

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?"

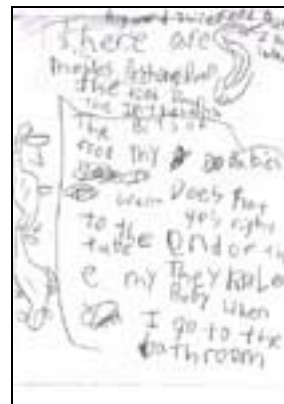


A veterinarian discusses a cow's four stomachs.

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't 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.


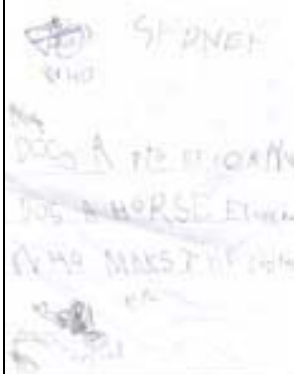
Individual Student Growth - Student Portfolios

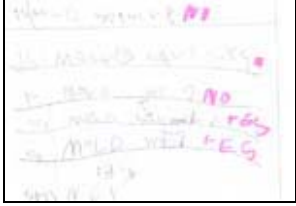

Throughout the year, teachers keep up portfolios of students' work samples. The teacher and students reflect and examine the documentation in the students' project portfolio, to evaluate individual growth in a project.

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	<p>"Do you like macaroni and cheese?"</p> 	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 5 th 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 <u>Teacher Food Questionnaire 1</u> .	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, <i>Jack and the Beanstalk</i> .
12/9/02	"Pancreas, tuber, pigs give milk, and mold can get everywhere."	CP brainstormed what he now knows for the <u>Student Food Topic Web 2</u> .	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 <u>Student Food Questionnaire 2.</u>	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.