured the students that they might think of some after they listened to him. Fire Fighter Alan told the children that he had been a volunteer for seven years. He had saved cats from a burning house and helped people in car accidents. Soon the children had questions and the teacher recorded both the questions and responses.

Students' Questions	Fire Fighter Alan's Responses
NH: How do you save little girls like me?	Make sure that you have a working smoke detector.
RM: How do you drive the fire truck?	Carefully. One person drives and another person runs the lights and sirens.
WK: Why do you go through red lights?	In two minutes a fire can double in size. We look both ways before going through the light.
MP: There might be more than one fire. What do you do?	We count on other small towns to help us. It is called "mutual aid."
NS: Do you save everybody?	We protect and try to save lives.
KM: Do cars pull over to the side when the siren goes off?	Sometimes yes and sometimes no.
WK: What if your smoke alarm doesn't have batteries?	You should change the battery twice a year. But check the smoke alarm every month to see if it works.

Literacy Extensions

As part of the every day curriculum, the teachers share literature with the students during large group meetings. Throughout this project, the teacher selected fire safety books to read to the children. Parents also brought in related stories. One parent donated a book entitled, *Do Fire Fighters Hug Their Moms?* This book prompted a student to ask the fire fighters if they hugged their moms. After teachers share books with the students, some students choose to participate in an activity that expands upon the concepts presented in the literature or teaches basic literacy skills. After students listened to *Goodnight Moon*, they created their own version and changed the words to the story.

Goodnight Fireman
by JG, WK, NS, CB, ML and MSJ

Goodnight Moon - JG
Goodnight Fire - WK
Goodnight Hat - JG
Goodnight Socks - ML
Goodnight Picture - NS
Goodnight Smoke - CB
Goodnight Old lady - MSJ
Goodnight Train - JG
Goodnight Bear - WK
Goodnight Mirror - ML
Goodnight Mr. Chimney WK

The teacher's husband visited the class and taught the *Chicago Fire Song* that he remembered from childhood. The children added motions to the song.

One gray night when all were in bed
Mrs. O'Leary took her cow to the shed.
The cow got mad and kicked a lantern over . . .
There'll be a hot time in the old town tonight.
FIRE! FIRE! FIRE!

WK took the song's tune and rewrote (with the teacher's help) the words to be about snack time at school. The snack table is a favorite place for students to socialize and plan future activities in the classroom. WK added picture icons to his song to help other children remember the words. During the last group that day the children learned the new song.

Snack Time
by WK

One gray night, when all were in snack time.
Old Mrs. Mary took her cow to the shed.
The cow got mad and ate up all the food.
There'll be a snack time in the old town tonight!
Snacky! Snacky! Snacky!

WK adds pictographs
to his song.

The literature extension activities enable students to make connections between what they are learning and other aspects of their lives. Sometimes they start with literature and relate it to the topic like they did with *Goodnight Moon*. Other times, they start with the topic, in this case fire, and relate it to other things going on throughout the day and their lives. In the *Snack Time* song, the student composer began with a fire song and related it to his favorite preschool activity.

At the end of Phase 2, students had answered their questions and were eager to share their findings with their parents. They brainstormed how they would share the new knowledge with their parents and family.

Exploring Fire Safety

Preschool Classroom

Phase 3

Sharing and Representing What The Children Learned

The student is building a large model fire truck.

Students prepared several different products to convey what they learned about fire safety. They created a representation of a fire truck, a model house complete with fire extinguishers and smoke alarms, plus an iMovie demonstrating proper fire safety techniques in case of fire.

The Construction of a Fire Truck

Initially, students made small representations of fire trucks using boxes and junk. Soon however, they wanted to make a huge fire truck that could be displayed during the culminating activity. The students who were interested discussed and drew pictures of what their truck should look like. Incorporating all of their ideas, the group began their work.

The children plan and draw their ideas for their collaborative fire truck.

This child sketches her vision of the fire truck.

The students made a list of things that they wanted to see placed into the design.

JG: A hose, three or five hoses. How many are on a fire truck?
MP: Gears. A very important thing is a gear. Six people can sit in the fire truck.
MNJ: Tires. Four tires.
KAM: Two sirens on the front near the bumper.
AW: Seats and a steering wheel.

Students inventoried the boxes and junk that were available. They didn't think that any box was big enough. The teacher took them to an extra storage area where she found one big box and a medium size box that could be used for the body of the structure. The students carried the boxes into the classroom and began constructing the fire truck.

The boxes and Styrofoam pieces begin to shape into the fire truck.

Each person worked on a special area. AW was in charge of the wheels. RS focused on the siren and lights. JG, MJ and TM created water hoses from various cardboard tubes. CB and MP worked on the steering wheel area and seat for a driver. Children added Styrofoam sheets to the top of the cardboard boxes to hold sirens, lights and a ladder. ES suggested that yogurt cups could be used for sirens and lights. NH and ECG transformed a Styrofoam packing sheet from a computer box into the front of the truck that held the headlights. Day after day, the group worked together to construct the fire truck. The truck was so big that it took up the whole table.

Painting the fire truck is a long process because it is so big!

Students discuss which brush to use.

Covering the top of the fire truck is tedious work!

It takes team effort to paint the huge representation of the fire truck.

Students made many collective decisions. Students debated what color to paint their fire truck. To make their representation more realistic, they consulted the digital photographs of the Champaign fire truck that teachers took on the field trip and hung in the dramatic playroom. They decided that red looked most like the truck that they saw. They shared paint cups and brushes and enhanced their problem solving and cooperation skills. Students had authentic opportunities to work as a team to accomplish shared goals. They painted their truck each day during project/activity time for several weeks.

Before the culminating activity, students added labels so that parts of the fire truck could be identified. They proudly displayed the finished fire truck on top of two shelving units, placed side by side. Later, the teachers and students included their fire truck in the annual school art exhibition.

Constructing a Model House

Students mark where fire extinguishers and smoke alarms are installed in a house.

This is the beginning stage of a representation showing where smoke alarms and fire extinguishers are placed in a house.

To represent what they had learned about fire extinguishers and smoke detectors, another group of students made a representation of a house from huge cardboard boxes. First they met to examine a dollhouse that a parent donated to the room. They discussed all the parts of the house and realized that they could make a model house, also. Students made drawings of the house and talked about the different areas that they wanted to include. Their house contained an upstairs

and a downstairs. Students designed steps, a garage and a fully outfitted kitchen. They placed fire extinguishers and smoke alarms near the stove and upstairs in the hallway. Two students added ropes so that anyone could climb out of the house and up to the roof in case a fire broke out. The finished house was a cut away exposure. The students attached their drawings to the house to show the various parts that they thought were important.

Creating the Fire Station

The biggest challenge was to change the dramatic playroom into a fire station. The teacher invited anyone who was interested to join a discussion about how to do this during project/activity time.

T: What do we need to turn this place into a fire station?
BL: Fire pole
KM: Cut a hole in ceiling for fireman to slide down
EGC: Fire truck
CB: Steps to get to bedroom & pole
RS: Siren curled up with light that goes through tube
JG: Fire truck
IF: Stairs steps go upstairs
ER: Fire truck
MJ: Fire truck
RM: Bedroom - 500 beds
ER: Slide
AW: Beds
WK: Doors for fire trucks
MNJ: Restroom
MP: Sleep in bed

The teacher took notes on chart paper as the children spoke. She encouraged them to think about the trip to the fire station again. Children added thoughts but were not at a stage to begin construction. The next day the group met and looked at the previous list. They added the following items:

WK: A trap door for quick escape
RS: A siren to warn the fireman that there's a fire
JG: Tools
ECG: A fire truck, a real one
ML: Fire stuff

The teacher told students that they could sign up to transform the dramatic play room into a fire station during project/activity time. On the following day, the students discussed how to place a fire pole in the room. The teacher reminded the class of the discussion several days earlier about cutting a hole in the ceiling so the pole could be placed there. She pointed out that the classroom is located below an office space. If they cut a hole in the ceiling, it would create problems for

the offices above. A volunteer fire fighter who visited the class suggested placing a black paper circle on the ceiling to give the effect of a hole. The children liked this solution and one person volunteered to cut the circle.

Part of the group volunteered to begin making the fire pole. They sorted through boxes and junk to find materials. They found wrapping paper tubes. A small group of girls planned what they would need to attach the tubes together. They decided on masking tape. AW and MP lead the group and showed the others how to tear the tape and attach it to the tubing. Lots of masking tape went into this part of the project!

The children are constructing their fire pole.

It took patience to tape the tubes together.

Unfortunately, the pole would not hold the children's weight. In fact, the children could not get the pole to stand by itself. A parent brought a carpet roll tube to school. It was stronger and taller. However, the tube did not reach the ceiling and would not stand on it's own either. The group discussed all the possibilities during project/activity time. As they sat in the dramatic playroom, the teacher spotted a volleyball standard outside on the playground. It would hold the tube upright and be sturdy enough for children to slide down. The group went outside and brought the standard into the dramatic playroom. The tube just fit! It had a huge base so it would not tip over. Finally, everyone could slide down the fire pole.

The fire pole was added just underneath the black construction paper circle. It was used daily for dramatic play. The students made beds from cardboard pieces and created pillows and blankets from fleece material. These were placed on the fire fighter's beds. Students also fashioned a computer, mouse and cell phone from boxes and junk materials. The fire fighters recycled many pieces of junk to become useful tools in the "fire station."

The student is writing a "Save" sign for his fire truck construction.

The student fire fighter role-plays cooking at the fire station.

The student fire fighters are eating their snack in their beds while they wait for a fire call.

Teachers placed chart paper on an easel in the "fire station." After each fire call, the teacher listened to the children tell their story of what happened when they responded to the fire call. The teacher recorded each report on chart paper and hung the reports on the wall at the end of each day. Children read and reread their stories of past fire calls. Parents became interested too and checked the dramatic playroom for the most recent fire call stories. Eventually, one fire fighter wanted to write down his own words. He asked the teacher to help him when he made a mistake. He knew about the special tape that hides written mistakes on chart paper.

The teacher takes dictation from children when they return from their first fire call.

Using the fire station was now a daily choice during morning project/activity time. Many children chose to be a fire fighter for the morning. They liked sleeping in the beds and awakening upon hearing the fire call come into the station. Some worked at the "computer" using the mouse and keyboard. There was always someone cooking in the kitchen of the fire station.

When going out on a fire call, the students donned fire hats and grabbed a hose. Off they would go to put out the fire! Most of the time the destination was the computer room, which happened to be the furthest point away from the fire station. Sometimes it upset the children in the computer room who were working quietly or reading books silently. The fire fighters learned to quickly contain their fires and come back to the fire station to make the report so as not to disturb the readers and computer users. When the huge fire truck representation was on display in the main classroom, it was used as a prop to put out fires, too. The fire fighters hooked up a hose

and doused the fire. Everyone enjoyed using the fire station whether it was sliding down the fire pole, cooking a meal or sleeping in the beds. The fire station remained open for a month.

A student fire fighter slides down the fire pole.

A younger fire fighter watches the older student use the computer in the fire station.

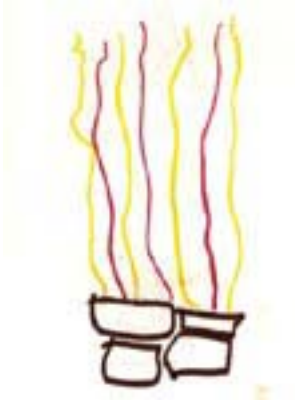
KM uses his fire hose to extinguish the fire.

Several fire fighters work together to extinguish the "flames."

Creative Stories about Fire

Children created stories about fire and read them to the class during large group meetings. They illustrated them with markers, colored pencils or crayons. While EG shared her illustrations, students began to comment and ask questions.

IPL: Oil and water make a fire. Is that steam or smoke?
EG: It's fire.
RS: Why is fire on every page?
EG: The fire is shrinking!



"Someone made a fire for marshmallows and hot dogs."

"The person wanted fire to stop shrinking but it did not."

IF's story had no illustrations:

> There was a fire on a big plane. The plane called the airport firefighters and then foam sprayed on the plane. The fire got put out.
> The End.

Other children illustrated picture books about fire. They drew fire trucks, fire extinguishers, smoke alarms, and scenes with fire. Children eagerly shared their books with others in the room.

Reflecting on What Students Learned

In Phase 3 of the project investigation, the teacher finds ways to ascertain what students know that they did not know before. Sometimes they personally interview students. Other times, students create murals or group stories reflecting upon what they have learned about the topic. At one large group meeting, the teacher videotaped the children sharing what they had learned about fire safety.

NS: Don't run around when there's fire. It might crash into you.
MJ: You should not be scared of fire fighters.
IPL: I'll tell you what I learned. They slide down the pole for fun to put out a fire.
AW: You have to crawl under smoke when there's a fire because smoke goes up high.
KM: The smoke alarm tells you when there's a fire. It goes BEEP, BEEP, BEEP, BEEP.
NH: The fire fighter has an axe to knock down doors.
CB: They're not supposed to go down that pole for fun. They do it so they can get to their engines faster.
RS: Don't be playing around when you think there's going to be a fire starting.
T: What happens if you play around near a fire?
RS: You might get hurt.
IF: When you put the top on the candle the fire disappears because there is no oxygen.

The teacher gleaned from this conversation that students had learned a great deal about fire equipment and the serious nature of putting out fires. Students also had an opportunity to web their thoughts about what they had learned after completing the fire safety investigation (Student Fire Safety Topic Web 2).

As a review, the teachers revisited some of their questions and asked students to respond:

What causes a fire?

IL: A lightbulb and a lighter match, an electric wire.
MJ: Wood and leaves and bark from the tree when fire gets on them.
EG: When you are cooking something and it's hot, that might start a fire.

What equipment does a fire fighter use?

NS: Hose, fire extinguisher, and you use axe to cut down doors and windows
CB: Hoses and axes
RM: Hose
IF: Water that comes out fire hoses

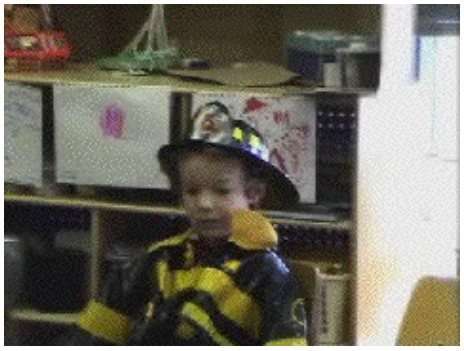
What is at the Fire Station?

ER: Food !!
NS: Brass pole for sliding down to fight fire at night.
RS: Fire trucks, bedrooms, and the pole.
MSJ: Fire truck, fire hats, a kitchen and dishes, fire hose.

Some students dictated fire safety tips that they wanted their parents to know. They decided to make a handout for parents that described their safety tips.

Open House for Families

The teachers and students invited family and friends to the school for the culminating activity. The children shared information about fire safety.



The student shares what he knows about fire safety during the culminating event.

The group took turns explaining the house that they built which held fire extinguishers and smokes alarms, the fire truck representation and general safety tips. Here are a few ideas that they shared:

IF: Don't set fire in a forest. Fire can burn down a whole forest.
WK: You shouldn't go under a table it might collapse. You will get hurt.
RS: You might get burned if you go into a burning house.
MP: If there's smoke all over your house, then you crawl.
T: Why do you crawl?
MP: Smoke is up and air is down.
MJ: Never play with matches. Adults should always light the matches.
TM: Never play with lighters or matches because they are dangerous for you to play with. If you ever drop your match that has fire on it, don't hide. Go outside. The fire can burn you and find you very easy, too. Everyday that you see a match or lighter go get your parents.
MJJ: My grandma was doing matches at the birthday cake. It was my turn to blow.

Children took parents around the room to read the walls that were filled with all of the documentation about the project. The children's stories and books were on display for all to read. Children distributed the fire safety tip sheet.

Fire Safety Tips for Parents
March 21, 2003

1. You should keep a flashlight on your nightstand and keep a pair of shoes near your bed. – WK
2. Get out of the house quickly when the smoke alarm says, "Get out, get out, get out!!" – NS
3. You need to watch out for lighters and matches because you might get burned. – TM
4. You should never go under tables because it's bad because the fire might be on the table and the table might crash down on you. – KM
5. When you see a fire, put water in the fire to put out the fire. – JG
6. Don't go back into the burning house. - BL

To conclude the open house, everyone viewed the two iMovies that the teachers made to capture the students' interest in role-playing about fire fighters and fire safety. The students wrote a play about friends who gathered together for dinner but a fire broke out at their house. They dramatized the following safety tips: dialing 911 to report the fire, stop drop and roll when one person caught on fire and crawling out of the house to avoid the smoke. The teacher videotaped the students acting out their play and then added music to enhance the iMovie. Students colored

their scenery on overhead transparencies. During the play, the teacher changed the scenes by switching the overheads. Their movie was entitled, *My Greatest Fire Safety Movie*.

The second iMovie depicted the *Day in the Life of a Preschool Fire Fighter*. The teacher videotaped and edited some of the children's fire calls. Both movies were popular and several parents asked for copies of the movies on CD. It was an easy way to share what the students had learned with others.

Throughout the project, students' activities and products depicted gains in literacy and vocabulary. Students corrected each other about the terminology to use for fire tools and incorporated fire safety tips in their dramatic role-playing. Some of the vocabulary they incorporated into their every day language included:

Vocabulary

Aerial ladder	Fire fighter	Hood
Axe	Fire	Hose
Badge	Fireplace	Matches
Button	Fire station	Safety
Coat	Foam	Siren
Crawl	Get out!	Smoke
Danger	Gloves	Smoke alarm
Fire alarm	Guard	Stop, drop and roll
Fire drill	Hazardous	Volunteer fire fighter
Fire extinguisher	Helmet	Water

New and Deeper Understandings

The students had very little knowledge about fires and fire safety before we began. During the fire safety project, students' understanding about fire safety grew. They gained specific knowledge about fire fighting equipment. At a very basic level, the children practiced safety measures such as stop, drop and roll. The monthly fire drill had a deeper meaning attached now that they were learning about fire safety.

The students demonstrated that they had acquired a true understanding of what they saw at the fire station by returning to school and building a recreation of a fire station in the dramatic playroom. They included all aspects of the fire station from the kitchen to the fire truck in the garage.

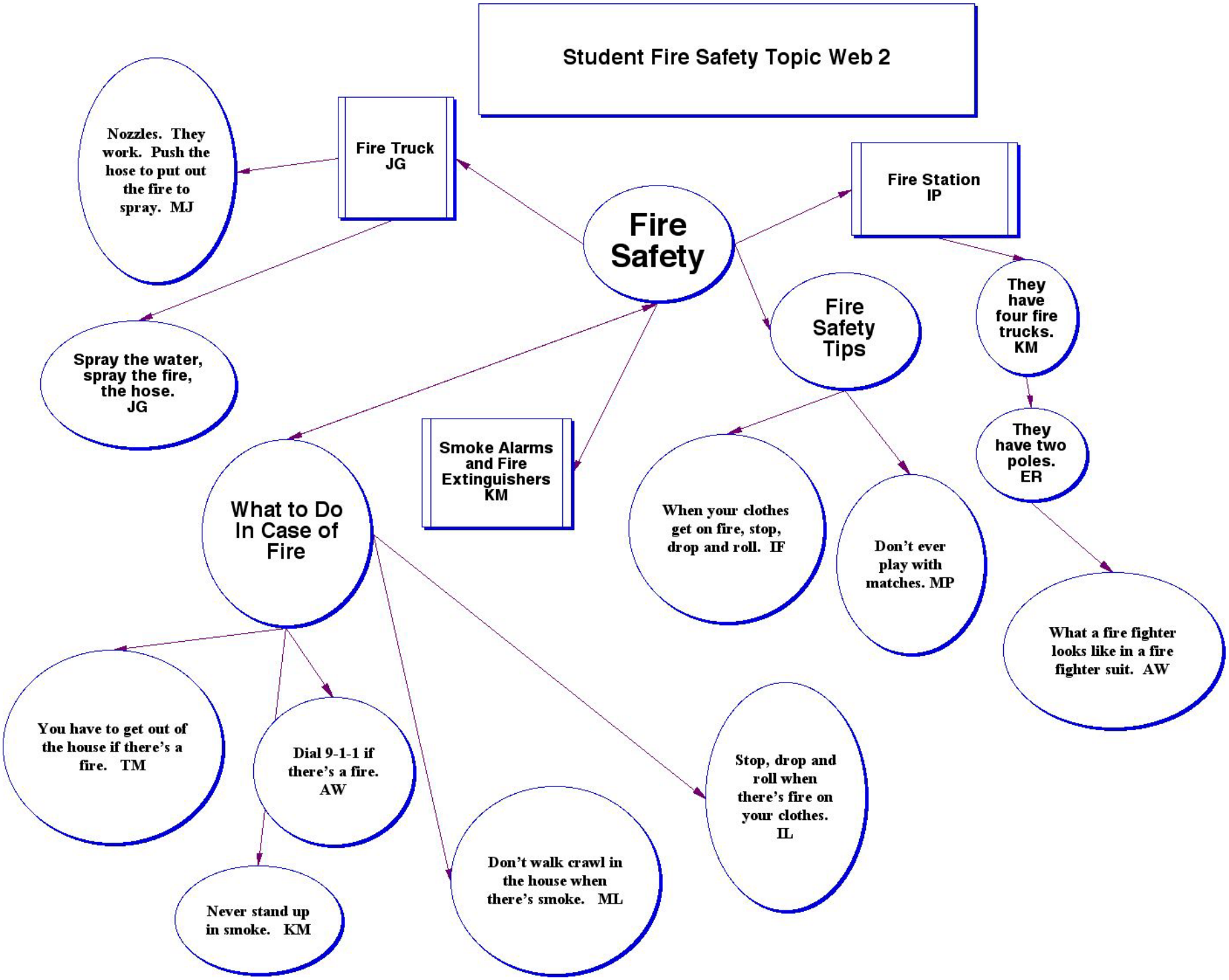
The students became comfortable with fire fighters and their gear. Each fire expert talked to the children about the importance of not hiding during a fire. The students learned that it is unacceptable to be under a table or bed or hide in a closet if a fire breaks out.

The students enhanced their cooperation skills as they played together in their "fire station." It was a popular choice area during March. The children organized themselves to go on fire calls and come back to report them. Most students enjoyed the fire safety project. If they were not

engaged in role-playing in their "fire station," they were helping to build a representation such as the fire truck or the house.

The interest in literacy increased. Several students wrote about fires and wanted to share their stories at large group meetings. Even their artwork depicted a fire theme. They drew campfire scenes or a house on fire. They became fully engaged listening to stories about fire trucks, fire boats and fire fighters. In the evaluation section the teachers share their reflections about the project and evaluate it by examining the documentation for growth of the group as a whole and for specific students (student portfolios).

Student Fire Safety Topic Web 2



Exploring Fire Safety

Preschool Classroom

Evaluation, Reflection, and Assessment

The classroom environment enables children to demonstrate what they know through a variety of authentic assessment strategies (exhibitions, demonstrations, journals, group discussions, debriefings, interviews, and conferences). Assessment is constant and ongoing so as to identify students' strengths and learning approaches as well as their needs. Teachers observe play, watch children drawing, listen to conversations and ask questions. As children explain their thinking, teachers can assess their level of understanding. "Students points of view are windows into their reasoning. Awareness of points of view helps teachers challenge students, making school experiences both contextual and meaningful. Each student's point of view is an instructional entry point that sits at the gateway of personalized education" (Brooks & Brooks 1993, p. 60).

Documentation is vital for assessment. Documentation includes narratives of child-to-child conversations, child-to-adult conversations, photo portfolios (photo narratives), wall displays, and written summaries. Documentation offers opportunities for children to evaluate their own work, for teachers to keep parents better informed (knowledge web), and for teachers to gain a better understanding of how children learn. Documenting conversations and representations at the beginning and at the end of the project for the group as a whole and for each individual child gives perspectives of growth in all dimensions including vocabulary, concepts, knowledge, skills and dispositions.

Tomlinson's "Planning Model for Academic Diversity and Talent Development" (Tomlinson, 1996, p. 162) is a useful tool for examining how children's responses showed growth. Instead of using the model to differentiate instruction, the teachers have used it to examine how responses to the activities were differentiated among students as well as how they demonstrated growth in students throughout the study. In a project-based classroom, where many activities are open-ended, using Tomlinson's indicators can show growth. Teachers can demonstrate through child portfolios how children have gone from simple to more complex responses; concrete to more abstract understandings, and less independence to more independence in work habits and dispositions.

In an environment of inquiry, teachers look for evidence of children's growth (Klein & Toren, 1998). Children's questions may evolve from general to more specific once children have more knowledge about a topic. They may transfer their learning by making links to other things that they know and with which they are familiar. They may incorporate the new vocabulary into their every day language. Teachers look for growth in fluency of ideas and in ways in which children generate questions, solutions, hypotheses and theories. Teachers look for growth or change in students' understandings by examining artifacts of learning, which include drawings, structures, writings, and conversations. Children may also become more self-directed, more engaged, and may strengthen their dispositions to inquire, to assume responsibility, to persevere, and to take on leadership roles within a group.

The evaluation of a project investigation includes teacher reflections, student self-evaluations, parent-feedback, and an examination of each child's project portfolio to assess growth and learning. Examples of children's project portfolios are included in this document.

The primary method of assessing what students have learned in project investigations is through the documentation of their experiences. Teachers observed students carefully and provided opportunities for students' thinking to become tangible in order for teachers to see growth. Teachers listened and recorded students' ideas expressed in conversations, brainstorming sessions, interviews, writings, predictions, and representations. Teachers reflected upon class growth as well as individual students' depth of understanding by examining and comparing the documentation from the beginning to the end of the project.

Teacher Reflections

Although the concept of fire and fire safety may have been more abstract than the previous concrete investigation of Bread that students completed at the beginning of the year, students were engaged throughout this project investigation. Students had an enormous amount of interest in fire equipment and what is in a fire station. They enjoyed turning their dramatic play room into a fire station and had a great deal of fun role-playing fire calls. Throughout all of these activities, students increased their basic literacy and numeration skills as they dictated and dramatized stories and counted fire extinguishers and smoke detectors in their environment.

Although students may never have been in a fire, they could relate easily to the topic of fire safety because they connected what they were learning to their own lives. To explore the fire equipment in their homes, teachers permitted students to take home a camera for counting and documenting the fire extinguishers and smoke detectors. When touring one house for fire safety equipment, the parent and child noticed that the smoke detector did not beep, as it should. The parent had to replace the battery for the smoke detector. The student discovered how his safety check may have saved his family!

The children's enthusiasm grew as they delved deeper into the topic of fire safety. Once the fire truck representation was completed, children put it to use. As soon as the dramatic playroom was designated as a fire station, it became a busy place filled with young fire fighters. Many children chose the dramatic playroom on a daily basis during March!

There was a tremendous amount of transfer in this project. Students became so aware of fire safety equipment in the school and in their homes, that when they visited the College of Education to view their art show, they searched for fire extinguishers and smoke detectors in that building. They were even interested in exit signs. This was an extension of the fire safety investigation. They learned to always look for the nearest exit when they enter a new building. It could save their lives. Students became much more aware of safety measures in public buildings.

In summary, fire safety is an important topic for young children to explore. Most students internalized rules and procedures for being safe if a fire occurs. All students enjoyed participating in the role-playing and dramatic activities that simulated fire safety.

Survey with children's illustrations added to find the number of fire extinguishers and smoke alarms in the home.

The project provided numerous opportunities for children to work in groups that were diverse in ability, age, and gender. Students gained negotiation and cooperation skills through the interactive role-playing and collaborative construction activities. They worked together to build each piece that went into the fire station. There were only two beds to share and one computer. Children took turns sleeping, wearing the fire hats, and cooking meals. The fire pole took planning and major revision when the first fire pole did not work. Once a sturdy fire pole was built, everyone took turns sliding down it. Most of their representations were group products incorporating teaming skills. They learned to value others' ideas, to follow through from planning stages to the finished products, and to gain a sense of group pride in their accomplishments.

Higher level thinking skills became evident through student's problem solving and critical thinking about the fire calls that they role-played. Students analyzed what they found on their "fire calls" and evaluated what they would need to help people and put out fires. They made decisions about what they were going to include in their written reports.

This topic presented interesting challenges for teachers to give students opportunities for first-hand investigations because the teachers could not allow children to experience being in or starting a real fire. The children could not experiment to answer their question, "What can catch fire?" The knowledge gained was mostly factual, and relevant to their own lives. Students conceptualized their increased understandings by articulating fire safety tips. After investigating fire and fire safety, the students brainstormed many safety tips for their second topic web (Student Fire Safety Topic Web 2).

Literacy and Language Development

Opportunities to increase literacy skills are always abundant in project work. In this project, students began with fire memory stories and later gave detailed explanations of what they saw on

their field studies. Notice the memory stories contained an element of fantasy at the beginning of the project.

KAM: There was a fire and I saw the fire. When I saw the fire I saw a floating heart. It rescued the people.
IF: There's a fire inside the dirt. It caught on fire through sparks flying through the air.
NS: Someone was carrying a candle but some fire sneaked out. And someone didn't know how to crawl and they got burnt.
TM: My friend was holding a candle and some fire got out of the candle and started growing. When I saw the fire, I saw four floating and one small one. And the small one dragged me out of the building. And I saw a hole and the water came down and put the fire out.

Once there was a beautiful fire truck who liked to play. He didn't have any friends to play with. Then he had four beautiful friends. Two friends were lazy and two friends were nice. The fire truck found a house. It was his friend's house. He'd never been to his friend's house. He liked to play with him but they didn't have time to play. So it was too bad. So they waited & waited for their mommies. There was a very big fire. And he never lost his water. He had lots of water. His friends helped him. There was another fire tomorrow. So he sprayed water.
The End.

There was a fire outside. Then a water bucket came and said to the butterfly, "What's wrong with you?"
Then the butterfly said, "I saw fire."
Then the water bucket quickly got some water and put out the fire.

As the investigation progressed, one group wrote the following group story. Notice the story has factual information such as how an axe is used by fire fighters. New vocabulary from the fire project is interjected into the story such as crawl, axe and fire fighters.

Group Fire Story

Firemen help people a lot to get our stuff out. There is a fire in our house. The smoke is high so we need to crawl on the ground. If you are in bed, you need to run outside in your pajamas. Nurses, ambulances, and doctors come. The nurse brings bandages, Band-Aids, and a fire extinguisher to help the fireman. The doctor will bring tools. A vet will help our animals. We have a pony, a cat, and a dog. The horse is on fire. The firefighters save the horse. "There are two horses," said the chief. Two firefighters ran back in the building with their masks and air tanks. The firefighters go to rescue the horses. They put the fire out and had a party at the neighbor's house. The mailman comes to the party and delivers a package from the newsman. The firefighters open the package, and they found a new axe because one of the firefighters lost his axe. It was shiny because it was new. He will use the axe to break windows and doors to help

get people out. Yellow ran away and the police came to help find him. He ran way to the forest and the firefighter could not find him. The firefighters knocked trees and NS and Yellow saw each other. The ambulance came and took them to the hospital. The forest caught on fire. The tree fell down and the fire was gone.

The fire went back to his house. The people all found their homes. They had lunch and dinner and went to bed. The firefighters got to the place where the fire was, all of the people came, and they got the flames out. Everybody was safe and they all went to bed.

The End!

Teachers documented language development through the fire calls that students dictated. Students' stories started out simple and grew more complex. The fire reports became more detailed and in depth as the month passed. Several examples follow. For a more thorough listing of the fire calls, see Student Dictated Fire Calls.

3/06/03

IF: It was a false alarm and we need to put them in jail.

NS: A wire reached up and it burned me but I put it out with a hose and I stop, drop and rolled.

3/10/03

MJ: This was a real one. The kids were hiding in the clay box and toy box. The fire fighters found them. They were scared and nervous. They were okay, but the fire fighters took them to the doctor just in case.

MJ: Fire fighter MJ went out on a fire call. KM fell into a whole pile of cords. Someone had plugged in 20 cords. Two cords snapped into pieces and fire started. MJ unplugged all of the cords, put the fire out and saved KM. He saved all of KM's toys.

3/13/03

MJ: I found ten cords all plugged in together. 99 fire fighters came to fight the fire at the hotel. When MJ got to the scene, the other firemen put it out. They drove back home. Glass hit paper and cut it into two pieces. A light flew on. Paper and a pillow caught fire. MJ put the fire out.

IP and RS: IP and RS saved a dad, a mother, two babies, a brother and a sister. The fire was at a group time place. The first fire was in the computer room. They did not save everybody there. Everyone was dead.

The fire call reports show real tragedy as well as heroics. The students listened to experts and heard many stories about fire and how fire fighters save people. Their fire call reports demonstrated that they understood what could happen on fire calls and the importance of coming back to the station to write a report.

The teachers documented misconceptions by listening to stories that were dictated in the writing area or shared at large group meetings. The teachers designed activities to help students explore and clarify their misunderstandings about fire and fire safety.

Misconceptions

- Only water puts out fire.
- Rocks make fire.
- You put smoke into fire.
- Fire hose water comes from the sink.
- Fire kills everything except water.
- Next year, we need to do a better job of pursuing the misconception or idea the very next day. This is something we will strive to do.

The teachers brought in fire experts from around the community. Each expert did an excellent job of explaining fire equipment and what their job entails. In most cases, the teachers prepared the speakers by giving them the students' questions ahead of their visit. Each speaker brought hands-on materials to share with the children.

The experts distributed hand-outs that covered similar material:

- Check for smoke detectors and if they are working properly
- Have a fire extinguisher near the kitchen or in a basement
- Fire fighters are here to protect and save you
- Know what to do in case of a fire at your house.

The teachers were happy with the information that the children gleaned as they listened to experts talk about fire safety. The students tried a few experiments, gathered and analyzed survey information, and wrote a play that illustrated all the elements of fire safety.

As a result of the inquiry, students still had a few more questions and wonderings that interested them at the end of the project:

IF: How do you make the special suits for walking through fire?
WK: What about the foam and the foam gun? It's not the kind you use in war.
TK: How does water spray people?
NS: Find out about fire extinguishers. How do they fight fires?
ER: About the clothes the fire fighters wear.
MJ: How do the fires start burning the house and how it falls down. How do the moms and dads get out and what about the baby who only crawls?
IF & WK: Do fighters have moms? WK said no and IF said yes.

The teachers asked children to make a book about what they learned about fire safety to share with parents at the open house. Below is the text of their book entitled, *What Kids Learned About Fire Safety*.

Student Reflections

AW: Crawl under smoke and get out quick. You call 911 when there is a fire.

BL: Don't go back into the burning house.

CB: I learned everything about fire safety! Get out of the house. Stay out of the house. Go to the new house. Stop, drop and roll when there is fire on your clothes. When there is fire, you call the firemen and they put out the fire. They have to answer to the fire chief. They have to write a report.

ER: Sometimes firefighters save kids. Sometimes they have their mask on so they can breathe air. Stop, drop and roll if there is fire on you. If there is fire in your house, you need water to put it out.

EG: I saw some fire trucks. You crawl out of the house. You stop, drop and roll when you see fire.

ESR: You squirt water out of the hose. If there is a fire, you need to use the hose to put out the fire. Fire Fighters use some hoses to put out the fire.

EC: You never can touch matches. You never can touch fire without an adult or a fire fighter.

ES: Fire trucks. Stop, drop and roll. Call the fire fighters. Fire poles.

IF: Stop, drop and roll when the fire is on your clothes. Crawl when there is a lot of smoke.

IP: Can't be under the tables. They have dining room and kitchen in the fire station.

MSJ: Get out of the house when there is a fire. If there is a little fire, use the fire extinguisher to put out the fire. When you hear the fire alarm, get out of the house very, very quickly. You should keep the fire extinguisher at a special place where you know where it is. If you hear the smoke alarm beep once, that means you have to change the battery. Firemen get wet when they are spraying the fire.

ML: There are some animals, a doggy and a puppy, a horse and a pony. When there is fire, you put on special clothes, gloves and hats to protect you. When there is fire, you stop, drop and roll.

MP: Don't play with matches. Don't play with lighters. Do not play with stuff that can make fire. Do not play with the hose. Crawl under smoke.

NH: Always be careful. Go outside. Do not go in for anything. You have to call 911 and the police. The firefighters find the police. There was a stranger once and we called 911 and the police came.

RM: I get out of the house when there is a fire. My daddy makes a fire where the fire belongs, in the fireplace. No going under the table.

RS: When you catch on fire, stop, drop, and roll. Get out of the house quickly when there is a fire, and don't hide from the firefighters.

TM: You need to get out of the house and don't go back for anything. You need to be outside if it's hot or cold.

TK: I don' like water. I like fire. I call 911 – call right now!

WK: Never play with matches. You shouldn't leave things cooking on the stove because they can catch fire. Don't leave hot things on the counter because it could cause a fire.

During the culminating activity the teachers distributed a questionnaire to parents asking them to think about what their children had learned about fire safety. Some of the parents took their questionnaire home and returned them to school. Below are the responses to the questionnaire.

Parent Reflections

1. **Did you see any evidence of your child's interest in the fire safety project?**
   - Yes, she talked about fire safety daily and asked lots of questions at home.
   - Yes, he loved making the fire engine out of boxes and junk. He also loved the fire station.
   - Yes, MJ talked a good deal about fire drills, alarms, and safety. I showed him the alarms we have and where they are located.
   - He tends to draw or construct fire-related objects, trucks, hoses, etc.
   - Yes, KM wore her firefighter costume many times. She mentioned to "Stop, Drop and Roll" when a fire is spotted.
   - We saw a lot of fire station drawings, fire extinguisher "boxes and junk", and heard a lot of stories / facts about fire and fire safety. The field trip was a big highlight.
   - Yes, this is a topic JG enjoyed. He talked about alarm systems, how to extinguish fire, etc.
   - EG talked about the field trip quite a bit. She incorporated themes about fire into her imaginary and pretend play at home.
   - Yes, excited about the field trips; shared fire safety tips
   - Yes, she was stop, drop, and rolling a lot. She was also singing the songs, and building a fire truck out of her chairs.
   - Very much. IP told us a lot about what he was learning from guest speakers and visits to the station. He told us new things that he learned and was very animated.
   - Yes, she let me know about what they did when they visited the fire stations.
   - Yes, MP talks about fire safety at home.

2. **Did your child talk about any aspect of the topic away from school? Did the conversation or statement reveal new knowledge about the topic?**
   - Yes, she wanted to know our plan for exiting the house if there was ever a fire.
   - Yes, he would say that children shouldn't touch matches or lighters. Also, he talked a lot about smoke alarms.
   - He seems to have a better understanding of fire safety.
   - Yes.
   - Yes, KM wanted to know the locations of smoke detectors and fire extinguishers in our house. And we checked the batteries together.
   - Yes, WK showed a lot of interest in the topic and expanded his knowledge of the topic, too.
   - Yes.

- She talked about water putting out fire. She also talked about what a smoke alarm does.
- Yes.
- Yes, "Stop, Drop and Roll"; us playing with fire.
- IF and DF have a fire station and trucks set up and hospital with ambulance and have carried out numerous pretend play sequences incorporating new ideas from school.
- Yes, one day the fire alarm sounded when we put on a fire in the fireplace (the smoke came inside due to the cold air in the chimney) and ECG started to shout "stop, drop, and roll" like crazy and rolled across the family room toward the front door.
- Yes, when she sees a fire extinguisher anywhere or fire hydrant on the road.

3. **Did your child like this topic?**
   - Yes, she really enjoyed this topic.
   - Yes, he thought it was exciting. I like the safety aspect of it.
   - Yes, MJ enjoyed all aspects. Truck, dramatic play especially.
   - Yes.
   - Very much.
   - Yes.
   - Yes.
   - Yes.
   - Yes.
   - Not sure. I think she liked the Bread Project more. She loves to cook.
   - Yes.
   - I think so.
   - Yes, she play fire fighter at home with her younger brother.

Student Portfolios

WK (5 years old)

WK turned five toward the beginning of this project. This was his second year in the class as a preschooler. Last year, he chose to play in the block area and the computer room during project activity time. This year, he was active in all phases of the fire project. He wrote stories, participated in surveys and helped create the representations that were displayed in the room. WK was also a student fire fighter who took his job seriously. He was one of the first guest speakers to talk to the group as a "fire expert." WK shared how to stop, drop and roll.

Two student "Fire Fighters" show off their gear.

WK adds lots of tape to secure the large fire truck representation.

Growth in Initiative and Leadership

WK was a major contributor to the fire station. He planned with the others all the items that should be included in the fire station. WK thought it was important to add fire trucks and doors for them to go out. On the field trip to the fire station, WK noticed huge garage doors. He wanted the same for the classroom fire station. He wrote and hung signs on the wall reminding everyone to dial 911 or be safe. He, also, enjoyed using the "computer" in the fire station.

During other projects, WK had been a participant, but not a leader. In this project, WK lead children in practicing "stop, drop, and roll." He initiated fire calls, and led other children at role-playing fire fighting. He acted as a fire chief in the dramatic play room.

WK writes out his survey question. The responses are tallied under "no" and "yes" columns.

WK uses the "computer" in the fire station to type up information.

Growth in Literacy Skills

WK's major area of growth occurred in literacy. WK participated in dictating fire calls that were detailed and intricate accounts of events. Some of his fire calls are listed below.

3/6 Too many electric plugs were plugged in. A blender was making a milkshake for dessert. One of the wires snapped and there was paper nearby. The paper caught fire.

In Hawaii a fire plane came and a volcano was in back of a house and exploded and the lava hit the house and it caught fire.

3/7 Bonfire in a house. A burglar set the fire with matches. He went outside and got some sticks. He put the sticks in the bathroom. He lit the matches and put it on the sticks. The firemen came first. The police came second. The police threw the burglar in jail.

It was a wild fire. Someone named George was watching the fire. Some poachers started the fire. George forgot to bring his hose. He lost it. Luckily, he got an extra hose. He put out the fire and saved the deer, lions, rhinos and bears.

3/10 It was a wild fire. It started because poachers did not build a pit fire. It has a hole in the ground to place your fire. The wind blew the fire off the wood. It went to the ground. WK used a short hose to put out the fire. WK saved panda bears, deer, lion and cubs.

3/11 False alarm a short building. I looked on each floor. Someone called 911. I called the police they threw him in jail.

3/13 There were some matches and one fell out and lit as it fell. It caught the floor on fire and I put it out with the short hose and went back to the station.

A burglar called 911 for a joke so the police came and threw him in jail and locked him up.

3/18 Fire Fighter WK went to a dinosaur fire. It started when a volcano exploded. A tree caught fire from the lava. I USED HOSE TO PUT OUT THE FIRE. (WK wrote the capitalized text himself.)

WK understood that sometimes there are false alarms. He also knew and shared with the other children that matches start fires and that police often go on fire calls, too.

The teacher noticed WK's engagement in writing and his desire to write his own reports. When he made a mistake he asked for "that tape." WK didn't mind making mistakes and fixing them.

WK writes his fire call report on the chart paper.

WK stands next to one of his safety signs displayed in the fire station.

WK wrote this story during the fire project.

> The firefighters were in Hawaii and we came to help the Hawaiian fire fighters. The fire started from the volcano and burned one of the houses. We put out the fire all by ourselves with fire hoses. We rescued a snake, a hamster, a gerbil and some spiders. IF rescued two kittens. NH saved 100 kids. The bad guy, the volcano "erupter," made the volcano erupt. The police caught the volcano "erupter" and sent him to jail.

WK wrote more during the fire safety project than he had during the previous projects. He created signs, stories and labels. He enjoyed the tune to the song about the Chicago Fire so much that he wrote his own words and sang the song during the culminating activity.

Disposition to Inquire

WK asked each expert something that was particularly important to him. He may have gleaned part of the information from a story shared in class or one that he read at home. He asked Fire Fighter Richard "Why are there foam guns?" and "What if there is a fire at the fire station?" He also wanted to know, "What if a fire is on the roof?" and "How do you put out a fire in a tall, tall building?" When a volunteer fire fighter visited, WK asked him, "Why do you go through red lights?" WK read his questions to the guest speakers from the chart paper. He inquired about concepts that furthered his knowledge base.

Fire Fighter Richard answers WK's question about a fire starting in the fire station.

WK grew in many areas during the fire safety project. He was a major contributor to the designs of the fire truck, fire extinguisher, and fire station representations. WK performed in front of an audience when he dressed as a fire fighter. He sang in front of a group of parents. WK let himself shine during the fire safety project!

Student Portfolio

IF – (4 years old)

Disposition to Inquire

This was IF's first semester in the preschool classroom. Throughout the early part of the semester, he enjoyed playing in the block area. In the first project investigation of the year, IF participated in activities that helped answer other children's questions. In the fire safety project, IF initiated his own question to pursue, "What starts a fire?" He persisted in his desire to find out the answer and asked his question to each expert that came to the class. He learned that people cause fires when they are not safe.

IF was interested in finding the answer to the question, "Does a Clock Start a Fire?" He created a form to survey students in the preschool classroom. IF presented the information in bar graph chart. The teacher displayed his results on the wall for classmates and visitors to read.

Extending the Comfort Zone

IF loved to play in the block area during the first months of school. To encourage growth, the teachers asked IF to explore new choices such as drawing, using the computer, or using art materials. The biggest step for IF was to work in other areas of the classroom. The fire safety project introduced him to a variety of media and IF became a major contributor to the group representations of the fire extinguisher, model house, and the fire truck.

The fire station in the dramatic play room got his attention quickly. IF signed up daily to use the dramatic play room on the activity choice board when it became a fire station. The fire safety project allowed him to comfortably explore the art and writing areas as well as dramatic play room and use his knowledge for fire safety.

IF waits his turn to slide down the fire pole.

During the culminating activity, IF wanted to share his new knowledge. In front of everyone, he said "Stop, drop and roll when the fire is on your clothes. Crawl when there is a lot of smoke."

Student Portfolio

ML (3 years old)

ML was a young three year old when she entered school in the fall. She was fairly quiet and chose mostly to use the computer or play in the dramatic play room during project/activity time. She stayed close to one particular female friend. During the fire safety project, ML demonstrated an enormous leap in her drawing skills and an increased interest in broadening her social relationships.

Simple to Complex

ML drew pictures that became more detailed as the months passed in the project. Her first fire fighter drawing is shown. Two months later her fire fighter has a hat and two eyes. In one picture she drew herself as a fire fighter holding a cake. The last picture she created has a house that is on fire with smoke coming out. The fire truck is approaching to put out the flames.

ML draws a fire fighter in November.

ML adds a face with ears, a fire hat with a shield to her drawing of a fire fighter in January.

At the end of the project, ML told the class, "You put on special clothes, gloves and hats to protect you when there is a fire. You also stop, drop and roll when there is a fire on you." Her drawings indicated that fire fighters put on special clothing.

Disposition to Inquire

Designing and conducting surveys was a new activity for ML. She became interested in developing questions for surveys and illustrating icons to represent words on the data collection forms. She added her own question to ask the expert, "Do firemen write letters to children?"

Extending the Comfort Zone

When several students started creating representations, ML began building her own small fire truck out of boxes and junk. She noticed that a group of students were building a large fire truck. She joined the group to help them paint their large truck and suggested that the hose should be pink. She felt more comfortable at the end of the project working with other children and less dependent on one friend for social interaction.

Student Dictated Fire Calls

3-6-03

1. Too many electric plugs were plugged in. A blender was making a milkshake for dessert. One of the wires snapped and there was paper nearby. The paper caught fire

2. In Hawaii a fire plane came and a volcano was in back of a house and exploded and the lava hit the house and it caught fire

3. It was a false alarm and we need to put them in jail.

3. A wire reached up and it burned me but I put it out with the house and I stop, drop, and rolled.

5. Another false alarm. This time we put the man in jail.

6. Another false alarm. This time it was a kid.

7. A fire started from pots cooking on the stove with no one watching them. When the person heard the smoke alarm they called.

8. There was a real fire and yellow was stuck inside. The smoke alarm went off (2 smoke alarms) and everyone got out of the building.

9. We went in and put out the fire and I rescued Yellow. Now we need lots of sleep after that one!

10. A 5-alarm fire call came in. –Another false alarm.

11. There was a boy stuck inside. There was a car crash call. We had to use foam hoses. There's a special switch to change from water to foam.

12. A house was on fire and the mom and dad were stuck inside. I had my air breather on. I had to go inside and put on a special suit for walking through fire. I got it under control.

3-7-03

1. False alarm. Burglar came into a house. 005 006 Address of house. Police knew it was a false alarm and they came in front of the fire trucks. They put handcuffs on the burglar and locked him up.

2. Bonfire in a house. A burglar set the fire with matches. He went outside and got some sticks. He put the sticks in the bathroom. He lit the matches and put it on

the sticks. The firemen came first. The police came second. The police threw the burglar in jail.

3. It was a wild fire. Someone named George was watching the fire. Some poachers started the fire. George forgot to bring his hose. He lost it. Luckily, he got an extra hose. He put out the fire and saved the deer, lions, rhinos and bears.

4. A little light was on the table. The baby kicked it. That's how the fire started.

5. Someone thought a bomb was an egg. They threw it into a light lantern. It went 5, 4, 3, 2, 1, 0 and it exploded. Fire fighter MJ got there when it was at one. He got the people right out when it said zero.

6. There was a monkey on fire. He was by a lamp that was on fire. It counted to ten. Fire fighter NS rescued that monkey. He is at the zoo.

3-10-03

1 It was a wild fire. It started because poachers did not build a pit fire. (It has a hole in the ground to place your fire). The wind blew the fire off the wood. It went to the ground. I used a short hose to put out the fire. WK saved panda bears, deer, lion and cubs.

2. It was a big fire. We couldn't put it out. More fire fighters saw the smoke and came. We saved a baby. A lady had a lighter. The lighter lit when someone wasn't looking. The whole house caught fire.

3. Fire fighter CB saved a kid.

4. It was a false alarm. There was no fire. The people (little kids) called just for fun. They could see smoke but it was from a store where something was baking.

5. This one was real. The kids were hiding in the clay box and toy box. The fire fighters found them. They were scared and nervous. They were okay but the firefighters took them to the doctor just in case.

6. Firefighter MJ went out on fire call. KM fell into a whole pile of cords. Someone had plugged in 20 cords. Two cords snapped into pieces and fire started. MJ unplugged all of the cords, put the fire out and saved KM. He saved all of KM's toys.

3-11-03

1. False alarm A short building. I looked on each floor. Someone called 911. I called the police they threw him in jail.

2. Monica cooked stuff. She made cookies. The firefighter threw her cookies away. No! They ate them.

3. Firefighter IP and RS saved a dad, a mother, two babies, a brother and a sister. The fire was at a group time place. The first fire was in the computer room. They did not save anybody there. Everyone was dead.

4. Someone called 911. It was a joke.

5. Firefighters went to store. There was some smoke. Fire hose water put out fire.

6. Real fire was on the rug in K/1 classroom. It was small fire. He used the hose to put it out.

7. Firefighter NH went to Rattlesnake Rocks near Dora's house. Swiper stopped because he was near rattlesnake rocks. A girl called 911 because Swiper took her doll. NH used her hose to follow Swiper. She took the hose and grabbed the doll. NH took it and gave it to the little girl.

3-13-03

1. There were some matches and one fell out and lit as it fell. It caught the floor on fire and I put it out with the short hose and went back to the station.

2. IL put out a barbeque fire and lots of false alarms.

3. A burglar called 911 for a joke so the police came and threw him in jail and locked him up.

4. Fire fighter MJ found ten cords all plugged in together.

5. 99 Fire fighters came to fight the fire at the hotel. When MJ got to the scenes, the other firemen put it out. They drove back home. Glass hit paper and cut it into two pieces. A lighter flew on. Paper and a pillow caught fire. MJ put the fire out.

3-14-03

1. There was fire and smoke in the jail. We put out the fire.

2. The cars burned up. The people fell out and I saved the people.

3-18-03

1. Fire fighter WK went to a dinosaur fire. It started when a volcano exploded. A tree caught fire from the lava. I USED HOSE TO PUT OUT THE FIRE.

Exploring Fire Safety

Preschool Classroom

Fire Safety Learning Activities

Phase 1

1 **Opening Event** In a large group meeting, the teacher recalled a field trip the children took in October to see the Fire Safety Awareness exhibit.	2 **Brainstorm Ideas** Children brainstormed ideas about fire and fire safety.	3 **Categorize Ideas** Teachers helped place ideas into categories directly on the chart paper.	4. **Label Categories** With teacher help, students made their Student Topic Web I.	5 **Share personal memories** Students shared personal experiences with fire at large group meetings.
6 **Illustrate Stories** Students used a variety of medium to illustrate their memory stories. They used finger paints, watercolors, chalk, and markers. Parents helped with dictation of stories. Teachers typed their stories on the computer.	7 **Share Stories** Students shared their stories and pictures at large group meetings. They noted similarities and differences in experiences. Teachers displayed the stories and pictures on the wall.	8 **Collect Data** Students developed surveys to find out what classmates already knew about fire and fire safety.	9 **Represent Findings** Children represented their findings using bar graphs. Students used clay and play dough to represent their memories of fire equipment.	10. **Articulate Questions** Teachers and students wondered about fire and fire safety. Where were smoke detectors and fire extinguishers in their homes? What type of equipment did fire fighters use? What can catch fire?

Phase 2

11 **Group Planning** Students began exploring fire	**12 Make Predictions** Before each guest speaker	13 **Engaging in Field Study** Students collected data	14 **Debrief** Students shared their findings at large group	15 **Create Representations** Students represented their

safety in three groups to answer their main questions. They decided they needed to ask some fire fighters about their equipment. They also needed to go to a fire station.	visited, the children articulated questions and formed predictions about their responses. Before each field study, students made predictions about what they would see and find on their field study.	to answer their questions about fire safety. The teachers invited fire fighters, and other experts into the class. One group of students toured the building to locate fire extinguishers and smoke detectors. Teachers also planned a trip to the local fire department.	meetings. They compared their findings to their predictions.	findings with constructions, clay models, paintings, and graphic organizers.
16 **Share** At large group meetings, students shared their progress on their surveys, representations and experiments. Classmates offered suggestions for refinement.	17 **Plans for Visiting Expert** Students formulated questions for the expert and the teacher documented what students thought the experts would say to answer their questions.	18 **Expert Visitor** Three fire fighters visited the school and shared new knowledge about fires and fire safety. Children held and examined fire equipment closely.	19 **Debrief** Students compared experts' answers to their predictions. They made observational drawings of fire extinguishers and other tools that the fire experts brought to share with them.	20 **Continuing Investigation** Students experimented. For example, they observed what happened to a lit candle under a glass globe when the teacher put a lid on the globe.

Phase 3

21 **Representations** Students created many 3-dimensional representations	22 **Articulating what students have learned** The whole group discussed what they had	23 **Brainstorm Second Web** Students brainstormed what they	24 **Label and Categorize Ideas** With the teachers, the students	25 **Plan for sharing** Students brainstormed ideas for the culminating

of fire equipment including smoke detectors, fire extinguishers, and fire trucks.	learned about fire and fire safety. The teacher asked individual children to respond to what they had learned.	now know about fire.	categorized what they knew about fire and developed the Student Fire Topic Web II.	activity. They wanted to share the fire truck, books that they created about fire, and two iMovies that depicted what they knew about fire fighters.
26 **Project Highlights** Students made a representation of a house with fire extinguishers and smoke detectors. A small group of students role-played a fire call and the teacher videotaped and edited their fire call into an iMovie. Another group of students wrote and acted a play that involved fire fighters. The teacher filmed the play and made that into an iMovie.	27 **Imaginative Activity** Students used the dramatic playroom as a fire station. Everyone had fun going on fire calls. Teachers supported literacy by writing down what children dictated to her about the fire call. Other students wrote creative stories about fire.	28 **Display** Students contributed their representation of the fire truck and a house for display. Teachers placed their stories, graphs, and pictures on the walls. Teachers also displayed the reports of the "fire calls."	29 **Culmination** Parents gathered in the room to hear the *Chicago Fire Song*, and safety tips from students. Then they toured the room to read the displays. The open house concluded with a special showing of the two iMovies.	30 **Evaluation** The teacher videotaped students sharing their new knowledge about fire safety. Students and parents reflected on the project by responding to a questionnaire. Teachers examined students' project portfolios to assess growth and learning.

Exploring Fire Safety

Preschool Classroom

Resources

Primary Resources

Experts on Fire Safety

- Fire Fighters:
  - University of Illinois Fire Institute
  - Urbana Fire Department
  - Champaign Fire Department
- Volunteer Fire Fighter

Hands On Materials

- Aluminum Foil
- Boxes and junk
- Camera
- Candle
- Cardboard
- Clay
- Computers
- Costumes
- Fabric
- Legos
- Paint
- Paper (all types and sizes)
- Plasticine
- Play Dough
- Straws
- Tape Recorder
- Video Camera
- Watercolors

Computer Software

- Kidpix
- Kidspiration
- iMovie
- Inspiration
- iPhoto

Field Site Visits

- Champaign Fire Station
- Children's Research Center (School site)
- Urbana Fire Department Fire Safety Exhibit at Lincoln Square Mall

Secondary Resources

Books

Bright, J.E. (2002), *Why we became rescue heroes.* New York: Scholastic Inc.

Demarest, C. L. (2002). *Firefighters A to Z.* New York: Scholastic Inc.

MacLean, C. (2002). *Even firefighters hug their moms*. New York: Dutton Children's Books.

Munsch, R. (1991). *The fire station.* Canada M2M 1H9: Annick Press Ltd.

Wellington, M. (2002). *Firefighter Frank*. New York: Dutton Children's Books.

Whittington, M. (1998). *Fire engine.* London: DK Publishing, Inc.

Song

Chicago Fire Song

Exploring Fire Safety

Preschool Classroom

Fire Safety Activities Across the Curriculum
Relationship to Illinois Early Learning Standards

Arts and Aesthetics

Constructing (26.A.ECd)

- Construction of the fire extinguisher representation using boxes and junk
- Construction of the fire truck representation
- Construction of the model house with smoke detectors and fire extinguishers
- Construction of the smoke alarms using boxes and junk materials

Creative Dance and Movement (26.A.ECb)

- Practice stop, drop and roll in case your clothes are on fire

Dramatizing (26.A.ECb)

- Dramatize fire calls in the dramatic play room
- Dramatize fire safety tips in a play that became an iMovie

Memory Drawing (26.B.EC)

- Draw fire safety items that experts brought to our classroom
- Draw items used for fire safety on field experiences
- Draw memory of fire experiences

Observational Drawing (26.B.EC)

- Draw the fire safety items that were shared in the classroom

Painting (26.B.EC)

- Finger-paint using red, yellow and orange then cut out a fire for pictures
- Paint the fire truck representation
- Paint the play dough fire memory creations
- Paint then add salt to fire pictures

Relating art to literature (26.A.ECd)

- Draw pictures to relate to stories shared about fire safety

Representations (26.B.EC)

- Create fire extinguisher representation
- Create fire truck representation
- Create house representation with smoke detectors and fire extinguishers
- Create smoke detectors from boxes and junk material

Responding to music (26.A.ECd)

- Listen and add movements to the *Chicago Fire Song*
- Write the "Snacky Song" to go with the tune of the *Chicago Fire Song*.

Singing (26.B.EC)

Practice and sing the *Chicago Fire Song*

Language and Literacy

Analyzing (5.B.EC,)

- Analyze information from the field experiences (videotape, expert interviews, photographs, building/home tours for fire safety equipment)

Classifying (5.A.EC)

- Classify questions that students asked to pursue in study groups
- Sort and classify information in topic webs

Comparing (5.A.EC)

- Compare different fire extinguishers
- Compare different fire helmets and jackets of the experts and students
- Compare different smoke detectors

Critical thinking (5.A.EC)

- Decide on presentation material for culminating activity
- Decide what material to include in the fire safety play
- Predict, hypothesize or theorize the answers to questions
- Predict what would be found on field experience

Developing oral language (4.A.EC , 4.B.EC)

- Add new vocabulary to the word wall
- Brainstorm fire safety concepts and ideas
- Categorize and label web topics
- Design questionnaire about fire safety
- Design survey for the home
- Find ways to present findings from survey questions
- Interview fire safety experts
- Listen in small group and large group
- Present material at the culminating activity
- Report progress at large group

Formulating questions (5.A.EC)

- Develop questions for the experts
- Develop researchable questions
- Reflect on project and formulate more questions

Integrating new vocabulary (4.B.EC)

- Add new vocabulary words to word wall
- Brainstorm and web ideas
- Use new vocabulary during project
- Use new vocabulary in story writing

Making lists (2.A.EC)

- Make list of fire safety tips for parent
- Make list of items needed to transform dramatic play into fire station
- Make list of materials for representations
- Make list of new knowledge
- Make list of questions to be asked
- Make vocabulary list

Planning (5.A.EC)

- Develop culminating activity
- Develop list of fire tips for parents
- Develop play about fire safety
- Plan the fire station

Presenting (5.C.EC)

- Explain new knowledge to family at culminating event
- Share boxes and junk creations of fire safety materials
- Share new facts on fire safety at group
- Share personal memory stories with group
- Share progress on each step of project
- Share stories written about fire safety

Reading (2.B.EC, 3.A.EC, 3.B.EC, 3.C.EC., 4.A.EC, 4.B.EC, 5.A.EC, 5.B.EC, 5.C.EC)

- Brainstorm for topic webs
- Create a list of fire safety instruments
- Dictate memory stories
- Dictate "What I've learned during fire safety project"
- Read books about fire safety
- Read experience stories
- Read fire calls on the wall in dramatic play room fire station
- Read signs posted by children around the room on fire topic
- Read words to the songs shared about fire safety
- Reflect on what they have learned
- Respond to literature through discussion at large group
- Use references and resources

Investigative Skills-Science

Exploring (11.A.ECa, 12.A.ECa, 12.C.EC, 13.A.EC, 13.B.EC)

- Explore the questions:
  - How do you build a model house?
  - How do you put out a fire?
  - How long before the flame goes out on a candle?
  - How to create a fire pole that everyone can use?
  - How to turn the dramatic play room into a fire station?
  - What equipment does a fire fighter use?
  - What starts on fire?
  - Where do you find smoke detectors and fire extinguishers?
  - Where do you place the fire extinguishers and smoke detectors in the model house?

Experimenting (11.B.ECb)

- Answer questions:
  - How can a fire pole be created?
  - How can we build a fire station at school?
  - How long before a flame extinguishes itself?

Investigating (11.A.ECb)

- What equipment is used for fighting fires?
- What is needed for a candle to continue to burn?
- What starts on fire?
- Where do we find smoke detectors and fire extinguishers?

Observing (11.A.ECb)

- Observe and photograph smoke detectors and fire extinguishers in the home
- Observe fire fighters place fire safety equipment on and how long it takes to dress
- Observe fire in a fireplace
- Observe the colors in the flame
- Observe the fire fighters leave the station on a fire call
- Observe the fire trucks
- Observe the fire station
- Observe the flame on the candle
- Observe the smoke detectors and fire extinguishers found in the building

Predicting (11.A.ECb)

- Predict how many tires are needed for the fire truck representation
- Predict what is needed to complete a fire station in the dramatic play room
- Predict what starts fires
- Predict what the fire station looks like
- Predict what will be found at the fire station

Reporting (11.A.ECb)

- Report fire calls during dramatic play

- Report progress on each phase of fire safety project
- Report results from experiments

Numeration and Problem Solving

Counting (6.C.ECa, 6.C.ECb)
- Count and tally results to survey question "Does a clock start a fire?"
- Count how many seconds it took Fire Fighter Mike to put on his equipment
- Count number of smoke alarms and fire extinguishers from survey
- Count the smoke detectors and fire extinguishers in the building

Estimating (7.A.ECa)
- Estimate how long before the flame goes out on the candle
- Estimate how long it takes to get out of the building when alarm goes off
- Estimate how many refrigerators at the fire station

Measuring (7.A.ECa)
- Measure fire pole for dramatic play room fire station
- Measure height of tires on fire truck while at field experience
- Measure how long it takes for flame to go out on candle
- Measure the length of fire equipment-helmets, coat and ladder

Organizing, analyzing and communicating data (10.A.ECa)
- Develop bar graphs to display the results of home survey on fire extinguishers and smoke detectors
- Develop bar graphs to display results to the survey question "Does a clock start a fire?"
- Explain results at culminating event about smoke detectors and smoke alarms found in the home

Surveying (10.B.EC)
- Does a clock start a fire?
- How many fire extinguishers are in your home?
- How many smoke detectors are in your home?

Social, Emotional Growth and Dispositions

Communicating (31.A.ECe)
- Ask questions skillfully
- Engage in group discussions
- Listen to others
- Negotiate roles, take turns, problem solve
- Report on progress of investigations to the large group
- Share research
- Use new vocabulary such as helmet, shield, fire fighter, aerial ladder, etc.

Cooperating and collaborating while working with others (32.B.ECa, 32.B.ECb, 32.B.ECc, 32.B.ECd)

- Create fire station in dramatic play room
- Create the fire pole to use in dramatic play
- Follow directions of fire chief
- Go out on fire calls together and report back to teacher
- Perform together as fire fighters on duty
- Study in teams collaboratively

Empathizing with others and their needs (32.A.ECa, 32.A.ECb, 32.A.ECc, 32.A.ECd)

- Appreciate work of peers by noting effort, care in work and originality
- Share materials, ideas, space and time
- Share words of encouragement and appreciation of peers

Enjoying (32.A.ECa, 32.A.ECb, 32.A.ECc, 32.A.ECd)

- Build representations as a group or individually
- Go on fire calls and role play fire fighters
- Listen to experts talk about fire safety
- Practice new skills for fire safety

Gaining confidence in abilities to do the following (31.A.ECd)

- Investigate
- Make presentations to an audience
- Observe and draw the details of fire equipment
- Represent fire safety equipment using play dough, boxes and junk or clay
- Use a variety of mediums to express ideas about fire safety

Helping peers (32.A.ECa, 32.A.ECb, 32.A.ECc, 32.A.ECd)

- Discuss problems for better understandings
- Joint clean up of work areas
- Problem solve when creating representations-house, truck, extinguisher, fire pole
- Represent fire and fire safety equipment

Initiating (32.A.ECd)

- Choose appropriate materials
- Experiment with fire and candle
- Predict and manage time
- Research to find answers to questions

Persevering (31.A.ECc)

- Add detail to observational drawings of fire extinguishers and smoke detectors
- Create fire safety representations that looked realistic
- Role-play fire calls and saving people
- Work on representations

Problem solving (31.A.ECd)

- Find a way to make a fire pole that held everyone
- How to light a candle and stay safe
- How to make a fire truck representation
- How to present material to family at culminating event
- What colors to add to the fire truck
- Where to place fire extinguishers and smoke alarms in the house representation

Risk taking (31.A.ECd)

- Play a fire fighter in the dramatic play room fire station
- Read fire stories to the group
- State disagreements in conversations or at large group meetings
- Support opinions
- Verbalize estimations, predictions and hypotheses
- Work with someone new
- Work in a new area of the classroom

Physical Development and Health
(19.A.ECa., 19.A.ECb, 19.C.EC, 21.A.EC, 22.A.EC , 24.C.EC)

- Practice crawling out of a building if there is a fire
- Practice stop, drop and roll if clothes are on fire
- Practice touching a door before opening it to see if it is hot
- Understand that fire/matches and lighters are not toys

What's to Eat

A Close Look at Food Around Our School

K-1 Classroom

Project Objectives

There are two different types of objectives articulated and identified in this project entitled, *What's to Eat?: A Close Look at Food Around Our School*. General objectives for project-investigations are common across all topics. They are aligned with best practices and high quality curriculum as described by the National Association of the Education of Young Children and the National Association for the Gifted. General objectives reflect the process of inquiry and the students' engagement in in-depth studies.

Specific content objectives for each project investigation emerge initially out of topic webs and are formulated and reformulated by the students' questions, the teachers' guidance, and the shifting interests of the students as the project progresses. The degree to which a child experiences depth and complexity of a topic may be different depending upon the diversity of skills and abilities of the students. Not all children master each objective, but respond to the tasks and progress at their own level. Outcomes are varied and children demonstrate different levels of content and skill mastery. General and specific objectives relate to the Illinois Learning Standards for early elementary students.

General Objectives for Project Investigations

1. Students will engage in an in-depth study of a topic.
2. Students will pursue first hand investigations.
    - Students will engage actively in data collection.
    - Students will become more proficient in organizing data.
    - Students will learn and utilize different modes for representing data.
3. Students will think critically and reflectively.
    - Students will engage actively in discussions of the topic, exchange ideas, debate, etc.
    - Students will formulate questions.
    - Students will evaluate their experiences in many ways and participate in culminating activities.
4. Students will relive and renew experiences they have had with various subject domains.
5. Students will increase their ability to use primary and secondary resources.
6. Students will increase their vocabulary.
7. Students will learn and apply new modes of inquiry including questioning and hypothesizing, reforming of hypotheses, interviewing, surveying, and observing.
8. Students will increase their modes of representing their ideas (observational drawings, graphs, Venn diagrams, displays).
9. Students will uncover facts and principles in various subject domains.

10. Students will be exposed to numerous and varied instructional strategies such as the following:
    - Whole group instruction and discussion
    - Small group instruction and discussion
    - Interviews with experts
    - Field trips
    - Field studies
    - Student-initiated projects such as constructions, surveys, representations
    - Personal conversations with teachers or other student experts
    - Experimentation
11. Students will strengthen their dispositions to be interested in relevant and worthwhile phenomena.

Specific Content Objectives for *What's to Eat: A Close Look at Food Around Our School*

1. Students will gain an awareness of the different food groups and the food pyramid.
2. Students will recognize the relationship between good nutrition and a healthy body.
3. Students will become familiar with various fields of study that involve healthcare, nutrition and plant and environmental sciences.
4. Students will gain an awareness of the relationship between plants and food.
5. Students will increase their understanding of the digestive system.
6. Students will gain an appreciation of the relationship of foods to cultures, and family traditions.

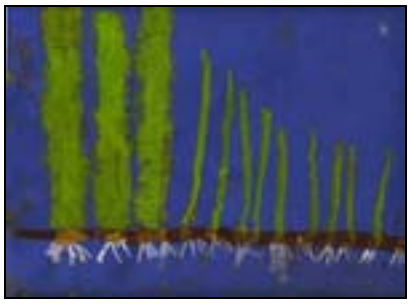
What's to Eat

A Close Look at Food Around Our School

K-1 Classroom
August – December 2002

Overview

"Me eating pizza"



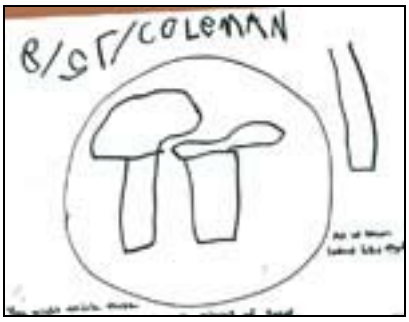
A chalk drawing of plants

Beginning the Project

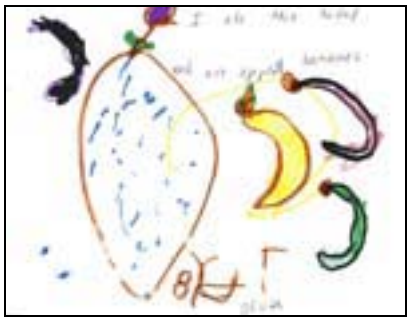
University Primary School is located in the agricultural area of the University of Illinois. Children pass the "South Farms" daily as they drive to school. The corn and bean fields are within a short walk from the school. The teachers chose the topic of food because it would be a familiar topic for everyone and could ease the transition from home to school to start the new year. This topic not only provided a vehicle for learning basic skills across the curriculum, but it also presented opportunities to explore a variety of topics in depth.

The first phase of a project is designed to uncover what the students already know about the topic. They brainstormed what they knew about food, which was then categorized to form a web (Student Food Topic Web 1). The head teacher began the project by sharing stories about going to her garden to get tomatoes and making bread in her bread machine for her sandwich. The teacher created opportunities for students to share their understandings with their peers. The students told stories about what food they had eaten for breakfast and what they were going to eat for lunch. They represented what they knew about food by drawing, painting, writing, and making models with clay, rods, pattern blocks, geoboards, boxes and junk, and paper. Students raised questions about food. The teacher and students categorized their questions to guide the upcoming inquiry:

1. How does food help our body?
2. How does our body process food?
3. What is in foods?
4. Where does food come from?
5. How are foods kept fresh?



"You might think these are mushrooms, but they're really pieces of toast."



"I ate this today - an apple and 4 bananas."

Developing the Project

In Phase 2, students listened to experts and engaged in field studies. Experts included: a plant biologist, a botanist, three nutritional nurses, a nutritional scientist, a parent who spoke about taste buds, a parent who made foods from scratch, a parent who brought exotic foods to taste, a physician, a pizza chef, an undergraduate nursing student, undergraduate science students, a veterinarian researcher, and an educational program coordinator from a museum. Students visited a nature center, cafeteria, corn and soybean field, greenhouse, grocery store, and two pizza shops. They also attend the play, *Jack and the Beanstalk*.

Before gathering their data, students predicted what they might learn. They collected artifacts, interviewed experts, made sketches, took photographs, jotted field notes, and videotaped their experiences. They analyzed their data and displayed their findings in graphic organizers and representations. They wrote experience stories, letters, poems, books, and captions for their drawings. At group meetings, students shared their findings. Students listened, questioned and commented about each other's work.

Students answer questions at the grocery store.

Students collaborate to make a representation of the fruit display shelf.

Concluding the Project

The students invited parents to an open house to share what they had learned about food. Groups of children chose to create murals, write reports, present a dramatic skit and read their stories and poems. Students displayed the process of their investigations about food on the walls. Students planned a potluck and were excited to share their favorite family foods with their classmates. They shared their Student Food Topic Web 2 and created murals and artwork to depict common themes from their findings.

Plants are so important for food.
Healthy animals and people need food.
Favorite food is delicious and beautiful.
Eating the right amount of food is important.

Students collaborate to create a mural showing plants as an important source of food.

Students display their mural at the open house.

The class prepares pizza for the pizza shop and culminating potluck.

Students wear gloves and a hat and take turns serving at the potluck.

Students made homemade pizza as the class contribution to the potluck. They also made extra pizza and sold it in their very own "pizza shop" over the lunch hour. They sold a slice of pizza for $1.25. Students integrated math into the project. They worked in groups to answer questions. They recorded their sales. They wanted to know the cost effectiveness of their shop. They questioned, "How many slices of pizza did we sell?" They calculated how much they

made. Students wanted to compare the pizza from each of the pizza shops to the homemade pizza. One child's comparison follows:

Comparison of Pizza

THIS WAS THE SAME

"D" Pizza Shop	Homemade Pizza at School	"PH" Pizza Shop
Crust was thick	Crust was thick	Crust was thick
Cheese was on the top	Cheese was on the top	Cheese was on the top

THIS WAS DIFFERENT

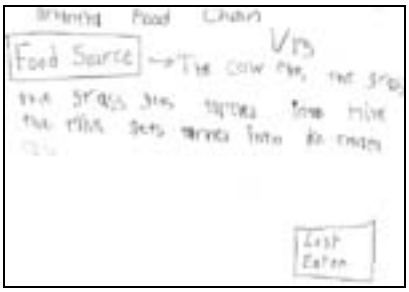
"D" Pizza Shop	Homemade Pizza at School	"PH" Pizza Shop
Did not taste garlic in the sauce	Did taste garlic in the sauce	Did not taste garlic in the sauce
The chef flipped the crust in the air.	Did not flip the pizza - pressed it in the pan.	Did not flip the dough. The cook got it from the freezer already formed.
Had mozzarella	Used mozzarella and parmesan	Used mozzarella
Cheese topping	Olives, ham, pepperoni	Meat balls, pineapple, sausage, pepperoni peppers, ham, mushrooms

The open house and potluck were a great success! Students enjoyed the variety of foods that represented the diverse cultures of families in the class. One parent gathered the family recipes and created a class cookbook.

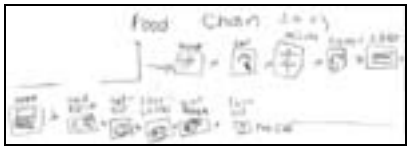
What Did the Children Learn?

This project entitled, "*What's to Eat: A Close Look at Food Around Our School*," helped students recognize the relationship between good nutrition and a healthy body. They generated new vocabulary words that extended beyond the typical words found in most kindergarten and first grade curricula. Students learned about the pancreas, esophagus, liver, and intestines. They gained an awareness of mold spores and mycelium. They also learned about the many occupations that facilitate our consumption of food. Students became aware that food comes from a variety of sources. They explored food chains and gave their interpretations.

CS: The mouse eats the cheese. The snake eats the mouse. The hawk eats the snake. This is a food chain.



"The cow eats the grass, the grass gets turned into milk, the milk gets turned into ice cream."



"Wheat, cut, milled, flour, cook, oven, half eaten, left out, spore comes, got moldy, threw out. The end."

Students gained an appreciation for the complexity and depth of what appeared to be a familiar topic to them. They not only learned new factual information about food, but they also began to see the connections between ecosystems of nature. They associated eating a healthy diet with feeling good. They made connections between plants and the food chain. They gained pleasure from trying new foods and increased their appreciation of foods from other cultures.

Students were active investigators and researchers. They verbalized predictions and became familiar with the research process. They learned methods for collecting, organizing, and analyzing their data. The students enhanced their social skills as they collaboratively constructed models. They applied problem solving and critical thinking skills while they built representations. They strengthened their disposition to inquire.

What's to Eat

A Close Look at Food Around Our School

K-1 Classroom

Phase 1

Food memory drawing saying Pringles for lunch

"I have two gummy worms, a chip, a iuice. box. and a sandwich for lunch."

It was the beginning of a new school year for a class of 5 and 6 year olds in a Kindergarten/First grade at University Primary School. Projects are a part of the school curriculum. But for many children, this would be their first experience with a project. The teachers chose the topic of food because it would be a familiar topic for everyone and it would help ease the transition from home to school. At an early staff meeting, teachers brainstormed the many learning opportunities that could arise from studying food. The K/1 teaching team generated a concept map, Teacher Food Topic Web, that included activities across disciplines, resources, big ideas, and required curricular objectives and basic skills.

It is important for teachers to think about the major concepts that may guide student investigations. Big ideas involved in the study of food may include:

All people need food to be healthy.
Food comes from a variety of sources.
Food is related to cultures and lifestyles.
Many occupations are in some way related to our consumption of food.

The food project began when students excitedly talked at the first group meeting about the lunch and lunch boxes that they had brought to school on this first day. For some, eating lunch at school was a new experience. Students spontaneously explored the lunch boxes for color, shape, size and weight. During project/activity time, the teachers invited students to continue talking about lunch boxes as well as to examine classroom plant and animals. The teachers made books about food, fish, plants, and turtles available for perusal. At whole group language and literacy, the teacher shared "*What's for Lunch, Charley*?" Students discussed what each of them had in their lunch before they washed their hands and went to eat.

During the next whole group meeting, the students recalled their past experiences with food and teachers wrote their ideas on sticky notes and affixed them to a chart. In this beginning brainstorming, many of the ideas were simple statements such as:

ASH: I eat chips.
CS: Everybody eats lunch.
JC: We eat meat.
PJ: I do not eat meat.
EA: I do not eat meat, either.

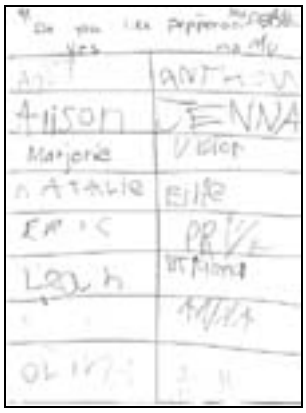
This sharing was a first step in getting to know each other's customs, beliefs, likes, and dislikes about food. On another day, each child revisited his/her ideas, explained them further and noted similarities of their ideas to those of their classmates. Students explained similarities and what category they thought their idea would fit and why. Together the teachers and students grouped similar responses into categories. They argued over which of their ideas fit suggested categories. The teacher elicited nominations for titles of categories and students voted for their favorite titles. The teachers labeled the categories according to most number of votes. The Student Food Topic Web 1 is an accurate portrayal of how they made their final decisions. Not all children wanted their ideas included in the category named by their peers. Therefore, some of their ideas are outside of the labeled categories. During these conversations about categorizing their ideas, teachers noted children's current level of understandings about food.

RW decides which category to place her idea.

Students make cookies with play dough.

To encourage further discussion and conversation about food, the head teacher shared stories about preparing her lunch by going to her garden to get tomatoes and making bread in her bread machine for her sandwich. Students shared stories about what they ate for breakfast and what they brought to school for lunch. The teacher asked students to record their stories on paper with pictures and words. The teacher took dictation for those who were hesitant to write. The students shared their memory pictures with their classmates, again noting similarities. With the teacher's guidance, the students categorized, labeled and displayed their stories on the wall in a graph.

Students made representations from memory of chocolate chip cookies, pizza, and pancakes.



This is a child-generated questionnaire asking, "Do you like pepperoni pizza?"

Students chose ways to represent what they knew about food with clay, paint, and homemade play dough. Teachers developed an oral questionnaire and wrote down students' responses to document their beginning understandings. (Teacher Food Questionnaire – Pre-Assessment). The teachers' questions prompted students' interest in questionnaires and they wanted to develop their own. Students polled their classmates about their food preferences.

Questions Students Asked Their Peers and Families

EA: Do you like shrimp & fried rice?
AB: Do you like hot dogs?
AC: Do you like granola?
JEC: Do you like Pringles?
JIC: Do you like cheese?
EE: Do you like brownies?
AF: Do you like pepperoni pizza?
AF: Do you like mango?
AHA: Do you like salad?
AHO: Do you have a peanut butter jelly sandwich?
BH: Have you ever eaten "Honey-comb" cereal?
PH: Do you like "Life" cereal?
MM: Do you like pepperoni pizza?
EM: Do you like cheese?
DM: Do you like French cinnamon crackers?
VM: Do you have a sandwich for lunch?
VM: Is Macaroni and cheese good for you?
CP: Do you like bread?
OP: Do you like apples?
SR: Have you ever eaten oatmeal?
BS: Do you like cinnamon bread?
LS: Do you like Brazilian food?

CS: Do you like toast with honey?
AW: Do you like apples?
RW: Do you like junk food?

A student was curious and asked parents to respond, "Do you like Brazilian food?"

The student organized her findings into a bar graph.

Students raised questions after noticing differences in the responses to the questionnaires. Teachers recorded their questions and had students illustrate them. They categorized their questions into five groups that formed the study teams for Phase 2 of the project investigation.

Questions About Food

How does food help our body?

VM: Is macaroni and cheese good for you?
SR: Why when bubbles touch your heart, your heart stops?
AHA: How do fruits help your body?
OP: How do tomatoes help me get strong?
JIC: Why are carrots good for you?
JEC: Why do we have milk?
PJ: Why do we have to eat?
EE: How does blood come out of your body?
CP: How does food help my brain work?
EA: How do my bones get strong?

How does our body process food?

BSH: How do you chew up food without it going into your stomach?
CS: How does food grind up in your stomach?

What is in foods?

AF: What is in soup to make soup taste good?
LS: How do you make all kinds of food?
RW: How does cat food come?
AC: How does dog food get made?
AW: Why is pepperoni on pizza red?
NB: How does broth get made?

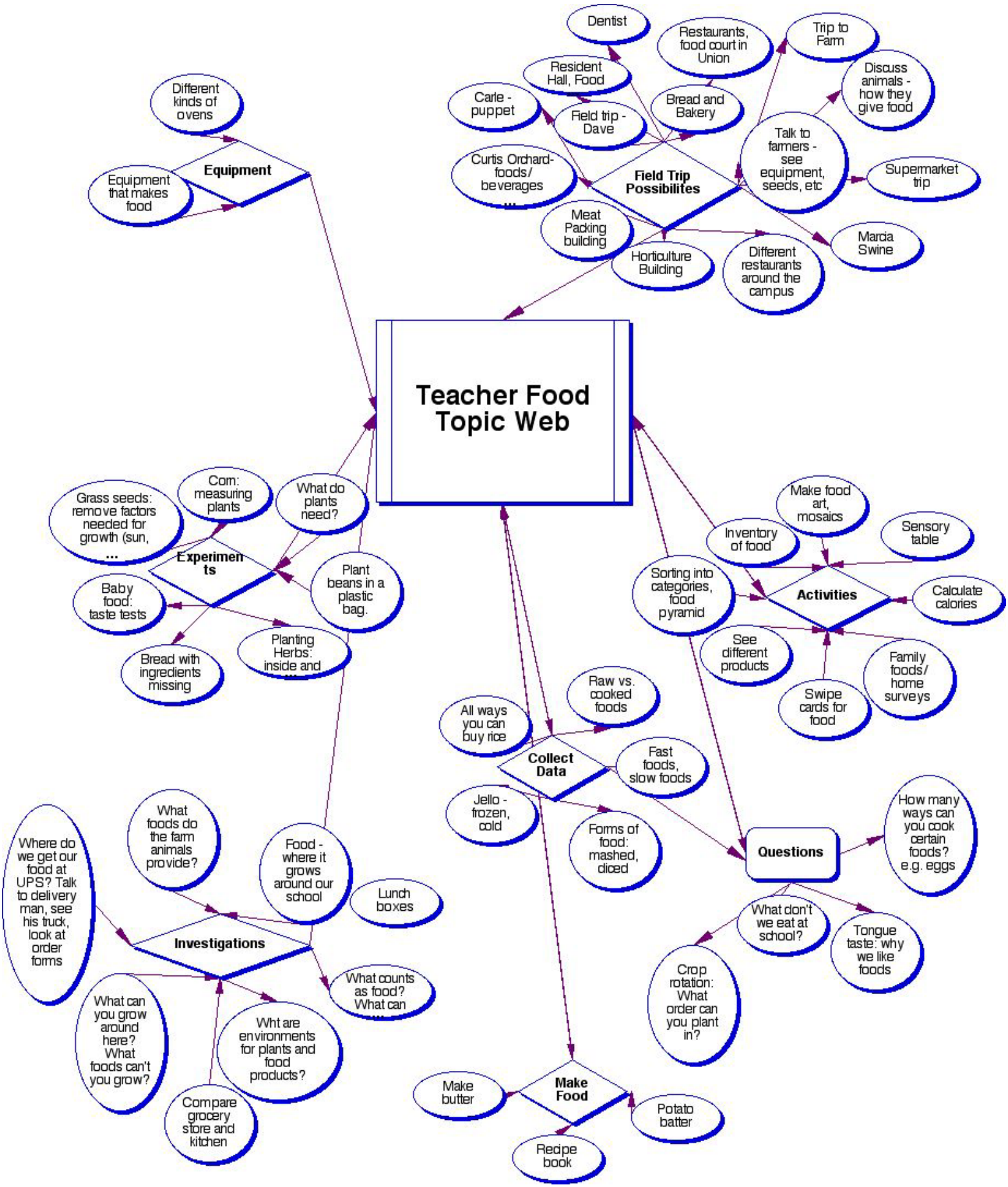
Where does food come from?

AHO: How do they put chicken in a plastic box?
DM: I'm wondering how the grocery store puts chicken in a container.
AB: How do you get chicken to the grocery store?
MM: How do you get turkey at the store?

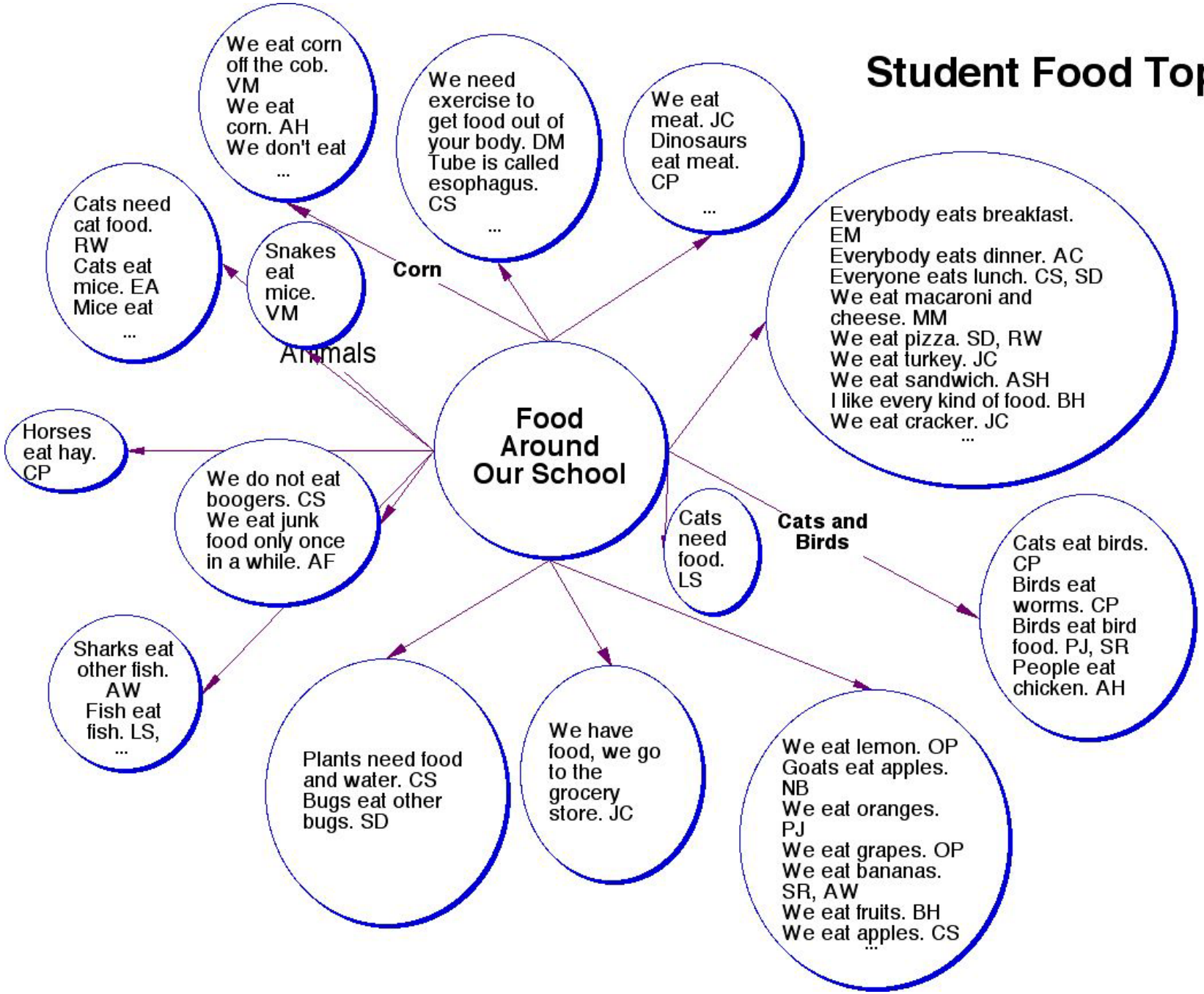
How are foods kept fresh?

BH: How can you keep lemon from getting moldy?
SD: How can you keep food from getting moldy after the expiration date?

The teacher asked a parent volunteer to probe the students' thinking about their questions in order to clarify what they would like to learn more about. The parents' typed responses are found in the Expanded Questions Phase 1.


Teacher Food Topic Web
Equipment
Different kinds of ovens
Equipment that makes food
Field Trip Possibilites
Dentist
Restaurants, food court in Union
Trip to Farm
Resident Hall, Food
Discuss animals - how they give food
Carle - puppet
Bread and Bakery
Field trip - Dave
Talk to farmers - see equipment, seeds, etc
Curtis Orchard-foods/ beverages ...
Supermarket trip
Meat Packing building
Marcia Swine
Horticulture Building
Different restaurants around the campus
Experiments
Grass seeds: remove factors needed for growth (sun, ...
Corn: measuring plants
What do plants need?
Baby food: taste tests
Plant beans in a plastic bag.
Bread with ingredients missing
Planting Herbs: inside and ...
Activities
Make food art, mosaics
Inventory of food
Sensory table
Sorting into categories, food pyramid
Calculate calories
See different products
Family foods/ home surveys
Swipe cards for food
Collect Data
Raw vs. cooked foods
All ways you can buy rice
Fast foods, slow foods
Jello - frozen, cold
Forms of food: mashed, diced
Questions
How many ways can you cook certain foods? e.g. eggs
What don't we eat at school?
Tongue taste: why we like foods
Crop rotation: What order can you plant in?
Investigations
Where do we get our food at UPS? Talk to delivery man, see his truck, look at order forms
What foods do the farm animals provide?
Food - where it grows around our school
Lunch boxes
What counts as food? What can ...
What can you grow around here? What foods can't you grow?
Wht are environments for plants and food products?
Compare grocery store and kitchen
Make Food
Make butter
Potato batter
Recipe book

Student Food Topic Web 1



Expanded Food Questions

(Students further explained what they wanted to know about food.)

9/10/02

BSH: How do you chew up food without it going into your stomach? What if you chew food and you don't like it? You might have to spit it out.

BH: How can you keep lemon from getting moldy? My prediction is salt. You should sprinkle the salt on top of the lemon.

VM: Is macaroni and cheese good for you? It's not good for adults. Adults eat the macaroni, but not much of the cheese. Kids eat the macaroni and the cheese. When I eat it, it makes my stomach feel good. It's my most favorite food!

SR: Why when bubbles touch your heart, your heart stops? Because there's water in there and the water gets sucked in there and it takes all the energy out. And the food makes the heart have more energy.

AHA: How do fruits help your body? They help your body grow. They taste good. I like strawberries, apples and grapes. They are good for you.

AF: What is in soup to make soup taste good? What is inside soup? Chicken, potatoes, and I think -- I don't know -- there's water in it. I love soup!

OP: This is a tomato. How do tomatoes help me get strong? Because they're healthy and they make you strong. It has juice in it.

AHO: How do they put chicken in a plastic box? I think they put chicken in plastic. First they take a little tray, then they put the chicken in it and then they put the plastic over it. So when they put it in the freezer the chicken can be frozen.

LS: How do you make all kinds of food? I think you mix them all together. Apples, bananas, fruits, vegetables or junk food. When you eat them you have take vegetable ones out and eat them first because they're more healthy. Then you would eat the fruits. The last one is junk food because it's the dessert.

JIC: Why are carrots good for you? They help you see. My Mom told me that.

JEC: Why do we have milk? To get the germs killed and bones stronger.

RW: How does cat food come? What is in cat food? It comes from a grocery store and it comes in a bag. Then you put it in a bowl and the cat eats it. Milk is in cat food. Fish might be in it too.

PJ: Why do we have to eat? To get energy and to have strong bones and to grow.

DM: I'm wondering how the grocery store puts chicken in a container. They make the chicken, they put the chicken in the plastic bottom and then they put the plastic on top so it won't dry and then they put it in the freezer.

EE: How does blood come out of your body? When I take a scab off and then it bleeds sometimes. Then I put a band-aid on it. Then I feel better and then it heals up.

CP: How does food grind up in your stomach? First you chew the food, then you swallow it, then it goes down your throat into your stomach and then it grinds up. Your stomach is soft and it mushes the food around until it's ground up.

AB: How do you get chicken to the grocery store? I think they kill the chicken and take the feathers off because we don't eat the feathers. When I see the chicken it doesn't have any feathers or head or legs on it. Just the insides.

MM: How do you get turkey at the store? It's fast because you have to sneak on it and grab it and put it in a cage and take it to the turkey store.

AC: How does dog food get made? I think there's nuts in it and they mash them up.

AW: Why is pepperoni on pizza red? Because it might have sauce in it.

SD: How can you keep food from getting moldy after the expiration date? Put salt and sugar on it because that's what they did in the olden days.

CP: How does food help my brain work? 4999999999999999999 See, this is my brain working. Food makes your brain healthy.

EA: How do my bones get strong? By drinking milk because it has vitamins in it.

NB: How does broth get made?

Teacher Food Questionnaire
Pre Assessment
9/17/02

1. **Why would you try new food?**

EA: Because you would think it was good.
NB: Because I want to know if I like it.
AB: Because I think it's going to taste good. I wouldn't try it if I thought it would taste bad.
AC: Because I might like it. I actually like Spinach. I hated kiwi fruit but it's still good that I tried it.
JEC: To see if I like it. So I have more things to put in my lunch.
JIC & SD: To see what it tastes like.
EE: Because it could look yummy.
AF: I forget. I tried a tomato but I didn't like it.
AHA: I think it might taste good.
AHO: Because my mom asked me to. Because of its color. Because of its taste.
BH: If it looks good.
PJ: My mom tells me to. Because of how it looks.
MM: I like to try new food.
EM: I try it because I think I'll like it.
VM: I never did. Cause it looks good.
CP: I wouldn't try a new food.
OP: I think it might be good.
SR: Because I would want to know what it would taste like.
BH: I like doing it.
LS: I like trying new food. It's fun.
CS: I do it all the time. I love it.
AW: Because I might like it.
RW: I don't know.

2. **What makes you like a food?**

EA: Because it's sweet.
AB: If it's hard or soft
NB: If it tastes good,
AC: When you are grown up you have less taste buds. But I think my little sister has less taste buds.
JEC: Your taste buds.
JIC: The different tastes on your tongue.
SD: For it not to be too sweet and not too spicy.
EE: Because it has meat in it or chocolate chips.
AF: Maybe because I don't know.
AHA: The taste.
AHO: My taste buds on my tongue.

BH: My tongue, the way it tastes.
PJ: Cause you have taste buds on your tongue.
MM: Because it tastes good.
EM: The look of it.
DM: Because they are good for my body.
VM: Its' taste.
CP: Cause it tastes good.
OP: It's good.
SR: Because it's sweet and good.
BH: I don't know.
SL: It looks good.
CS: The way it tastes.
AW: If it tastes good.
RW: The taste.

3. Where does bread come from?

EA: It comes from dough.
AB, AF, EM, RW: The bakery.
NB: From wheat. Wheat comes from wheat fields.
AC: Wheat. Flour is made from wheat.
JEC: Wheat. It gets grinded up.
JIC: The store gets it form the factory. From wheat.
SD: A Farm. The grain comes form the farm and they use the grain to make the bread.
EE, AHA, MM, DM, CP: The bread store.
AHO: A bread shop. They make it there.
BH: Flour
PJ: Wheat. They chop it down.
VM, OP: From the grocery store.
SR: A factory
BH: Wheat
LS: Grains
CS: Farmers
AW: Grain, seeds

4. How does bread happen?

EA: The dough gets harder and turns into a crust.
AB: You put eggs, flour, salt, sugar, and yeast.
NB: Start with the field of wheat. After it's ripe you pick the wheat. Then you grind it. Put it in a machine and it makes it into bread. Then they pick it up and sell it at stores.
AC: I don't know. Mash up the wheat to make flour, and then make the bread from the flour.
JEC: You put it in the oven and then it rises up because of the moisture.

JIC: You start with wheat. Then grind it. Then put flour and yeast and water in. Put it to rise for morning bread. Then they sell it.

SD: By putting the wheat into a machine, making it into dough and then you put the dough into the oven. It rises because there's yeast in it.

EE: Dough, roll it, pat it, put it in a pan and cook it.

AF: They get some dough, then they put it in the oven.

AHA: You make it.

AHO: With dough. They have sugar. Clump it together and roll it, and pull it. Then they cook it.

BH: Put flour and oil together and sugar and bake it.

PJ: You bake it. Grind the wheat, cook it, and sell it.

MM, DM, CP, OP, BH, LS, RW: I don't know.

EM: Cookbook, then they make it.

VM: It's made by an animal.

SR: Happen to what? Because they cook it. They cook bread.

CS: Farmers make it.

AW: You have to make bread. Plant the seeds to make grain, then cook the grain to make bread. Also it's made at a bread factory.

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.

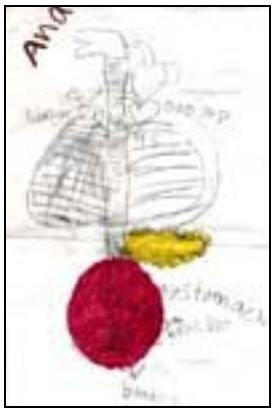
Students disagreed on whether food was "good" or "bad" for your body. At a group meeting, the class decided to brainstormed what food they thought fit into the category of "junk food." Students voted that potato chips, Rice Krispie treats, fruit roll ups, chocolate chip cookies, and Cheetos were "bad" 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

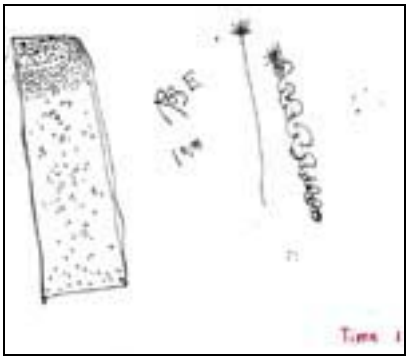
Chlorophyll	Carotenoids	Anthocyanins	Anthoxanthin
Apples	Apple	Berries	Cabbage
Broccoli	Bananas	Grapes	Mushrooms
Celery	Carrots	Plums	Onions
Cucumber	Lemons	Purple cabbage	Potatoes
Green bananas	Orange	Strawberries	Rice
Green beans	Tomatoes		
Green grapes			
Lettuce			
Lime			
Pears			
Peas			
Spinach			

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.

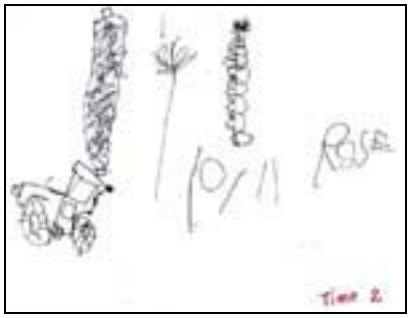
Stems, Flowers, Fruit, Roots, Leaves, and Seeds You Eat

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?

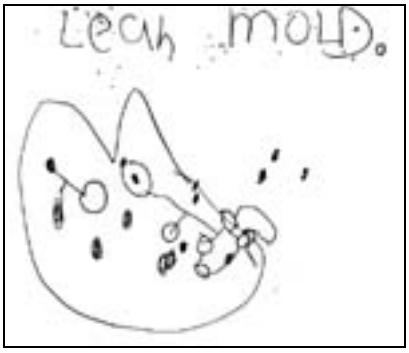
In Phase 1, only a few children articulated an awareness or interest in mold. But as the project progressed, more students began noticing and bringing artifacts to school that they had found around their homes. Students reported mold discoveries. They made observational drawings of moldy artifacts. They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

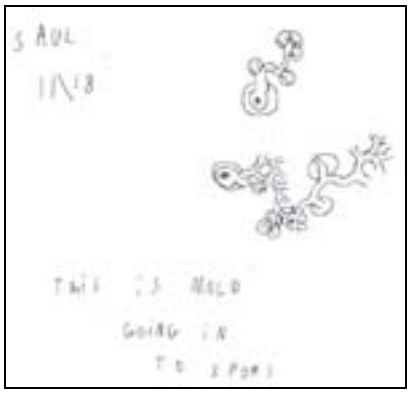
The students went on a field visit to the University of Illinois Bevier Cafeteria. The director showed many interesting pots and pans as well as how they keep the dishes and food healthy and safe for eating.

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.

What's to Eat

A Close Look at Food Around Our School

K-1 Classroom

Phase 3

Sharing Results, Findings, and Understandings

Students give a puppet show entitled "The Hungry Thing" for their parents.

Children share their work with parents.

During Phase 3, students reviewed and reflected upon their work. Teachers evaluated children's developing basic skills and knowledge in content areas. Students thought the topic of food was important. It allowed depth in investigations, and they had personal experiences to tell about food.

Food is an important topic. The *Illinois Learning Standards for Physical Development and Health* state," a tremendous opportunity exists to enhance our health and well being. Much of that opportunity lies in our ability to address the growing health challenges that are facing children and youth. Although progress is being made, poor physical fitness; violence; **lack of proper nutrition** *[bold added for emphasis]*; communicable diseases; and alcohol, tobacco, and other drug use continue to plague out society and most notably our youth." Student's reflections in their Food PowerPoint presentations demonstrated that they recognized the relationship between good nutrition and a healthy body. Students had a chance to interview and become familiar with people from various fields of study related to food. They brainstormed the many occupations that facilitate our consumption of food.

- botanist
- cashiers
- chef/cook
- dishwashers
- farmers
- garden shop
- grocers
- managers

- nutritionist
- processing plant
- restaurant
- servers in a cafeteria
- shelf stockers
- truck drivers
- waiters and waitresses

They also listed the people who work with corn in particular:

- animal scientists
- artist representing corn
- bread maker
- chemical companies making medicines
- children using corn for dramatic play
- factory workers that make corn products, eg. corn chips
- farmer - planting, picking, feeding to animals
- miller
- people eating corn
- scientist that study corn
- storekeepers that well corn products
- zookeeper feeds corn to animals

Food was a topic with depth. Students gained an awareness of the relationship between food and plants. They made posters and books for the culminating potluck, which showed evidence of their new understandings of plants. Students demonstrated their increased understanding about digestion. A comparison of the web created at the end of the project (Student Food Topic Web 2) with the web (Student Food Topic Web 1) that they brainstormed at the beginning of the project showed increased digestion vocabulary. Parent volunteers probed students' ideas from their webs and students further explained what they brainstormed. Their explanations are detailed in the Expanded Food Topic Web 2. Even though they increased their understanding, some students continued to wonder about plants and digestion. They incorporated new questions about plants and digestion in the second semester project topic of movement.

K/1 students had personal experiences and opinions about food. Students gained an appreciation for the variety of food that people eat. They became aware of peanut allergies and other children's likes and dislikes. When bringing birthday treats, they made comments to reassure the child with peanut allergies that their treat was peanut free. This was also demonstrated by an increased number of students (all of them) saying that they would be willing to try new foods. They reflected on their willingness to try new foods in a food survey given by the teachers at the beginning and the end of the project. (Teacher Food Questionnaire 1and Student Food Questionnaire 2) Students learned ways to maintain their healthy bodies. They showed interest in cookbooks and recipes and became more knowledgeable about portions and the food pyramid. The students' and parents' reflections revealed that the students had a growing awareness of different food groups and the amount of food that is suggested to maintain a healthy body.

To finish the project, students planned how they would share what they learned from their investigation entitled, *What's to Eat: A Close Look at Food Around Our School.* Students worked individually, in small and large groups commenting, listening, and discussing the products that they were producing for the open house. They chose a number of ways to relate how they pursued the answers to their questions. Some groups presented representations about what they discovered on their field studies. Other students revealed concepts they had learned on murals and scenery for food skits, puppet shows, stories, poems, books food labels, and PowerPoint presentations.

Products

Representations of Information Gained from Site Visits and Experts

After students returned from a site visit, they met in a small group to plan how they wanted to represent what they had learned. They looked at sketches and digital photographs and made choices about who they wanted to work with and what materials they wanted to use. After the trip to the bean and cornfields, students decided to make a representation out of boxes and junk of a tractor that they had seen. The tractor was displayed at the open house.

Students tape together large boxes to represent a tractor.

The tractor is finished and ready for the open house.

Students explain their representations at the open house.

Students also displayed 3-dimensional representations from the grocery store; a mixing bowl, oven, and flattening machine from the pizza shop; a model of the body showing the digestive system and a model of the tongue. The students felt that the representations informed others about the researchable questions from Phase 1:

Where does food come from?
How does the body process food?
What is in food?

Digestive Game

A small group of students interested in digestion made a game for the other members of the class and their parents to play. They placed Velcro on the 3-dimensional body and on cardboard cutout body parts. They wrote rules to the game.

Object of the Game: To learn more about the digestive system.

Rules:
Pick a blue card and read it aloud.
Find the matching body part.
Place the body part in the correct place on the body.
The game is over when the digestion system is complete.

Definitions: Defined by a student and placed on a blue card.

Rectum - It's the end of the digestive system.
Liver - It squirts out juice to help the villa get the food into the blood stream.
Mouth - It helps chew up the food before you swallow.
Salivary Gland - It is something that makes your mouth wet. It makes the food softer so that you don't choke. It also makes spit.
Large Intestines - The food goes into it and gets dried up before it comes out of you.
Small Intestine - It's a tube that's almost as long as a football field and the food takes a long time to get through it. The food goes through villa that makes it into fuel.
Appendix - It helps digest raw meat. We don't need it because we cook meat. People who lived back in the old days ate raw meat.
Epiglottis - A part in your body that opens and shuts to help foods go down at the right time.
Stomach - It's a big round ball in you tummy. It has gases in it and the gases smoosh up the food.
Esophagus - It's a tube that leads from your mouth to your stomach.

Many of the same children continued to study digestion in the second semester. At the last culminating open house in May, they added more features to their 3-dimensional model and used it in their poster session to explain how movement occurs in digestion.

Murals and Food Representations

After students brainstormed what they had learned about food, they noticed some themes. Students worked individually and in small groups to communicate their ideas for the open house. The themes were similar to the "Big Ideas" that teachers generated prior to beginning the investigation:

> We get food from a variety of places
> Plants are so important for food.
> Healthy animals and people need food.
> Favorite food is delicious and beautiful.
> Eating the right amount of food is important.

Some students collaborated to make murals to show that "Healthy animals and people need food", "Plants are important for food", and that "We get food from a variety of places."

Students learned to perceive and respond to works of art by their classmates and by adult artists. They compared and contrasted exemplars. Then they used many different art mediums to show the theme that "Favorite food is delicious and beautiful."

Student arranges food to be artistically interesting.

Student uses chalk as a medium to represent the food arrangement.

A student is putting Mod Podge gloss-Lustre on a 3 dimensional apple to make it as shiny as his real apple.

Student adds texture to her 3 dimensional pear.

A small group of students worked on a skit to demonstrate to their parents the theme of "Eating the right amount of food is important." They dictated the lines that they wanted to say to the

teacher. The teacher facilitated by asking probing questions and typing the script. They practiced their lines, painted the scenery, and gathered the costumes and props for their skit entitled, ***Eating the Right Amount of Food***.

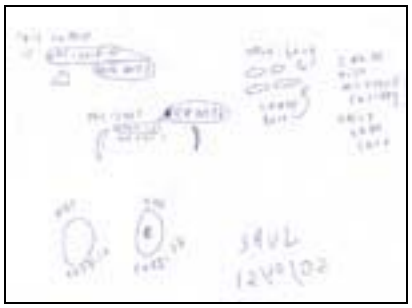
PowerPoint Food Presentations

Some students had created a PowerPoint presentations last year. They were very excited about the opportunity to again work on a presentation. Most of the class worked with the assistant teacher on creating a PowerPoint presentation to share what they had learned about food. He worked individually with each student using a format, which included samples of work from each phase. Students selected a work sample from their Phase 1 project portfolio to explain their prior experiences with food. Then they chose evidence of how they researched their questions from the Phase 2 project portfolio. For Phase 3, they reflected on what they knew and thought was important about food. Students chose the type of presentation they wanted and the slide template. The assistant teacher facilitated their reflections by typing and by helping insert their digital pictures into their presentation. At the open house, some students presented their PowerPoint reflections in front of the audience of parents. (See PowerPoint Gallery).

Literacy

Reports, Poems, Booklets, Stories, Recipes, and Riddles

There were many opportunities for the students to read and write throughout the project. They wrote thank you letters to the experts and field site guides on behalf of the class. The teacher gathered fiction and non-fiction book about food and made them available. They wrote reports and rules to games. They wrote charts to explain what they now knew about food.



Student summarizes an experiment. This lemon is antioxidant (new word). Orange juice or lemon juice. I wonder which will oxidize faster? Answer: lemon juice.

Every week the teachers read a number of poems to the students during whole group language and literacy time. Teachers identified poetry elements such as repetition, meter, rhyme,

metaphors and similes. Students incorporated vocabulary and food ideas into their poetry. Teachers displayed their poems for the culminating open house.

Pizza
By DM

Pizza, Pizza
Oh that big pizza
You taste so pepperoni good.

Pumpkins
By AC

Pumpkins, Pumpkins
I love pumpkins
They can make pumpkin pies
I love pumpkins because they can be used for Halloween.
Pumpkins, Pumpkins
The juice is slurpy and glurpy, sloppy and poppy and ploppy, popular and slopular.
Yummy pumpkins
Mum! Mum! Mum!

Apples
By AC

Apples, Apples, Apples
I love apples
They are juicy and sweet
The juice is watery and sticky
Apples are good

Fruits
By NB

Fruits, Fruits
I love fruits
Squishy, Gloppy fruits

Apples
By LS

I like apples
They taste good
They are juicy
They are red as roses
They are too red

But I still like them

Bread
By LS

I like bread to eat with soup
And crackers too.

The teachers read a variety of versions of *Jack and the Beanstalk* and *The Old Lady Who Swallowed a Fly*. The teacher chose *Jack and the Beanstalk* because it referred to beans that children were growing in the window garden. The teachers chose *The Old Lady Who Swallowed a Fly* because it presented a playful idea about eating. Children compared and contrasted the versions. They listed the similarities and displayed comparison charts for both stories, *There Was an Old Lady*, and *Jack and the Beanstalk*.

There Was An Old Lady

Title	Author	What she ate	Did she die?
I know an old lady	Rose Bonne	Fly Spider Bird Dog Goat Horse	Yes
I know an old lady who swallowed a bat	Lucille Colandro	Bat Owl Cat Ghost Goblin Bones Wizard	No
I know an old lady who swallowed a fly	Nadine Bernard Westcott	Fly Spider Bird Cat Dog Goat Cow	Yes
There was an old lady who swallowed a fly		Fly Spider Bird Cat Dog	
There was an old lady who once saw a ghost and other funny rhymes	Sirley Pettigrew	What she saw and did: Monkeys Birds Horse Duck 2 old Ladies Baseball Ghost Hats Cats Skis Airplane Skate	No
I know an old lady who swallowed a pie	Alison Jackson	Pie Cider Roll Squash Turkey Pot Cake Bread	No

		Salad		
I know an old lady who swallowed a trout!	Teri Sloat	Trout Salmon Otter Seal	Porpoise Walrus Whale Ocean	No

After reading and comparing stories, students wrote their own version of *Jack and the Beanstalk* and *The Old Lady Who Swallowed a Fly*. Students shared their versions with the preschoolers next door. They also displayed their books at the open house.

Alice and the Beanstalk
By NB

Once there lived an old poor woman with a little girl, Alice. They had 3 horses and a cabin and that's all they had. One day early in the morning Alice looked out of her bedroom window. She saw a giant beanstalk. She wondered what was up there. So she climbed and climbed and climbed the beanstalk until she came to the top where there was a big castle. Suddenly she shivered. She felt something. She turned around and she saw a giant and it said, "Fee Fi Fo Fum. I see an English woman."
"Hello," she said, "My name is Alice."
The giant looked confused. "I thought that your name was Jack."
"No, it isn't," said Alice.
"Oh," said the giant. "Then you can go."
"OK."
So she ran into the castle. She found a big ladle. She jumped in. When the giant came in the castle, he said, "Fee Fi Fo Fum. I smell the blood of an English woman. Be she alive or be she dead, I'll grind her bones to make my bread."
Suddenly Alice heard a snoring sound from the castle. The giant had fallen asleep from a wind sound. She wanted to know what made the wind sound, so she went to the window and saw a magic harp. She jumped out the window, grabbed the harp, and ran down the beanstalk and lived happily. The end.

The Old Lady Who Swallowed a Bee
By CP

I know an old lady who swallowed a bee.
I don't know why she swallowed a bee, cause it was free.
I know an old lady who swallowed a bear. She swallowed a bear to catch the bee.
I don't know why she swallowed a bee, cause it was free.
I know an old lady who swallowed a lion. She swallowed a lion to catch the bear. She swallowed the bear to catch the bee.
I don't know why she swallowed the bee, cause it was free.
I know an old lady who swallowed a tiger. She swallowed the tiger to catch the lion. She swallowed the lion to catch the bear. She swallowed the bear to catch the bee.
I don't know why she swallowed the bee, cause it was free.

Students wrote food stories incorporating ideas that they had learned from their study. They also wrote booklets summarizing and listing the source of foods that they eat. Some children chose to read their writings in front of the parents, others displayed their writings at the open house.

The Tomato Garden
By LS

Once, there was a little seed. It was a tomato seed. There was a farmer who planted it. One day, it got so big. He tried to pull it, but it was stuck in the ground. So, he called his dog and his cat. His animals couldn't get it out, either.

He called his neighbors, but they weren't home. Now his tomato had grown as big as the house. He grabbed a doll's silverware and he tried to cut the tomato. But it didn't work. He tried to push the tomato to the ground, but he couldn't. He sat down on his bed and thought, “How can I cut that tomato down?”

Then he got an idea. He went to get a beaver to cut it with his teeth. He went in the forest to find the beaver. But the beaver was cutting trees. The farmer asked the beaver, "Could you come help cut down my tomato?'
The beaver said, "No, I am busy."
So, the farmer had to do it by himself. He found a big knife and that was the perfect thing because it was as huge as the tomato.
Then, all the people came and said they wanted some tomato. The farmer said, "If you will help me cut the tomato down, you will each get a big piece of the tomato."
While they were cutting, the beaver came to help, so he could get some tomato, too.
They were able to cut it down and they all lived happily ever after with the farmer having a stomachache.

What Comes From Wheat?
By SD

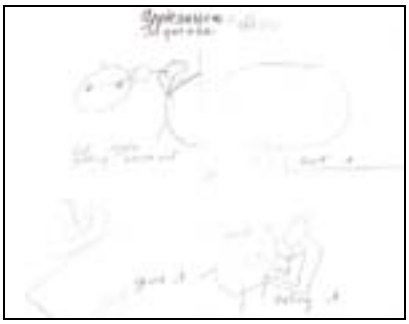
What comes from wheat?
Apple pie crust comes from wheat.
Croutons come from wheat.
Sugar cookies come from wheat.
Cake, bread and crackers come from wheat.
Lots of things come from wheat.

What Comes From Corn?
By JC

What comes from corn? Corn tortillas!
What comes from corn? Cookies!
What comes from corn? Pancakes!
What comes from corn? Breading for fried perch!

What comes from corn? Corn bread!
What comes from corn? Cornflakes!

Students were curious about what was in the foods that they enjoyed eating. They also were interested in the ingredients and the sequence in preparation of foods. Students wrote food sequence charts, which were displayed at the open house.



Student wrote an applesauce sequence chart.

A student writes the sequence of pizza.

A kindergarten student draws a very detailed sequence of making pasta. These are the first six steps.

AH continues giving directions for making pasta.

Many students were very interested in sharing what their families were bringing to the open house potluck. They announced several days ahead what food they were bringing, some of the ingredients and the steps in making it. They made food name cards, and displayed them in front of their dish at the potluck. This interest lead to a compilation of recipes of the foods made during the food project. Students created one cookbook with their original recipes and illustrations. A volunteer parent created a collective cookbook of all of the recipes that were brought to the potluck. After the potluck, the students wrote riddles to quiz their classmates.

Riddles

PJ: I ate this at the potluck.
It is crusty.
It is cheesy.
It is saucy.

You can eat it in a triangle.
What is it? Pizza

AC: I ate this at the potluck.
You cook it in boiling water.
It has cheese you eat it for lunch.
It is good.
What is it? Macaroni and cheese

BSH: I ate this at the potluck.
It's sticky.
It's healthy.
It's yummy.
It's messy.
What is it? Fruit Picks

VM: I ate this at the potluck.
It's a dessert.
It can melt.
It is cold.
What is it? Ice cream.

BH: I ate this at the potluck.
It can be eaten in triangles.
It has a crust.
It has sauce.
It has to be in an oven.
What is it? Pizza.

SD: I ate this at the potluck.
It is slippery.
Lots of people like it.
You need a big spoon to serve it.
What is it? Pasta

JIC: I ate this at the potluck.
It was healthy.
It was mixed.
It was cold.
It was in a bowl.
What is it? Fruit salad.

AB: I ate this at the potluck.
It looked round.
And it has sauce.
And cheese.

What is it? Pizza.

AHO: I ate this at the potluck.
It is round.
It has circles.
And I brought it to the potluck.
A lot of people ate it.
What is it? Cookies.

NB: I was eaten at the potluck.
I have a cone.
I am a circle.
I am slippery.
I am different flavors.
What am I? Ice cream.

CS: I ate this at the potluck.
It is sweet.
It is cold.
It will melt.
What is it? Ice cream.

JEC: I was eaten at the potluck.
I have noodles.
Before I'm eaten I'm in a pot.
The pot is hot.
What am I? Macaroni

Display

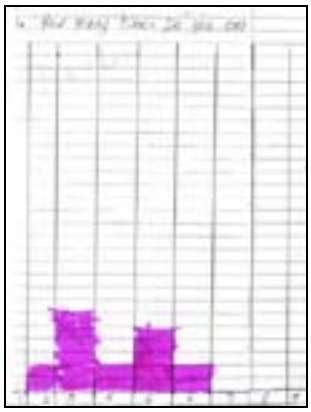
Students wanted to display results of a parent questionnaire that they had designed. Their questionnaire included the following:

1. How many times do you eat (in a day)?
2. How many times do you eat breads and cereals (in a day)?
3. Do you eat bread dressing?
4. How many times do you eat vegetables (in a day)?
5. Do you eat potatoes?
6. Do you eat salad?
7. Do you eat corn?
8. Do you eat peas?
9. Do you eat green beans?
10. Do you eat carrots?
11. Do you eat broccoli?
12. How many times do you eat fruit (in a day)?

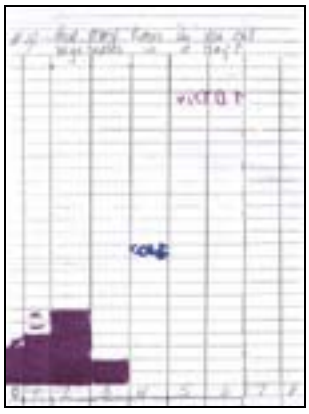
13. Do you eat blueberries?
14. Do you eat cranberries?
15. Do you eat cranberry juice?
16. Do you eat pie?
17. If yes, is the pie bought or homemade?
18. Do you celebrate Thanksgiving?

The students worked in pairs to analyze their data. They prepared bar graphs and/or pie graphs to display the results for each question. One child read the parent response and marked it off on the survey. The other child transferred that data to the graph. In this multi-age classroom, this allowed readers and non-readers to work together.

This is one family's response to the questionnaire.



This graph show that the six families reported that they ate three times that day.



This graph shows that six families ate two servings of vegetables that day.

This pie graph shows that more people eat broccoli than do not.

Students noted:

NB: The most people ate 3 times a day. I was surprised that 2 families ate only 2 times a day and 2 other families are 6 times a day.

CP: It tells me that most of the people that we surveyed ate 2 vegetables in a day. But some ate 0 vegetables. You are supposed to have 3 to 5 vegetables a day.

AJH: This graph tells me that 13 people said they eat broccoli and 6 people said no they don't eat broccoli.

New Vocabulary Related to Food

Students were pleased when they learned a new word. They wanted to see just how many new vocabulary words that they collectively knew. They were surprised at the length of their list. They integrated new vocabulary words into their conversations. Sometimes individual students were still refining the correct meaning or offered a word to the list but didn't recall the definition.

New Vocabulary

New Vocabulary Word	Definitions
2 Compartment sink	There are two compartments of the sink. One in the back and one in the front.
Antioxidant	
Botanist	Someone who studies plants and works with them.
Buttermilk	
Carnivore	Means meat eater.
Casserole	Like a hot beef in it. In a roll. It can be rolled up. Casserole is a kind of food. And my Mom and Dad have it for dinner.
Catering	
Chlorophyll	Something in the leaf that makes it green.
Coddled	
Compare	It means try it against something else.

Conveyor belt	It's a belt that moves other things from one place to another.
Corn flour	It's corn and you ground it up.
Digestion	Digestion is something that helps you swallow.
Esophagus	A long food tube.
From scratch	It means that you don't follow a recipe and just know from scratch.
Ginger-stem	
Griddle	Is like a big thing that you cook with.
Herbivore	A plant eater.
Large intestine	
Large Surface	I think it is a large island. And a lot of people go on it.
Liver	Something I think that sends juice into your body. Only digestion juice.
Marshmallow crème	Marshmallow stuff that's sticky and gooey.
Microorganisms	I think it means something that gets in your body and helps you get your baby out if you are pregnant.
Mill	Is like something that crushes things and mill is also something that you need to plug in.
Mold	Yucky stuff.
Mycelium	When the spore divides and then it all goes into little bubbles, it divides itself. I think it means that mold is getting on our pieces of food.
Ocolist	A glasses maker.
Omnivores	Rodents. Like rats and those things.
Ogre	It's a mean giant.
Oxidizing	
Pancreas	Pancreas is I forgot what it means but I know what it means. It's the other thing in your body and it squirts juice into your stomach.

Pantry	
Pass through	A place where you can send the things they want to send from the wall to the other side of the wall.
Persimmons	This is an orange fruit and you sometimes need to peel the skin off. And to me it really doesn't taste good.
Photosynthesis	It means I think it means something with a plant how the plant grows. The sun would give it the energy to the leaf which makes it get food.
Poached	It's an egg and its made with water and a stove and an egg.
Potato peeler machine	
Processing Plant	
Pomegranate	It's a kind of a fruit
Proofer	Something that pats something else down
Pumpkin pie filling	It's a kind of pumpkin stuff that tastes like pumpkin and it's sticky and gooey
Rectum	It's a body part. It's the end of the large intestine.
Rough metal	
Sanitizing	It's like when you get germs off of something.
Small intestine	It is almost half as long as a football field. It's a part in your body. It froze juices to digest the food inside the small intestine. It digests the food in there and goes into the large intestines and it digests all of the food and finally goes at the end of you and then it goes out of you.
Skim Milk	
Spore	A spore is mold floats around in it, and then it lands on something when it finds the right air, and food.
Stack oven	It's an oven that you cook pizza and cookies in and all kinds of stuff. Something that you stack stuff with.

Star fruit	It's a fruit that I tasted that tasted bad. I think star fruit comes from stars.
Steam Jacket **Kettle**	I don't know a jacket that is steamed. Doesn't look like a kettle but it is a kettle.
Steamer	It's hot. And you don't touch it. Something that you can't wear any jewelry around.
Taste buds	Something that tastes on your food. They are things to help you taste things. If you didn't have them you wouldn't taste anything.
Tenticles	Something that sticks out.
Tilting /Skillet	Something that you cook with. A skillet is a pan.
Tuber	
Udder	
Utensils	They are stuff that you use to bake stuff with and like mix. Something that you use to cook with.

Open House

The teachers and students decided that this culminating open house on the food project should have a potluck so there would be a lot of food. Everyone could contribute family favorites and customs. The open house was held on the last day of school before winter break. The morning of the open house, a small group of students made homemade pizza as the class contribution to the potluck. They made extra pizza to be able to open a pizza shop over the lunch hour. They advertised with flyers and taped them up and down the hall of the building where our school is located. They sold a slice of pizza for $1.25. At 1:00 P.M., the open house program began. Students shared orally their PowerPoint presentations, read their stories and books, dramatized their skit, and sang their original group songs.

The students contributed their own verses to their song.

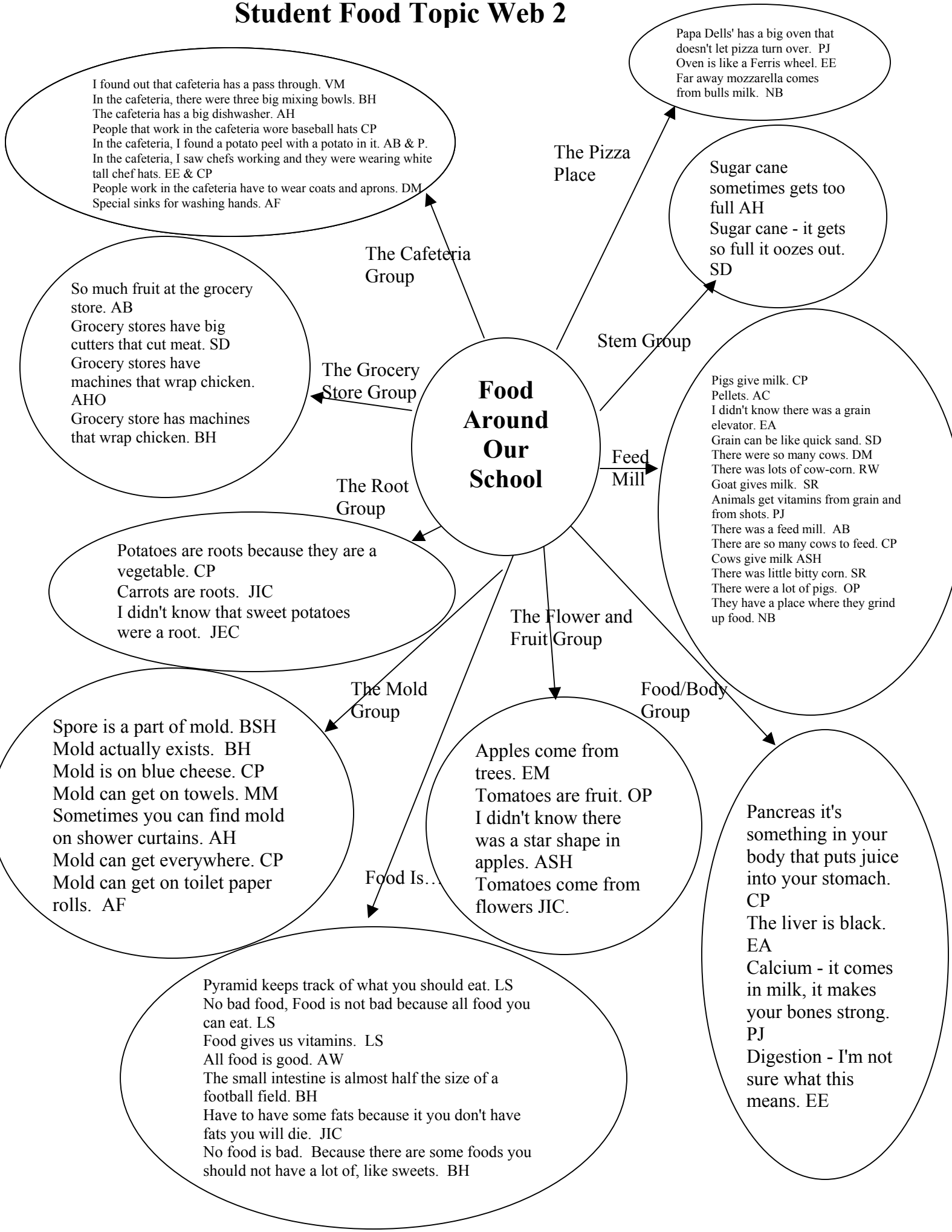
The display in the room included products, webs from the beginning and the end of the project, a model of the tractor, stories and booklets, and murals and posters. Students guided their parents to view the displays before or after they ate at the potluck. They took turns being servers.

At the potluck, there was pizza, ice cream and corn casserole. EE is serving.

The process of taking a "Closer Look at Food" is displayed on the wall of the classroom.

Teachers designed a questionnaire to give to parents, asking them what they thought their children had learned about food. In the Evaluation section, teachers share their reflections as well as those of the parents and students. The teachers also documented growth in individual students and share some examples from the Student Portfolios.

Student Food Topic Web 2



What I Now Know About Food: Children's Expanded Food Topic Web 2 Explanations

BH: Plants are so important for food. Food is made out of plants. For example, cauliflower is a flower of a plant. Carrot is a root of a plant. Pears come from a pear tree and tree is a plant.

CP: The mouse eats the cheese. The snake eats the mouse. The hawk eats the snake. This is a food chain.

The Mold Group

BSH: Spore is a part of mold. It jumps out of some tiny tentacles of a mold.

BH: Mold actually exists. It is a micro life form. It goes everywhere. Mold is so, so, so tiny that you can't see with your eyes.

CP: Mold is on blue cheese and green cheese.

MM: Mold can get on towels because towels have moisture on them. Mold needs moisture to grow.

AH: Sometimes you can find mold on shower curtains because shower curtain has water on it and mold likes water.

CP: Mold can get everywhere.

AF: Mold can get on toilet paper rolls. I learned it, someone told me and I saw some at a friend's house.

The Cafeteria Group

VM: I found out that cafeteria has a pass through. It was a big one.

BH: In the cafeteria, there were three very, very big mixing bowls. It looked like a baby could fit in the biggest one. The sizes were different.

AH: The cafeteria has a big dishwasher. It has belt that goes through it. It is much, much bigger than the one I have at home. It is as wide as two classrooms.

CP: People that work in the cafeteria wore baseball hats or hair nets because their hair might get in the food and get the food dirty.

AB & PJ: In the cafeteria, I found a potato peel with a potato in it. It did not look like the one we have at home. You have to crank the handle to peel the potato. I didn't know there is a machine that can peel a potato.

EE & CP: In the cafeteria, I saw chefs working and they were wearing white tall chef hat. They baked us cookies. The cooks wore small white hats. They cooked. You can tell people's jobs by the type of hat they wore.

DM: People that work in the cafeteria have to wear coats and aprons.

AF: Special sinks for washing hands. There are a lot of sinks. There was a big sink.

The Pizza Place

PJ: Papa Dells' has a big oven that doesn't let pizza turn over. They make many pizzas because they have many guests.

EE: Oven is like a Ferris Wheel. It's big. You can open it. You can cook something in it. It takes a little while to cook.

NB: Far away mozzarella comes from bull's milk. Bull is kind of a cow. They have a good pizza.

The Grocery Store Group

AB: So much fruit at the grocery store. And also there is lots of aisles of meat and big cutters. They cut big pieces of meat and broccoli. We saw a big clump of meat and it comes out with lines.

SD: Grocery stores have big cutters that cut meat. I think that they wouldn't need so sharp cutters to cut so soft meat.

Ana: Grocery stores have machines that wrap chicken. And it wraps the chicken, by putting the chicken on the machine and it wraps it all up.

BH: Grocery store has machines that wrap chicken. They have a big machine that has a very pointy knife. It slices really, really fast. You should not be by it. And also a grown up can only do it. Don't touch it.

Feed Mill Group

CP: Pigs give milk.

AC: Pellets. The baby pigs eat the pellets.

EA: I didn't know there was a grain elevator. I think it grounds up food.

SD: Grain can be like quick sand and very dangerous.

DM: There were so many cows. The cows were big.

RW: There was lots of cow-corn. They eat corn after they grind it. The cows are big.

SR: Goat gives milk. And if you squeeze it too, too hard than it really hurts the cows and they won't give you milk. They don't like that because they are being mean.

PJ: Animals get vitamins from grain and from shots. They need vitamins when they are sick because they can't lie down in a bed like we do, they have to sleep standing up and the vitamins make them feel better.

AB: I didn't know there was a feed mill. You can't go in the grain elevators because they are like quick sand and when you get to the bottom there's a chopper that could chop you up! They are huge!

CP: There are so many cows to feed corn grains to.

ASH: Cows give milk - I eat cheese. You can make ice cream out of it. You can make butter out of it, and cheese and a lot of stuff with milk. I eat all of these things.

SR: There was little bitty corn, it's small, small, small, really small. There are seeds inside. They give it to the cows and they eat it. I eat cow meat.

OP: There were a lot of pigs. Corn grain looked like flour. They cook some stuff with it. They can make biscuits. They feed it to the pigs.

NB: They have a place where they grind up food and if you went in there you would die. Some cheese is from goat's milk. They have lots of cows. There's a food called pallets that feeds the baby animals.

The Flower and Fruit Group

EM: Apples come from trees. And bananas come from trees. Strawberries come from flowers. The apples are very juicy and sweet.

OP: Tomatoes are fruit. Tomatoes taste good. They are very juicy. They are fruit because they taste like fruit. They are red. They have seeds in them. You put them in salads or pizzas.

ASH: I didn't know there was a star shape in apples. It's cool because you can make stamps like a star shape. It looks good on the apple.

JIC: Tomatoes come from flowers. The flower is blue. The flower grows into the tomato. I have them in my yard and did not see anything else. Some are big and some are small.

NB: Strawberries are actually a flower. Beans come out of pods. There is a kind of fruit that grows in high places that is bad for you that you can use for a sponge.

Food Is…

LS: Pyramid keep track of what you should eat. And it's good because you know what you should eat.

LS: No bad food. Food is not bad because all food you can eat.

LS: Food gives us vitamins. It's good that food gives you vitamins.

AW: All food is good. There is some food that's not good for you, but it's not bad, like candy.

BH: The small intestine is almost half the size of a football field if you stretched it out. When you eat food it goes to the small intestine first and then to the large intestine.

JIC: Have to have some fats because if you don't have fats you will die. If you eat too much fat you will die too.

BH: No food is bad. Because there are some foods you should not have a lot of, like sweets. Also there are other foods you can have a lot of.

The Root Group

CP: Potatoes are roots because they are a vegetable and they grow under the ground. They are oval shaped, they are plants. Roots are part of a plant. Beets are potatoes too. They are red. Potatoes are white on the inside and they are brown on the outside.

JIC: Carrots are roots. They grow from the ground.

JEC: I didn't know that sweet potatoes were a root. They grow in the ground so they are a root. They have eyes and if you plant them roots come out of the eyes.

MM: Plants have roots because they have to grow. The roots drink the water and hold the plant in the soil.

OP: Carrots are roots. They grow under the ground. That's why they are a root.

Stem Group

AH: Sugar cane sometimes gets too full and they push their sugar out and the sugar stays on the ground. It is the stem part of the plant.

SD: Sugar cane - it gets so full it oozes out. When they cut the sugar cane down it all comes out. It is a stem.

NB: Syrup comes from sap.

Food/Body Group

CP: Pancreas it's something in your body that puts juice into your stomach to help the stomach grind the food up.

EA: The liver is black. I saw it on the poster on the wall. And it closes up and stuff. It closes so that the food does not go out.

PJ: Calcium - It comes in milk, it makes your bones strong

EE: Digestion - I'm not sure what this means but I think it has something to do with food.

BH: Food is good for you. It's vital. If we don't eat and we don't have protein we will be as skinny as a thread and we will die. You need protein.

JIC: Large intestine - it goes around the small intestine. When the juices go through the large intestine it turns it into rocks and smashes them up.

AB: Carrots help your eye. They help you see better. That's why I like carrots.

PJ: Pancreas - It's a part of your body. On the poster it is yellow and it is big.

EE: The liver is in your body. It grinds up your food.

Student Food Questionnaire 2

1/21/03

1. **Why would you try a new food?**

- I like to see if it tastes good or not. It's good to try other foods.
- Because it's good.
- So your tastes can expand.
- So I know what it tastes like. So I might like it.
- Because I like food.
- So it might taste good.
- I would only try it if it's healthy for you.
- Because maybe it could be good.
- You would try a new food to find whether it's good or bad. Also I might try it because it might taste good. And I might like it.
- Because if there's a new food for dinner, my dad won't let me have any other food until I try the new food. In a café, if I didn't like all the foods, I would try a new one.
- So you can see if you like it.
- Because I might like it if it looks good.
- Because I might like it. When I was 3. I didn't want to try peanut butter, but I did and I like it.
- Because of the look or I might just try to see what it tastes like.
- To maybe like its taste.
- Because I wanted to know what it would taste like.
- Because a friend tried it or because I wanted to.
- Because I don't know if I'll like it and maybe I will like it.
- To try it because I love to eat.
- Because I was brave enough.
- Because it would be yummy.
- Because you never know if you like it.
- Because it's good to try new foods.

2. **What makes you like a food?**

- Because it tastes good. I like it. I just like it.
- The way it tastes. A sweet taste. If you taste it and it's good, you like it.
- The way the different food tastes. Usually, I like foods that are not spicy.
- My taste buds make me like a food.
- It helps me grow.
- Your taste buds make you like it.
- My taste buds make me like a food.
- The taste of the food makes me like it.
- The way it tastes.
- If it tastes good and if it has the right texture.

- Taste buds and the look of the food.
- The taste.
- The taste.
- Taste.
- It's taste.
- Because it's my favorite food. Because it tastes good.
- It depends on where I taste it on my tongue.
- My taste buds.
- My taste buds.
- Your taste buds.
- Because it's a color I like.
- The taste and what it looks like.
- Because it's very good.

3. Where does bread come from?

- Bread comes from grain. Another bread comes from corn.
- Bread comes from a store. Bread gets to a store by a factory (Bread Factory).
- Bread comes from wheat.
- Bread comes from wheat.
- Bread comes from wheat flour.
- Bread comes from wheat flour.
- Bread comes from wheat.
- Bread comes from the wheat place. The factory.
- You bake it. Butter, flour, sugar, salt.
- I don't remember.
- Wheat.
- Wheat.
- Grain.
- Wheat.
- I don't know.
- Wheat.
- Wheat.
- Wheat.
- Grains.
- Wheat.
- The grocery store.
- Wheat and the wheat comes from seeds.
- Wheat.

4. How does bread happen?

- Bread comes from the store. Factories make the bread.
- You make the bread. It rises up in the oven. You use yeast, dough to make bread.

- You make it out of yeast, so it puffs up. You bake it.
- You chop the wheat and make it into flour, then you take the flour and make dough of it, and then put yeast on it and put it in the oven and then you're done. Then you eat it.
- They grind up the wheat, and they put yeast and after that they put it in the oven.
- You need yeast and flour. Farmers make the bread. You buy from a store.
- You first grind the wheat. You make it into a dough. Then you put yeast. Then you put it in the oven. Then you eat it.
- It's from wheat. People make it. It gets to us from trucks.
- Bread gets made from dough. We buy bread from stores.
- You get wheat and you grind it up into flour. Then you bake it into bread.
- They bake it.
- Wheat flour- they put it in the bread.
- It rises then people eat it.
- Cut the wheat down off the stalk. Put the wheat in the grain elevator.
- From wheat, grind it up.
- Put some wheat, water, and milk, stir it up, put it in the oven.
- The wheat puffs it up.
- Grind up wheat to make flour and you use flour to make bread.
- I don't know.
- First you get some wheat, pick off little seeds, put the seeds in a bowl, then add ingredients, mix it until you have dough, knead the dough, then bake it, then you have bread.
- I don't know.
- Start with wheat, harvest it and then it becomes bread.
- Put wheat and yeast together and let it rise.

Student Dictated Script

Eating the Right Amount of Food

N – Narrator

N: We interviewed a nutritionist and asked in her opinion what was the biggest problem in nutrition. She felt the problem was the amount of food that people eat. Some people eat too little food to be healthy - young and old people. While others eat too much. Our class thought of solutions to the problem. One idea was limiting the amount and the availability of food for purchase in stores and restaurants.

VM: I think there should be restaurants and stores that sell only healthy food. And I think you can't take too much even of healthy food, cause you can still get too big and get sick. So the plates in restaurants should be smaller.

AB: I think the people that are getting big are eating too much sweets and fats. I think a solution should be not to have very many candy stores in a town - only 1 in each town that will only sell 1 piece of candy to you a day.

N: Another idea the class had to get people to eat the right amount of food was to tell them over and over through signs, pyramid posters, lists, mailings, consultations with nutritionist, and via radio and television.

DM: Ladies and Gentlemen, You have a problem of eating too much food. That can be solved by stop eating fats. You can throw away the fats on the chicken. If you're allergic to a food like fish, don't eat it. You know there is a new law that says that you have to follow the food pyramid. Ladies and gentlemen, this is the end of Health Talk on the news.

N: Lectures and speeches could get the message out as well.

CS: I want to talk to you about the right amount of food. First, you should find out what IS the right amount of food for you. The president's assistant or Surgeon General will tell you. Just telephone or e-mail him. Here is a tip. Don't eat all of the food on your plate BUT eat some because you can't eat too little. I have made this picture to help you know how much to eat. Well, Good-bye. Good Luck in eating the right amount of food.

N: Some members of the class had other creative plans which included getting shots for your food or being feed intravenously or having a machine tell whether you ate the right amount.

SR: Here is a big machine that I invented. You just type the food and the amount into the machine. It beeps a loud beep when the food is too much. And it beeps a little beep if it's too little.

N: Some members of the class thought of consequences for making inappropriate choices.

JC: My idea is that the president has a meeting in which he says "Use the food pyramid or you go to jail.

N: A scenario might look like this.

PJ: I found some one who ate too little.

AC: I just made the machine make a little beep.

JC: You must go to jail.

AC: Oh I'm sorry. I'll try to do it right next time. I'll go to classes.

JC: Still, you have to go to jail for 1 year.

PJ: I think they should only have to go to jail for 35 days.

JC: I'm the judge.

PJ: All right, all right you're the judge.

AC: Can I get out early for good behavior - eating the right amount?

JC: We'll see.

Jack and The Beanstalk Stories

Comparing and Contrasting Different Versions of Similar Stories

Title	Author	Setting	Characters	Giant	Ending
Jim and the Beanstalk	Raymond Briggs	Castle town Jim's house Dentist Glasses place Wig place Outside Beanstalk	Giant Mom Jim Wig-maker Tooth maker Oculist Bean Trader Cow	Happy Nice Bald Kind Beard Big nose He's big He needs glasses He has no teeth	Giant gave Jim gold Sing on gold Jim didn't go back Giant felt younger Happy ending
Jack and the Beanstalk	No author listed	Castle (rooms) Jack's house Beanstalk Road Jack's room Kitchen Oven	Jack Giant Mom Big Lady Bean Trader Harp Hen	Mean Fe Fi Fo Fum Hairy Loud Very big	End of Giant Jack's family was rich End of the beanstalk Jack chopped the beanstalk Giant Chase Jack Jack took the harp
Jack and the Beanstalk	Paul Galdone	Castle (rooms) Jack's house (rooms) Garden Beanstalk Fair	Giant Jack Mother/Widow Ogre's Wife Merchant Cow	Beheaded Mean Fe Fi Fo Fum Asleep	Giant died Jack got married Dancing Ate goose

Jack and the Beanstalk (play)	? (Email)	Jack's house Kitchen Oven Road Castle (rooms) Beanstalk TV station	Mom Giant (ogre) Big Woman Jack Chicken Cow Sign Holder Harp Bean Trader (Wiseman) News people Chorus Commercial People	Grown-up sized Fe Fi Fo Fum Bossy Mean Liked to play Sleepy Hairy Grumpy Liked to count (did it wrong) Greedy	End of the beanstalk Giant was dead Family was rich Newsperson Jack took the harp Singing Bow Question and answer
Jack and the Beanstalk	Steven Kellogg	Giant's house Jack's house Outside Beanstalk Kitchen Yard	Giant Big Lady Jack's mom Jack Hen Princess	Monster/Ogre Looked for Jack Shook house with snores Looked very scary	Jack chopped down beanstalk Giant died/Broke his head House fire

What's to Eat

A Close Look at Food Around Our School

K-1 Classroom

Evaluation, Reflection, and Assessment

The classroom environment enables children to demonstrate what they know through a variety of authentic assessment strategies (exhibitions, demonstrations, journals, group discussions, debriefings, interviews, and conferences). Assessment is constant and ongoing so as to identify students' strengths and learning approaches as well as their needs. Teachers observe play, watch children drawing, listen to conversations and ask questions. As children explain their thinking, teachers can assess their level of understanding. "Students points of view are windows into their reasoning. Awareness of points of view helps teachers challenge students, making school experiences both contextual and meaningful. Each student's point of view is an instructional entry point that sits at the gateway of personalized education" (Brooks & Brooks 1993, p. 60).

Documentation is vital for assessment. Documentation includes narratives of child-to-child conversations, child-to-adult conversations, photo portfolios (photo narratives), wall displays, and written summaries. Documentation offers opportunities for children to evaluate their own work, for teachers to keep parents better informed (knowledge web), and for teachers to gain a better understanding of how children learn. Documenting conversations and representations at the beginning and at the end of the project for the group as a whole and for each individual child gives perspectives of growth in all dimensions including vocabulary, concepts, knowledge, skills and dispositions.

Tomlinson's "Planning Model for Academic Diversity and Talent Development" (Tomlinson, 1996, p. 162) is a useful tool for examining how children's responses showed growth. Instead of using the model to differentiate instruction, the teachers have used it to examine how responses to the activities were differentiated among students as well as how they demonstrated growth in students throughout the study. In a project-based classroom, where many activities are open-ended, using Tomlinson's indicators can show growth. Teachers can demonstrate through child portfolios how children have gone from simple to more complex responses; concrete to more abstract understandings, and less independence to more independence in work habits and dispositions.

In an environment of inquiry, teachers look for evidence of children's growth (Klein & Toren, 1998). Children's questions may evolve from general to more specific once children have more knowledge about a topic. They may transfer their learning by making links to other things that they know and with which they are familiar. They may incorporate the new vocabulary into their every day language. Teachers look for growth in fluency of ideas and in ways in which children generate questions, solutions, hypotheses and theories. Teachers look for growth or change in students' understandings by examining artifacts of learning, which include drawings, structures, writings, and conversations. Children may also become more self-directed, more engaged, and

may strengthen their dispositions to inquire, to assume responsibility, to persevere, and to take on leadership roles within a group.

The evaluation of a project investigation includes teacher reflections, student self-evaluations, parent-feedback, and an examination of each child's project portfolio to assess growth and learning. Examples of children's project portfolios are included in this document.

The primary method of assessing what students have learned in project investigations is through the documentation of their experiences. Teachers observed students carefully and provided opportunities for students' thinking to become tangible in order for teachers to see growth. Teachers listened and recorded students' ideas expressed in conversations, brainstorming sessions, interviews, writings, predictions, and representations. Teachers reflected upon class growth as well as individual students' depth of understanding by examining and comparing the documentation from the beginning to the end of the project.

Teacher Reflections

As the project began the teachers noticed that students were eager to discuss their variety of experiences with food. They told each other what was in their lunch boxes. Some children talked about their favorite foods and food allergies. Common experiences and interests served as catalysts for questions and investigations. The topic of food was both concrete (food being eaten at school) and enjoyable. At the same time, the topic was abstract and complex (how the body digest food, sources of food, and how plants produce food, etc.). This allowed for children to grow and be challenged.

Teachers documented the children's experiences as the primary method of assessing what they had learned. There was a diversity of abilities and experiences in this multi-age classroom. Teachers paid attention to students' thoughts expressed through surveys, conversations, predictions, questions, and writings. They compared individual children's depth of understanding at the beginning of the study with what was revealed at the end of the project.

Growth in Vocabulary

Teachers compared their brainstorming sessions from the beginning to those at the end of the project. Most of the students' initial ideas were simple (Student Food Topic Web 1). They included: what animals eat, what and when people eat, and what people don't eat. Three students mentioned more sophisticated ideas such as plants need food and water, a tube is called an esophagus, and we get food from the grocery store. The Student Food Topic Web 2 showed more complex thoughts and ideas. The students listed the relationship of plants to foods as well as the parts of the plant that they eat. They generated new vocabulary words when describing digestion and the body. At the end of the project, students not only listed the grocery store for where people get food, but they mentioned the cafeteria, the pizza shop, and the feed mill.

Growth in Categorizing

Teachers noticed when categorizing ideas for the Student Food Topic Web1, some students had a difficult time putting ideas together and explaining their reasoning. They did not want their idea joined with those of others. They made separate categories for cats, snakes, horses, and fish. They made three categories for cats: "cats and mice," "cats eat birds," and "cats need food." Some students thought that all the animals should be put together in the same category. They requested that the "sign-in" question should ask if others felt that way too. Half of the students did not want to change the original topic web. The students categorized the second web in December. By this time, they were more familiar with each other. They had more ideas and were willing to join their ideas with others to label the categories. Their active dialogue demonstrated a high degree of critical thinking and analysis. They agreed on the final product, the Student Food Topic Web 2.

Growth in Awareness of Sources of Food

At the beginning of the project, when the students predicted what kinds of food they would find in a walk around the school (Phase 2), all but one of the predictions were related to walking around their house or in a city. Only one predicted that she would find corn. Farm fields surround University Primary School. The teachers were puzzled that students did not mention the food from the farm fields in their predictions. On the walk around the school, the children discovered the corn and soybean fields. They were surprised to find out that people consumed those plants. A look at the booklets created at the end of the project (Phase 3 products), indicated that students increased their understanding of the relationship between plants and food.

Growth in Researching Questions

In project work, often after initial questions are answered, more questions arise. Students, who came to school with previous cooking experiences at home, did not find cooking at school challenging. They answered the Pre-Assessment Teacher Food Questionnaire thoroughly. These students found depth and complexity in this project in the study of molds, plants, and digestion.

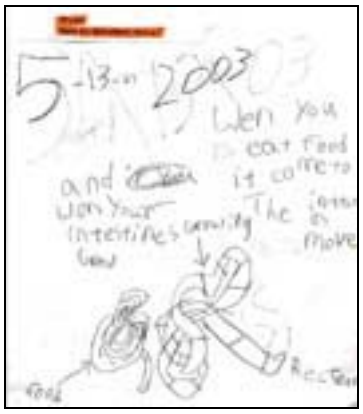
Students continued to pursue questions related to food after the project was over. They incorporated food questions into the movement study.

BH: How do intestines move?
DM: When I am very hungry, why does my stomach growl and why do I feel like throwing up?
NB: How do your intestines get sick? How do your intestines help you? How does food land in your body? How and where does it go after it is swallowed?
AHO: How does your Adam's apple move when you swallow?
LS: How do animal researchers open up an animal's stomach? (Such as horses and cows with the opening to their stomach at the South Farms.) What do they see?
CS: How does food move down the esophagus?

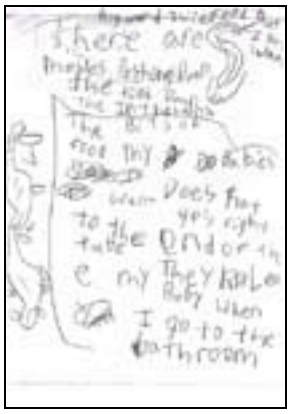
In May, students interviewed a parent physician. She brought a chart and refined what they had learned earlier from the nurses. She emphasized the work that the brain does before food even enters the mouth. Her chart showed the inside of the esophagus, stomach and intestines. In addition, a student arranged for a veterinarian to come to the classroom. She answered the question, "What do you see inside an animal's stomach?"

A veterinarian discusses a cow's four stomachs.

Some students wrote reports to share their findings from their original questions. The teachers displayed their illustrated answers for the May open house. It is being included in this Evaluation Section because it demonstrates the intense interest students had related to digestion and their ability to transfer knowledge from one topic to another over a prolonged time period. Their detailed findings are testament to their depth of understanding about a topic that is not generally included in a kindergarten or first grade curriculum.



BH writes a detailed answer to his question, "How do intestines move?"



"The bits of my food that my body does not want goes to the end of the tube and leaves my body when I go to the bathroom."

Students reflected on what they knew in May that they did not know at the end of the first semester:

BH: At the beginning of the project, I was thinking a lot of questions, like in the body parts, like how intestines move and also if there's more stuff that I don' know that's inside the body. In school I answered the body parts questions. I listened to MM's mom and I read through the pages of body part books and I wrote it down on a piece of paper. Intestine movement is important so the food can get down into your body and then you could grow.

LS: In the beginning, I wondered about muscles inside of you and how do they move. I learned from MM's mom that the digestion system muscles move. She talked about some parts - the esophagus and some spit. She had a little chart.

In addition, some students incorporated new questions about plants in the second semester project topic of movement.

EE: How does a plant suck up the water?
SD: How does water get soaked up the tree to the leaves?
MM: What moves in grass?

For the culmination of the second semester project on movement, some children continued their study on plants and wrote a chart explaining "Water Moving Through Plants." This chart was displayed for the open house in May.

A student explains plant vocabulary words: diffusion, xylem vessels, stomata, evaporation and transpiration.

Teachers noted again that their interest in plants continued past their exploration of food into their investigation of movement. Students explored how plants absorbed water and gained a deeper understanding of the complexity of photosynthesis.

Conclusions

Teachers developed instructional activities that supported conceptual growth by using students' misconceptions and misunderstandings in Phase 1 to build learning experiences for Phase 2. Not all students gained the same level of understanding about abstract and complex concepts. This project helped students to recognize the relationship between good nutrition and a healthy body as noted in the Student Reflections. The list of occupations in Phase 3 showed that they

increased their awareness of the many occupations related to the consumption of food. Through their extended study, students deepened their awareness of the relationship of plants to food and increased their understanding of the digestive system. The students' original skit presented at the open house demonstrated an awareness of the different food groups and the food pyramid. Teachers noted that the conversation at lunch showed that students had gained an appreciation for the variety of foods that their peers eat.

In conclusion, throughout the food project, students collected and evaluated data. They matured in their abilities to cooperate as they collaboratively constructed models. They applied problem solving and critical thinking skills while they built representations of the tractor and the flattening machine. They listened to each other, posed questions for clarification, and learned how to appreciate others' ideas. The project was multi-faceted and kept students engaged for five months. Teachers noted transfer of learning throughout the year as students made connections from the food project to other studies. Student and Parent Reflections document the enjoyment of doing challenging, in-depth work.

What's to Eat: A Close Look at Food Around Our School
Student Reflections

1. **What they would tell a friend about food?**

NB: If you eat too much food you will get sick. If it's really close to lunch, you shouldn't eat. I get a snack an hour before lunch and when that hour is done, I don't eat any more.
DM: Eat right. Don't eat too much.
AC: Food is good for you. You're supposed to eat the right amount of food.
CS: Food has microbes and you are eating that.
VM: All the food has fat.
AB: Food isn't bad or good. If you have meat for dinner, it gives you protein.
SD: If you did not have food, you would die.
SR: I know the secret ingredients about pizza. It's spicy.
EM: Ice cream has milk in it.
AW: I now know that pizza has pizza dough.
EE: Food is good for you.
AH: Some grapes have seeds in them.
AF: I would tell them what do you know about it.
AH: You eat it. Food is good for your body.
PJ: Ask people what kinds of food they like.
BH: If you eat the right food, you'll be healthy.
JC: Mold can get on it.
JC: I'd tell them what vitamins are in each one. They help you grow strong.
BS: You need fat.

2. What would you like to keep doing with food?

NB: I am always hungry even if it's not snack time, so the thing I would like to keep doing is eat it.
DM: Work with it like go to a grocery store and work with it.
AC: Study it.
VM: Like to keep eating it.
AB: Keep eating more plants because plants are not food that are fattening.
SD: I would like to keep eating it. If I never had food, I would die.
SR: I would like to keep writing about food.
EM: Go to the grocery store.
AW: I'm going to make a kids' cookbook at home. I would like to experiment with food for my cookbook and if it's good, I'd put it in there.
EE: Eating it.
AH: Eating grapes.
AF: I would like to do my survey.
RW: Eating.
PJ: Make lemonade.
BH: Eating it and telling people about it.
JC: Eat it and keep using them for games and other activities.
BS: Learn more about what kinds of food there are.

3. What are you still wondering about food?

NB: Why are sweets bad for you? Why is sugar bad for you and all that stuff?
DM: How do they actually keep their food fresh in grocery stores?
AC: What foods do pigs eat?
CS: Why food that is good for microbes is also good for us.
VM: Nothing.
AB: Why is some food not very good for you?
SD: Why does food help you?
SR: I am still wondering if all foods are healthy.
EM: How do they make ice cream?
AW: Nothing.
EE: How does the food go down in your body?
AH: Why do bananas have peels?
AF: I'd like to learn about mangos because I don't know anything about them.
RW: How do farmers grow food?
PJ: How are foods made? How are lemons made?
JC: How does food help your body?
BS: What different foods taste like.

What's to Eat: A Close Look at Food Around Our School
K/1 Parent Reflections

1. **What type of evidence did you see of your child's interest in the Food Topic?** (Involvement in or excitement about the field trips, classroom activities, products, etc?)

    - Yes. He did appear excited about different food activities from time to time. For example when they made a soup with different ingredients, visited restaurants, farms, etc.
    - Not a meal went by in which CP didn't classify every food on the table by its place on the food pyramid. Likewise, he seemed to take great enjoyment in reading food labels (ingredients, nutrition, etc.). He often got excited about and seemed to enjoy field trips and cooking in class.
    - She wrote a poem about the food one weekend. In fact, she wrote poems and stories involving food quite a lot! She talked about the class cooking projects, the class visitors who showed a film of the intestines, and so on.
    - Despite what JC says there about the literal field trip, we saw her interest increase in what was growing in the fields and also in what all could be made from corn and soy. Her interest in cooking (which she already enjoyed) definitely increased and she also showed a lot of interest in mold (but she wouldn't do the mold experiment because she didn't want to make good food moldy on purpose!). She also developed interest in reading food labels.
    - CS expressed a lot of interest in discussing various aspects of the food topic at home. He seemed especially interested in nutrition and microbes.
    - She liked the cooking and eating the food.
    - RW enjoys going to the grocery store with me. However, now she wants to point out different items of produce to me. And the items she cannot identify, she asks their proper names.
    - BH has been talking about the type and quantity of food nutrition he should take each day. He has been excited about the field trips.
    - She is less excited about the field trips, constructions, but that's just EE! During some outings, (i.e. Papa Dell's) she would later relate information she'd gained with obvious pride.
    - He started looking for specific ingredients in food and talking about the food pyramid and how many portions of food from each category we should have. He wanted to help prepare meals, cut veggies, and wanted to make soup.
    - She enjoyed the field trip.

2. **What, if any, did your child talk about the topic away from school? Did conversations or statement reveal new knowledge about the topic?**

    - Yes, sometimes he did converse about his food project - viruses, molds, cheeses, cows and milk products, revealing new knowledge.
    - The food pyramid and the field trips.

- She revealed new knowledge when she talked about different food groups, where food comes from, how to make different foods, etc.
- Yes, she announced one day at breakfast, after "mis-swallowing," "Oh my epiglottis didn't close in time." And she talked a lot about digestion and making the "skeleton game" at school. Especially this aspect of the study- how the human body uses food- interested her.
- CS liked to talk about every new thing he learned at school, especially the science related terms (mold, digestion).
- She talked about the food pyramid and parts of the plant.
- RW informed me that if my small intestine was unwound and laid out it would be as long as a football field. She also told me that there is no bad food.
- BH was discussing what calcium does to the body and the amount he needs to take. He also asked about vitamins.
- EE talked a lot about food, especially the food pyramid which she was greatly interested in. During meals she would tell us our food groups. Other information would come in as experienced. "Do you know what part of the tongue tasted this," etc.
- He mostly talked about nutrition information and the food pyramid.
- She talked a lot about Thanksgiving dinner.

3. Did your child like this topic? Why or why not?

- Yes, she liked it. She likes food, it's a part of her everyday life, and she's interested in that.
- JC says: It was fun - all of the activities like cooking, building the skeleton, the speakers, the visitors, some of the field trips, and serving the pot luck. The best field trips were to the cafeteria and also to Jack and the Beanstalk. The Busey Woods soybean and corn field trips made me tired, and the food mill stank too much, so those weren't my favorites. Also, it was unfair that some kids got to go to Papa Dell's and not everybody. I'm glad we're going to Pizza Hut now.
- Yes because he could relate it to home and new learning at school.
- Yes.
- Yes, RW enjoyed this topic because she loves learning new things period. However, I think for all the children this was a topic they deal with in their everyday existence as human beings.
- Yes, he seems to like this topic.
- Yes, I think a familiar topic during her first semester of Kindergarten eased her transition.
- Yes, he could relate easily to concepts and it reinforced things we talk about at home.
- Yes, she liked the field trips.
- Yes, he liked it because it was fun and he liked learning about food and how does mold get on food.

- To the extent it was new, CP enjoyed learning about the topic. Ironically, CP has no interest in trying new foods (any foods). But he seems to have no problem differentiating between liking something and learning about that something.

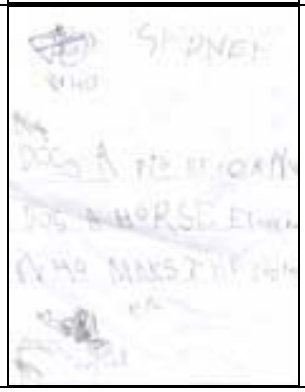
Individual Student Growth - Student Portfolios

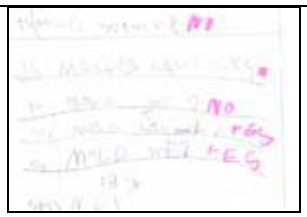
Throughout the year, teachers keep up portfolios of students' work samples. The teacher and students reflect and examine the documentation in the students' project portfolio, to evaluate individual growth in a project.

SR (5 yr.) Growth in Fluency - Reluctant Contributions to Many
Growth in Questioning Skills - Ambiguous to Clear

At the beginning of the project SR was reserved and quiet. She spoke quietly in front of the class to answer questions. However, she was self motivated and worked independently on chosen activities.

Date	Child's Comment	Context for Documentation	Teacher's Comment
8/28/02	"We eat bananas."	This was a whole group brainstorming session.	At this meeting, children reflected on what they knew about food. Many students brainstormed about the food they eat or the food animals eat. This was the first week of school and SR appeared reserved and quiet. After a child offered bananas as a food that they had eaten, SR waited until the group had departed and then went to the teacher and mentioned bananas as her contribution to the brainstorming session.
9/9/02	"Why when bubbles	Children formulated	SR was able to

	touch your heart, your heart stops?"	questions for investigation in the food project.	formulate a question. This question was related to health and the body. However, it did not appear to be directly related to food.
9/10/02	"Because there's water in there and the water gets sucked in there and it takes all the energy out. And the food makes the heart have more energy."	A parent volunteer interviewed students individually.	SR worded her question awkwardly. The volunteer probed for insight into what SR wanted to know. SR made the connection to food when interviewed one-on-one. She made her question more researchable by restating, "Does food make the heart have more energy?"
9/12/02	"Do you like macaroni and cheese?" 	For project activity time, SR chooses to make a questionnaire.	SR asked the teacher to write her question so that she could interview the parents that were coming for a curricular meeting. SR noticed that other children were asking questions about food likes and dislikes. She joined in.
10/22/02		SR wrote: "Does a pig eat corn? (yes) Does a horse eat hay? (yes) Who makes the food? (yes, Rick) Daddy helped."	With parental help, SR wrote relevant questions for the field site visit to the feed mill. She took her questions with her on the visit. She noted the answers at the end of the questions.
11/13/02		SR questions:	Independently, SR

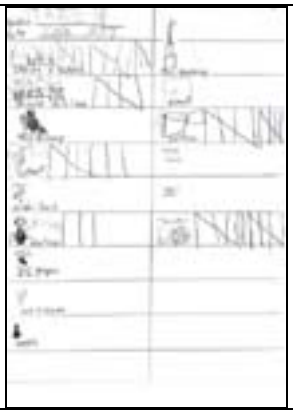
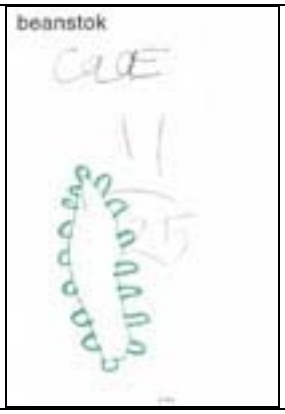
		"Is mold spicy? (no), Is mold salty? (no) Is mold hot? (no) Is mold sticky? (yes) Is mold white? (yes)"	wrote relevant questions for the expert who is coming to the class to speak about mold. She noted the answers to her questions with a pink marker. Most of SR's peers wrote 1 or 2 questions. SR is now very fluent and generated 5 relevant questions.
12/5/02	I think their food gets moldy. If it's moldy can we bring it to school and do a project on it? What time does your store open and what time does it close? What kind of sauce do you put on the pizza? Is the crust made with dough?	SR dictated these questions to an adult before a small group went to a pizza shop.	SR asked relevant questions on her field visit. Upon their return to the classroom, she enthusiastically explained to the whole group what she had learned. She reported, "Food doesn't get moldy in their pizza shop. They keep their ingredients cold and then very hot. So no mold comes."
12/12/02		SR 3-dimensionally represented the mixer at project/activity time.	SR was very engaged in representing the mixer. She problem solved the materials she needed and how she would cover the boxes and junk.

SR grew in many domains throughout the duration of the project. The teacher encouraged SR to think about her ideas. SR gained confidence in a setting where the class paid attention to the details of her work. She moved from a reluctant to an enthusiastic member of the class. SR became more confident in expressing her ideas clearly. She learned that others respected and valued her views.

CP (5 yrs.) Growth in Flexibility and Social-Emotional Domains (from Self-Absorbed – Group Participant)

Date	Child's Comment	Context for Documentation	Teacher's Comment
8/28/02	"trillion"	CP used this word in his journal writing.	CP was personally focused on numbers and his journal writings were exclusively about numbers. He mathematically preformed 3 years above grade level. He also read 3 years above grade level.
8/28/02	"Dinosaurs eat meat, cats eat birds, birds eat worms, and horses eat hay."	This was a whole group brainstorming session.	CP offered observations about what animals eat.
9/6/02	"How does food help my brain work?"	Children formulated questions for investigation in the food project.	CP could not think of anything that he wanted to know. The teacher talked to him about what he already knew. She asked him if he knew how his brain could think of all those numbers. He decided to find out how food helps his brain.

9/11/02 and 9/18/02		CP made time 1 and time 2 observational drawings of a peach.	This was the second piece of drawing that CP has done this school year. He drew reluctantly. Then he did it quickly and went on to something else. The time 2 drawing was done in much the same manner.
9/12/02		CP designed a questionnaire for the parents asking, "Do you like bread?"	CP enjoyed graphically organizing his data collected from the parent questionnaire into a bar graph.
9/13/02		CP collected data from his walk inside the school looking for food.	CP tally marked his findings but did not appear to understand the conventional way to mark the 5th tally diagonally.
9/17/02	"I wouldn't try a new food. I don't know how bread happens."	A parent interviewed CP for the Teacher Food Questionnaire 1.	CP always brought the same food for lunch - juice and Cheerios. CP went home in the middle of the school day because he was not feeling good. The

			next day his mother reported that he had refused to eat for 24 hours. He hadn't realized how much effect the lack of food would have on his body.
10/17/02		CP collected data from his walk outside the school looking for food.	CP now was able to tally using the diagonal line.
10/22/02	"What does the animal food look like?"	CP asked a question that he wanted to know on the field trip to the feed mill.	CP was able to independently formulate a question of something he wanted to know.
11/25/02		CP volunteered to draw an observational drawing of a beanstalk.	CP did not often choose to illustrate his writings with pictures. He was enthused after going to a play, *Jack and the Beanstalk.*
12/9/02	"Pancreas, tuber, pigs give milk, and mold can get everywhere."	CP brainstormed what he now knows for the Student Food Topic Web 2.	CP reflected on what he now knew that he didn't know at the beginning of the project.
12/20/02		Parent answered a questionnaire: 1. What type of evidence did you see of your child's interest in the Food Topic? 3. Did	CP's mother provided important background information. 1. "Not a meal went by in which CP didn't

		your child like this topic?	classify every food on the table by it's place on the food pyramid. Likewise, he seemed to take great enjoyment in reading food labels (ingredients, nutrition, etc.) 3. CP enjoyed learning about the food topic. Ironically, CP has no interest in trying new foods (any foods). But he seems to have no problem differentiating between liking something and learning about that something."
1/21/03	Why would you try a new food? "Because it's good."	Answer to Student Food Questionnaire 2.	CP was still eating only Cheerios and juice for lunch.

At the end of the project, it was obvious to the teachers that CP had become more aware of other children and wanted to work with them. He engaged in investigative activities and enjoyed researching questions to find out new information. He made positive contributions to group meetings and refined his advanced mathematical skills. It was interesting to note that even though he was able to perform complex mathematical functions, he did not appear to know conventions of recording and tallying data.

CP also increased his literacy skills by expanding his use of secondary sources and by analyzing different versions of the same stories. He created and wrote his own versions of the stories demonstrating much growth in standard conventions of writing and an increased interest in writing words instead of numbers!

Drawing was not CP's favorite way to document or collect data. However, the food study presented authentic opportunities for him to grow in this area. Although he mentioned, "It is good to try new foods", CP did not seem to alter his eating habits at school.

Studying children's growth is an ongoing activity in the K/1 classroom. Other students made similar strides in their academic, social, and emotional domains of development. All students strengthened their disposition to inquire, to preserve, to problem-solve, and to create. All students gained self-confidence in becoming independent learners.

What's to Eat

A Close Look at Food Around Our School

K-1 Classroom

Food Project Learning Activities

(Step-by-Step Lessons)

Phase 1

1 **Opening Event** In a large group meeting, the students discussed their lunch and lunch boxes that they brought to school.	2 **Brainstorm Ideas** Children brainstormed ideas about food.	3 **Categorize Ideas** Teachers led a discussion about listening for similarities in order to categorize their ideas on chart paper.	4. **Label Categories** Children debated names for categories and created Student Food Topic Web 1.	5 **Share personal memories** The teacher shared stories of how she made her lunch. Students shared personal experiences with food at large group meetings.
6 **Illustrate Stories** Students used markers to write and illustrate their memory stories. They drew about breakfasts, and lunches that they liked to eat.	7 **Share Stories** Students shared their stories and pictures at large group meetings. They noted similarities and differences in experiences. Teachers displayed the categorized stories on the wall.	8 **Collect Data** Students developed questionnaires to find out what classmates already knew about food. They asked questions such as, "Have you eaten Brazilian food," and "Do you like pepperoni pizza?"	9 **Represent Findings** Children represented their findings using bar graphs. Students used clay, play dough, paint, KidPix and boxes and junk to represent their memories of food.	10. **Articulate Questions** Teachers and students wondered about food. They articulated questions: Is macaroni and cheese good for you? How does food grind up in your stomach? How do you keep food from getting moldy? What is in soup to make it taste good?

Phase 2

11 **Group Planning** Students began exploring food in five groups to answer their questions. They decided they needed to go to the grocery store, a cafeteria, a feed mill, a greenhouse, and some restaurants.	**12 Make Predictions** Before each site visit, students articulated questions and formed predictions about what they would learn on their field studies.	13 **Engaging in Field Study** Students collected data to answer their questions about food. They visited a nature center, cafeteria, corn and soybean fields, a greenhouse, grocery store, and two pizza shops. Students interviewed experts, collected artifacts, counted, made observational field sketches, and took pictures.	14 **Debrief** Students shared their findings at large group meetings. They compared their findings to their predictions.	15 **Create Representations** Students represented their findings with constructions, clay models, paintings, and graphic organizers.
16 **Share** At large group meetings, students shared their progress on their surveys, representations and experiments. Classmates offered suggestions for refinement.	17 **Plans for Visiting Expert** Students formulated questions about food and predicted what visiting experts might say to answer their questions.	18 **Expert Visitor** Experts included: a plant biologist, a botanist, a nutritional nurse, a nutritional scientist, a parent who spoke about taste buds, a parent who made foods from scratch, a parent who	19 **Debrief** Students compared experts' answers to their predictions. They made observational drawings of plants and other items that experts brought to share with them.	20 **Continuing Investigation** Students conducted experiments related to food. For example, they placed plants in a variety of conditions in the room (in the dark, in light, without water, without dirt, etc.).

		brought exotic foods to taste, a physician, a pizza chef, a puppet, an undergraduate nursing student, and others.		

Phase 3

21 **Representations** Students created many 3-dimensional representations of food equipment including a grocery display shelf, tractor, pizza dough mixer, flattener and oven.	22 **Articulating What Students Have Learned** The whole group discussed what they had learned about food. The teacher asked individual children to respond to what they had learned.	23 **Brainstorm Second Web** Students brainstormed what they now know about food.	24 **Label and Categorize Ideas** With the teachers, the students categorized what they knew about food and developed the Student Food Topic Web 2.	25 **Plan for Sharing** Students brainstormed ideas for the culminating activity. They wanted a potluck and planned to share a skit, booklets, poems, and PowerPoint presentations.
26 **Project Highlights** Students shared aspects of their investigation by making murals, reports, booklets, representations and PowerPoint presentations.	27 **Imaginative Activity** Students wrote variations on the *Jack and the Beanstalk* and *The Lady who Swallowed a Fly*. They integrated food into poems and riddles. They created a skit entitled *Eating the Right Amount of Food.*	28 **Display** Students contributed to the class display. Teachers placed their stories, webs, reflections, new vocabulary lists, graphs, and pictures on the walls.	29 **Culmination** Parents gathered in the room to hear the PowerPoint presentations, reading of stories and poems, a dramatic skit and song. Then they toured the room to read the displays and ate at the potluck.	30 **Evaluation** Students and parents reflected on the project by responding to a questionnaire. Teachers examined Students' Portfolios to assess growth and learning.

What's to Eat

A Close Look at Food Around Our School

K-1 Classroom

Resources

Primary Resources

Experts on Food

- Education programs coordinator from Spurlock Museum
- Nutritional nurse
- Nutritional scientist
- Parent who spoke about taste buds
- Parent who made foods from scratch
- Parent who brought exotic foods to taste
- Physician
- Pizza chef
- Plant biologist
- Puppet Stuffee with nutritional nurse
- Student from College of Nursing
- Undergraduate science students
- Veterinarian researcher

Hands on Materials

- Bean seeds
- Boxes and junk
- Buttons
- Cardboard
- Clay
- Computers
- Corn on cob
- Costumes
- Fabric
- Felt
- Fruits
- Geoboards
- Ingredients for making food recipes
- Legos
- Jar with tight fitting lid
- Measuring cup
- Measuring spoons

- Mill
- Mod Podge
- Money
- Paint
- Paper (large and small)
- Paper cups
- Papier mache
- Pattern blocks
- Rods
- Rulers
- Scales
- Seeds
- Socks
- Soybeans in pods
- Timers
- Thermometers
- Unifix cubes
- Vegetables
- Wheat stalks
- Yarn

Computer Software

- Inspiration
- Kid Pix
- Kidspiration
- PowerPoint
- Simple text
- Web View-n-Do

Field Site Visits to Study Food

- Anita Purves Nature Center and Busey Woods
- Bevier Cafeteria
- Children's Research Center
- Corn field
- Greenhouse
- IGA grocery store
- Papa Dells Pizza
- Pizza Hut Pizza
- Play production of "Jack and the Beanstalk"
- Soybean field

Secondary Resources

Books and Stories

Agree, R.H. (1980). *How to eat a poem & other morsels: Food poems for children*. New York: Random House.

Anderson, K. C. & Cumbaa, S. (1993). *The bones & skeleton gamebook*. New York: Workman Publishing.

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Carle, E. (1990). *Pancakes, pancakes!* New York: Scholastic Inc.

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Erlbach, A. (1995). *Peanut butter: How it's made*. Minneapolis, MN: Learner Publications Company.

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Florian, D. (1992). *A chef*. New York: Greenwillow Books.

Frank, J. (1977). *Poems to read to the very young*. New York: Random House.

Freymann, S & Elffers, J. (1999). *How are you peeling?* New York: Arthur A. Levin Books.

Gabler, M. (1992). *The alphabet soup*. New York: Henry Holt and Company.

Galdone, P. (1974). *Jack and the beanstalk*. New York: Clarion Books.

Galdone, P. (1975). *The gingerbread boy*. New York: Clarion Books.

Gaines, I. (2000). *Pooh's fall harvest*. New York: Scholastic Inc.

Gelman, R. G. (1992). *Body battles*. New York: Scholastic Inc.

Gibbons, G. (2002). *The berry book*. New York: Holiday House.

Giganti, P. Jr. (1992). *Each orange had 8 slices: A counting book*. New York: Scholastic Inc.

The gingerbread man. (1967). New York: Scholastic Inc.

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Hershenhorn, E. (2002). *Chicken soup by heart*. New York: Simon & Schuster Books for Young Readers.

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Jackson, E. (1995). *The Impossible riddle*. Danvers, MA: Whispering Coyote Press.

Jerrard, J. (1992). *Jack & the beanstalk*. International.

Johnny-cake. (1969). New York: Scholastic Inc.

Kahl, V. (1969). *The perfect pancake*. New York: Charles Scriber's Sons

Katz, A. (2001). *Take me out of the bathtub and other silly dilly songs*. New York: Scholastic Inc.

Krasilovsky, P. (1950). *The man who didn't wash his dishes*. New York: Scholastic Inc.

The little red hen (1985). New York: Scholastic Inc.

Lin, G. (2001). *The ugly vegetables*. Watertown, MA: Charlesbridge Publishing.

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Matthew, R. (2000). *Cooking a meal*. New York: Franklin Watts.

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Newing, F. E. & Bowood, R. (1965). *Plants and how they grow*. Loughborough, England: Ladybird Books.

Numeroff, L. J. (1991). *If you give a moose a muffin*. New York: Scholastic Inc.

O'Malley, K. (2001). *Humpy Dumpy egg-splooes*. New York: Scholastic Inc.

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Paul, D. & Paul, H. (1982). *An introduction to Zoology*. Loughborough, England: Ladybird Books.

Pettigrew, S. (1974). *There was an old lady who once saw a ghost*. New York: Scholastic Inc.

Pinczes, E. J. (1993). *One hundred hungry ants*. New York: Scholastic Inc.

Polacco, P. (1990). *Thunder cake*. New York: Putnam.

Polette, N. (1989). *The little old woman and the hungry cat*. New York: Greenwillow Books.

Posada, M. (2000). *Dandelions: Stars in the grass*. New York: Scholastic Inc.

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Went, F. (1963). *The plants*. New York: Time.

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Wilson, M. (1959). *The human body: What it is and how it works.* New York: Golden Press.

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Ziefert, H. (1998). *Rabbit and hare divide an apple: A puffin math east-to-read*. New York: Viking Children's Books.

Zion, G. (1959) *The plant sitter*. New York: Scholastic Inc.

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Milne, A. A. (1970). Rice pudding. In *When you were very young*. (p.50). New York: Dell.

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Dakos, K. (Ed.). (1999). Ten ants in the classroom. *In The bug in teacher's coffee and other school poems*. (pp.34-37). New York: Scholastic Inc.

Games

Somebody (1991). Dexter, MI: Aristoplay.

Music

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Humperdinck, E. (1959). *Children's dance from Hansel and Gretle***.** On Children's introduction to the great composer. (Directed by Miller, M.), New York: Golden Record.

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Perez, C. (n.d.). *Still life in the dark*. Private collection, Beverly Hills, USA.

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Soteras, C. (n.d.). *Mediterranean still life*. Private Collection, Napoli, Italy.

What's to Eat

A Close Look at Food Around Our School

K-1 Classroom

Food Learning Activities Across the Curriculum

Relationship to Illinois Learning Standards

Arts and Aesthetics

*Constructing (LS26A1e)

- 3-dimensional objects such as the tractor out of boxes and junk, food out of clay (pizza, fruit, etc.)
- Build with craft supplies, paper mach, newspaper, balloons, modeling clay, cardboard (pizza dough mixer, dough flattener, shelf from a grocery store
- Build with food
- Construct tractor, farmer and animals, body showing digestion tract, dough flattening machine, and mixing bowl with dough hook made with boxes and junk
- Construct with commercial made materials:
- Cuisenaire rods
- Geoboards
- Legos
- Measure costumes made for dramatic play
- Pattern blocks
- Problem solve
- Representation of the equipment for making pizza and tractor
- *What's Important About Food* murals
- Wooden blocks

*Dramatizing (LS25A1b and LS26A1b)

- Dramatize the nursery rhyme *Pat-a-cake, There was an old lady who lived in a shoe* after discussing the food that was involved in the rhyme
- Practice play lines for puppet shows and skit
- Practice play lines for story innovation of books, *The Hungry Thing* and *Jack and the Beanstalk, etc.*
- Role-play farmer, restaurant
- Use child-made puppets to explore creative dramatics

*Memory drawing (LS26B1d)

- Draw favorite food, food they had just eaten, food they would eat, eating food, or preparation
- Draw *Jack and the Beanstalk* play, potluck and other events from memory because not appropriate to draw at the time

- Draw pictures of what their question is about to help them remember their project questions (e.g., questions for site manager, etc.)
- Draw prediction of what food they will see on walk around preschool classroom, neighboring offices, and outside around the school
- Draw predictions of what expert will say about food and nutrition

*Observational drawing (LS26B1d)
- Draw corn and bean field site visit
- Draw corn and soybeans collected on field trip (Time 1 drawings)
- Draw food brought into classroom for their lunch (Time 1 drawings)
- Draw people working with food and plants (grocery store, cafeteria, pizza restaurant, green house, Busey woods and field mill) from field site visits
- Draw plants, seeds, digestion and mold (artifacts brought in by experts)
- Revisit observational drawings and elaborate, edit, and revise to make Time 2 observational drawings of lunch food, seed sprouts, corn and soybeans

*Painting (LS26A1e)
- Paint food, plant, mold, digestion and animals eating pictures
- Paint fire tractor, dough flattening machine, and mixing bowl with dough hook made with boxes & junk
- Paint murals (depicting themes of the project) for open house and culminating display
- Revisit observational drawings to add detail or information and color with water colors

*Relating art to literature
- Draw pictures and write responses to *Jack and the Beanstalk, The Hungry Thing, There was an old Lady Who Swallowed a Fly, The Little Red Hen, etc.*

*Representations (LS26A1e)
- Create food pictures on the computer with Kid-Pix
- Create "food" mural
- Draw pictures to imitate artistic style of known artist
- Make two-dimensional drawings on a variety of food, plant, seed, digestion, mold, animals eating subjects that they drew throughout the investigation

*Responding to music (LS25A1c, LS26A1c, and LS26B1c)
- Listen for fast/slow, high/low, soft/loud and musical patterns
- Listen to sounds at food field site (feed mill, pizza shops, and cafeteria) and reproduce sounds with instruments
- Move creating a simple creative dance and draw after listening to classical music
- Write a poem with words to describe sounds

*Singing, movement and dance (LS25A1a and LS26A1a)
- Create a simple dance

- Sing *Found a Peanut; Oats, Peas Beans and Barley Grow; At the Corner Grocery Store; There was an Old Lady Who Swallowed a Fly; Take Me Out of the Bathtub* as well as tap and clap to the beat

*Viewing visual art exemplars (LS25A1d)
- Discuss art prints that feature food and analyze elements of art - line, shape, color and texture

Language and Literacy

*Analyzing (LS5B1a)
- Analyze information gathered through field studies (field notes, data tabulation, video of expert interviews, photographs, etc.)

*Classifying
- Classify memory drawings
- Classify questions that children asked to pursue study groups
- Sort and classify ideas for Student Food Topic Web 1 and Student Food Topic Web 2.

*Comparing
- Compare and articulate differences in definitions
    - Photosynthesis, chlorophyll
    - Large intestine, small intestine, pancreas, liver, esophagus, rectum
    - Herbivore, carnivore, omnivore
    - Mycelium, spore, mold, tentacles
    - Taste buds, salt, sweet, sour, bitter
    - Tilting skillet, griddle, steam jacket kettle, stack oven, proofer
    - Egg, shell, membrane, poached, coddled, scrambled, fried, sunny-side up
    - Restaurant, cafeteria, café
    - Food chain, food source, water cycle
    - Parts of plant - flower, seed, fruit, root, stem leaves
    - Pizza, loaves, rolls, hallah, humantachen
- Compare different kinds of cooking equipment
- Compare different kinds of exotic fruits
- Compare different kinds of tastes
- Compare different kinds of ways eggs could get cooked
- Compare temperature needed to make yogurt, cookies, bread

*Critical thinking (LS5A1a)
- Decide on what to present for culminating event
- Decide what to include in mural for culminating event
- Predict, hypothesize, or theorize the answers to their questions
- Support own opinions when responding to questions such as the following:
    - How does your body use food?
    - What food is bad?

  - What is important about food?
  - Where does food come from?

*Developing oral language (LS4A1a and LS4B1b)

- Brainstorm what they remember about food
- Categorize and label to form a topic web or graph
- Design survey questions and ways to show results of surveys - example - How many times do you eat in a day? How many soybean products do you have in your house?
- Discuss in group meetings (whole class, small group, or one-to-one)
  - Food project "opening event"
  - Help in solving problems
  - Puzzling questions
  - Question of the day
  - Responses to different versions of *Jack and the Beanstalk*, *There was an Old Lady who Swallowed a Fly*, and tunes for *Chicken Soup with Rice*, and art exemplars
- Interview experts
- Listen in large group discussions, small group, one to one, and to experts
- Report progress on representations, experiments, research, etc.

*Formulating questions (LS4A1b and LS5A1a)

- Develop researchable questions
- Ponder questions at the beginning, middle and end of the project

*Integrating new vocabulary

- Brainstorm words they know about the topic before and after studying (Topic Web I and Topic Web II)
- Use new vocabulary words in conversation

*Making lists

- Characters for puppet show and plays
- Jobs related to food and nutrition
- Kinds of food in our school
- Make lists of what they might see
- Make lists of what they would like to research
- Questions to be asked on parent questionnaire
- Questions, predictions, and findings
- Vocabulary list
- What kinds of things are eaten and by whom
- What they had learned
- What they might do
- What they would need for their representations, models, etc.

*Planning

- Develop power point presentation
- Draw a design for representation

- Follow phases of writing, and pre-write and discuss ideas for "*Jack and the Beanstalk, Three Little Pigs* innovation" stories
- Write web for food and plant knowledge

*Presenting (LS4B1a)

- Explain food posters, models, PowerPoint presentations, representations, stories, puppet show and food skit to the neighboring classroom and parents at the Open house and culminating event
- Serve food for the Pizza Sale and Culminating Pot Luck
- Share personal food story with the class
- Share progress on representations with the class
- Share stories, puppet show and poems written about food with the class

*Reading (LS5A1b)

- Choose food, plant, body and digestion books for Independent Reading time
- Dictate a project experience story (after a field trip, after talking with an expert)
- Make a book out of experience story
- Read about length of small intestine and mold from an Internet search
- Read child authored stories
    - Adapted stories
    - Co-operative stories
    - "Jack and the Beanstalk, There was an Old Lady and Three Little Pigs" innovations
    - Poems
- Read nursery rhymes booklets - *Pat-a-cake, Little Tommy Tucker, Lady who lived in a Shoe, Four and Twenty Blackbirds* etc.
- Use experience story for reading

*Reflecting

- Brainstorm "What I Now Know"
- Edit stories for publication
- Respond to the literature through writing or discussion
- Self - evaluate
    - Edit writings for publication
    - PowerPoint presentations
    - Progress to complete any part of the project
    - What I have learned about the project
- Think about and write or tell "what I learned" after field visits

*Using references and resources (LS5A1b)

*Writing (LS5C1a)

- Book log entries of the title, author, date and comments about books read
- Describe the sound of animals at the farm
- Label parts of a plant

- Plan representations and presentations for culminating event
- Record field trip and expert findings
- Write books that integrate new knowledge about food
- Write food chain
- Write food questions
- Write innovation stories
- Write invitations for culminating event
- Write memory stories about food
- Write number stories about the project
- Write or dictate a self-evaluation of food project
- Write poetry that integrates food
- Write PowerPoint presentation
- Write predictions of what they will find out on field trips or from experts
- Write reports on what they have learned
- Write stories about various aspects of the topic
- Write survey questions
- Write thank you letters to the experts
- Write web of what they know about food and plants

Investigative Skills-Science

*Exploring (LS11B1c)

- Explore questions such as the following:
  - Where does food come from?
  - Do you have all the food groups in your lunch?
  - What is "junk food?"
- Dissect a lima bean seed soaked over night
- Taste salty, sweet, sour, and bitter food
- Compare the feel of flour, cornmeal, cornstarch, baking soda, sugar, salt
- Use bread dough to form pizza, loaves, rolls, hallah, humantachen
- Grinding seeds (wheat, beans, and corn)

*Experimenting (LS11A1c, LS11A1f, LS11B1b, and LS11B1d)

- Answer questions such as the following:
  - Will mold form on everything - bread, fruits & vegetables, cheese, etc?
  - How long will it take to form mold?
  - How can mold be stopped?
  - Will plants grow with and/or without air?
  - Will plants grow with and/or without sunlight?
  - Will plants grow with/or without soil?
  - Will plant grow with/or without water?
  - What kind of food does the classroom turtle prefer?
  - What kind of food do worms prefer?
  - What do chocolate chip cookies taste like without the chocolate chips?

* Investigating (LS11A1b)
- Is water a food?
- How does the body use food?
- How do plants make food?
- How does food help our body?

*Observing (LS11A1a and LS11A1e)
- Dissect and describe parts of seeds and plants
- Observe mold
- Observe corn
- Observe soybeans
- Observe wheat
- Observe food from lunch

*Predicting (LS11B1a)
- Predict descriptions what food is available in the neighborhood
- Predict possible answers to questions formulated before talking to an expert
- Predict prior to conducting experiments
- Predict purpose of kitchen tools and equipment
- Predict what kinds of food are in our school and CRC

*Reporting (LS11B1e)
- Report the test process and results of their experiments
- Report what small investigating group found out on field site visit

Numeration and Problem Solving

*Counting (LS6A1b, LS6D1, LS10B1b)
- Count and compare the following:
    - Number of corn kernels on an ear of corn
    - Number of cups or fractions of cups when measuring
    - Number of inches, centimeters, pounds, ounces etc. used in measuring
    - Number of soybean seeds in a pod
    - Number of soybean seeds on a soybean plant
    - Number of wheat seeds on a stalk
    - Tally what they see on their field trips

*Estimating
- Estimate the following:
    - Amount of something (beans, etc.) that would fit into a container
    - Length, height and width of objects before measuring (ear of corn)
    - Number of days to an event, e.g., seed will sprout
    - Weight of objects before weighing (pumpkin, apple)

*Measuring (LS7A1a, LS7A1b, LS7A1d)

- Measure number of days until seeds sprout
- Measure the following items converting nonstandard measurement to standard measurement by comparing Cuisenaire links, Cuisenaire rods, inches and centimeters
    - Bean plant
    - Ear of corn
    - Onion plants
    - Spider plant
- Measure the height, height, and width of corn, beans plant and wheat stalk, etc.
- Measure the temperature of oven when baking bread, cookies and yogurt
- Measure the temperature outside to communicate whether or not students would have an inside or outside recess.
- Tractor, dough flattening machine
- Use food to build representations
- Scenery for puppet stage
- Weight of classmates, corn, pennies, beans, etc.

*Organizing, analyzing, and communicating data (LS10A1a, LS10B1b, and LS10B1c)

- Develop bar graph displaying results from surveying peers
- Develop bar graphs displaying the results of the survey sent to parents
- Develop bar graphs representing data from field trips (e.g., what we saw on walking tour of CRC building, walking in the neighborhood and at the feed mill)
- Develop pie graph displaying the results of one of the survey questions sent to parents

*Problem-solving (LS6B1, LS6C1a, LS7C1, LS7B1a)

- Building the co-operative tractor

*Predicting answers to questions such as the following: (LS10A1b)

- How many pieces do I cut my crepe to get fourths?
- How much salt will taste good in pancakes?
- What is the temperature for baking bread?
- What temperature is good for making yogurt?

*Surveying (LS10B1a)

- How many bean products do you have in your house?
- How often do you eat?
- On Thanksgiving, how many times did you eat meat?
- On Thanksgiving, how many times did you eat vegetables?

*Using geometry

- Analyze geometric relationships
    - 2-dimensional shapes to 3-dimensional shapes
    - Drawings of representation to boxes and junk models
    - Drawings of representation to clay models

Social, Emotional Growth and Dispositions

*Communicating
- Engage in group discussion
- Frame questions skillfully
- Listen to others
- Negotiate roles, turn-taking, problems to solve
- Report progress of investigations at group meetings
- Share research
- Use new vocabulary

*Cooperating and collaborating while working with others
- Prepare displays
- Present final reports
- Study collaboratively in teams

*Empathizing with others and their needs
- Appreciate work of peers noting evidence of effort, care and originality
- Share friends, materials, space and time
- Share praise and appreciation of peers

*Enjoying

*Gaining confidence in abilities to do the following:
- Investigate
- Make presentations to an audience
- Observe people communicating more closely
- Remember experiences of foods
- Represent food in drawings
- Use a variety of mediums to express their ideas

*Helping peers
- Clean up joint project
- Discuss for better understanding
- Problem solve
- Represent

*Initiating
- Choose appropriate materials
- Experiment
- Predict and manage time
- Research to answer questions

*Persevering

*Persisting at a task

*Problem solving

*Risk taking

- State disagreements in conversations or at group meetings
- Support own opinions
- Verbalize estimations, predictions, and hypotheses