

You Gonna Eat That?

Glenza Lowman

Overbrook Elementary School

Overview

Rationale

Objectives

Standards

Strategies

Classroom Activities/Lesson Plans

Annotated Bibliography

Overview

If writing is my gift then science is my nightmare. I have always been overwhelmed by the concepts of science; how they are investigated and the many formulas needed to find an outcome. My more creative side believes there is an easier, natural order of things--the ebbs and flows of the universe. Don't get me wrong--I admire the achievements of science and the dedicated life changers whose craft affords me the opportunity to live longer, stronger, and wiser.

But I am what I am. An observer. A linguist, by nature, whose job it is to paint pictures of the words using rhythm, rhymes, and syncopated phrases. That's why I love teaching Kindergarten. I can use my creative side, to paint pictures of activities that stimulate academic, social, and intellectual growth in my students. I have even learned to appreciate the "Science" curriculum offered in the District. While the topics remain the same year to year, I try to engage students in new ways at looking at old science concepts. And what better way than to intrigue them with food?

This unit of study, while rehearsing themes about preventable diseases, exercise, and nutrition, allows me to use the biology of food as a precursor to the exploration and investigation of these themes at an elementary level. The investigations and information I learned from the Biology of Food Seminar exposed me to interest I've held about food, the chemical nature of milk, cell biology, photosynthesis, plant and animal structure, the origins of agriculture and conventional and sustainable farming. The lessons were presented in ways that intrigued me and offered me a behind the science look at ordinary occurrences.

The lecture has helped me to scaffold science lessons by using food to encourage my students to think about what they eat in different ways. I imagined my original apprehensions about science mirror the feeling of students who are not exposed to science enough. Hence, the goal of this curriculum is to introduce "scientific" concepts at age appropriate levels to help awaken primary students natural curiosity about the

world, while engaging in pedagogical investigations that set forth the discipline of research and science as they apply to real life.

Rationale

As noted on the Brevard County School District's website, "This will be the first generation, in modern time, that is going to have a shorter life span than their parents." Imagine that. Parents will live longer than their children primarily due to non-infectious, preventable diseases that present themselves as a result of obesity and being overweight. There is a need to educate children, at an early age, about these health concerns. "Research has shown that health education is more effective when content is aligned with skills practice." (Harcourt, page 4) A science curriculum on the foods we eat would provide a platform that allows children to make healthier food choices, as well as, enable them to learn about food biology. Most school systems don't introduce health and nutrition lessons until the third grade. However, a dedicated science curriculum that teaches about the biology of food, food sources, healthier alternatives, and fitness that fosters a greater access to resources should push this generation into a greater responsibility for eating intelligently. "Research shows that most students in health-oriented schools are better at practicing healthful behaviors ..." (Harcourt, page 5.) Thus, this curriculum could serve as a primary strategy to start at the kindergarten level in order to "engage students in meaningful learning experiences...[that] afford opportunities to explore, analyze, and solve 'real life' health problems using the science of food as a strategy.

Objectives

The objectives of my lessons are as follows:

1. analyze a daily food list of their consumption
2. identify the parts of plants
3. identify the needs of plants
4. Photosynthesis of plants
5. compare and compare food factories and farms
6. categorize fruits and vegetables (root, stem, bulb, stem, flower, fruit, leaf)
7. review the five senses.
8. compare processed foods vs. genetically modified organic foods.
9. identify and compare family food cultures.
10. create an app that responds to taste buds.
11. create a classroom cookbook
12. grow a vegetable plant

Standards

1. PA Academic Standards for Health, Safety and Physical Education
10.1 Concepts of Health
10.2 Healthful Living

- 10.4 Physical Activity
- 10.4 Concepts, Principles and Strategies of Movement
- 2. PA Academic Standards for Science and Technology and Engineering Education
- 3.1 Biology Sciences
- 3. Reading, Writing, Speaking and Listening
- 1.0

Strategies

All lessons will include visual and auditory aids, tactile and kinesthetic activities, as well as, media and technology. Children will participate in whole group, small group and science investigations. A science journal, class work, and assessment will help monitor learning behaviors. Each lesson will be one day of a lecture followed by a second day of lab. The lecture will include a hook, introduction to concepts and vocabulary during whole group instruction, a teacher-led activity that the children will participate in and finally a journal/ worksheet that reviews the concept. On the second day there will be an investigation of the major concept being taught. After each investigation children will record their observation results and or question for further learning in their journals. Each week there will be a different theme and investigation/project:

1. Making ‘sense’ outta dinner (The Five Senses)
2. I Can See Green (Photosynthesis)
3. If It Don’t Snap...Put It Back (Edible Parts of Plants)
4. Taste This! (Tongue Sensitivity)
5. Take That! (Cultural Alternatives)

The culmination will be a trip to a farm where students will plant crops, harvest a seasonal fruit or vegetable, then make a healthy snack.

Classroom Activities/Lesson Plans

The lessons will be taught as follows:

I. Making ‘sense’ outta dinner

Objectives:

- a. Students will be able to name the five senses.
- b. Students will match each body part with its sensibility
- c. Students will create a food journal of their dinner, using the five senses to describe the meal.
- d. Students will add up calories in their dinner and compare with the USDA recommended amount.

Vocabulary: senses, ear, eyes, nose, tongue, hands, tasting, seeing, hearing, tasting, touching, smelling,

Materials: Profile of a child's body, markers, glue, scissors, science journals, Post-It notes, Growing and Learning book (Your Health) page 75 – 76, My Five Senses labels

Day 1: Whole Group

1. Teacher will introduce the five senses using a song, and then have the children sing along:

“Five Senses, Five Senses, we have them, we have them.
Seeing, hearing, touching, tasting and smelling.
There are five, there are five.”

2. Teacher will call upon student volunteers to help label the body part that matches the sense from the song. Then have children repeat the sense that matches the body part. i.e. eyes are for seeing, ears are for hearing, etc.
3. Students will return to their seats then create a five senses handbook. They will first sort magazine cutouts into groups of things they can see, hear, touch, smell and feel. Finally they will paste the cutouts under the My Five Senses labels (101 Ready to go Activities for every subject you teach, page38) in the handbook for assessment.
4. Students will be given a homework assignment. They will write down everything they ate for dinner in their science journals. As well as using their five senses to describe the meal.

Lab:

Materials” The Very Hungry Caterpillar, chart paper, markers, sentence strips, science journals

1. Teacher will read “The Very Hungry Caterpillar” then ask the children to name all the foods the caterpillar ate.
2. The teacher will list each food on the board then ask for student volunteers to describe the food using each of the five sense.
3. The teacher will then ask the class why they thought the caterpillar needed to eat all that food and create a list of responses for investigation.
4. The teacher will then post this question on a sentence strip “What happens to the food we consume?”
5. Students will be asked to take out their food journal from the previous day.

6. The teacher will model how to add up the food the caterpillar ate and the energy it took to chew, swallow, and build a cocoon using www.calorieking.com
7. The teacher will introduce the concept calories, energy, weight, and waste.
8. The teacher will then use a Tchart to demonstrate energy in, energy, out as a way to measure food intake and output.
9. The Students will compare the results to determine if he ate too much, not enough, or just the right amounts.
10. Students will then pair up and add up the calories they ate for dinner and any physical activity they did using the internet source.
11. After each pair is done the will compare their findings then discuss them with the whole group
12. Teacher will give a homework assignment. Each student must record 1 hour's worth of activity in the science journals.

II. I Can See A Rainbow...Photosynthesis

Objectives:

1. Students will identify the parts of plants
3. Students will identify the needs of plants
4. Students will compare and contrast different leaves
5. Student will conduct an investigation on the Photosynthesis of plants

Vocabulary: plants, fruit, vegetables, seed, root, stem, leaf, flower, food, water, air, photosynthesis, germinate

Materials: color words, food cut outs from The Very Hungry Caterpillar, tape, plants, fruits, vegetables, flowers, microscope, science journal, chart paper, glue Fruit and Veggie Worksheet, Nutrition Counts

Day 2: Whole Group

1. Teacher will introduce the concept of Photosynthesis using this song:

I Can Sing A Rainbow... Captain Noah

Copyrights for lyrics, words, music, and motion picture version held by Arthur Hamilton.

Red and yellow and pink and green Purple and orange and blue I can sing a rainbow, sing a rainbow, sing a rainbow too.

Listen with your eyes, Listen with your ears, and sing everything you see, I can sing a rainbow, sing a rainbow, sing along with me.

Red and yellow and pink and green, Purple and orange and blue, I can sing a rainbow, sing a rainbow, sing a rainbow too!

This song is fun for children to learn and sing; but please keep in mind that the true colors of the rainbow are Red, Orange, Yellow, Green, Blue, Indigo, Violet. In other words, a rainbow is composed of the colors of the [visible light spectrum](#), which is why those colors always appear in the same order or pattern within the rainbow.

Once you've enjoyed the song, please also visit our [coloring](#) website for more fun for you!

2. Teacher will call upon student volunteers to match the different foods the caterpillar ate with the colors on the chart. Students will be asked to respond by saying: the leaf is green, the apple is red, etc.
3. Students will then be asked to review why food comes in different shapes, sizes and colors. The teacher will write their responses on the board.
4. The teacher will then introduce the parts of plants and ask children to draw and label along with him/her in their science notebooks.
5. Students will then complete the Fruits and Veggies worksheet.
6. Students will be given a homework assignment. Students must look for examples of foods that are roots, stems, leaves and or flowers then bring pictures from food circulars back to school.

Lab:

Materials: Sentence Strips, Photosynthesis video, cut out of leaves, assorted leaves, science journals, seeds, cups, labels, potting soil, water, Wisconsin Fastplants Plant Light Box System

7. Teacher will post on the board a sentence strip that asks, "How do plants get their food?"
8. The teacher will ask student volunteers to name the ways that plants get their food. The teacher will record all responses on chart paper.

9. The teacher will then introduce the concept of Photosynthesis and explain why it is important to plants.
10. The teacher will then ask the children to pay close attention to the video about how plants get their food because they are going to participate in a science experiment using different “light” conditions in order to measure the optimal environment for growing plants.
11. After the video the children will be asked to review the list they created earlier, and either add new information or delete information.
12. Students will then return to their seats where they will be given instructions on how to plant seeds. Each group will have pre-labeled cups i.e. outside, flash light, red light, inside; potting soil, seeds, and water at their stations.
13. The teacher will model how to add the soil, add the seed, and water the soil the place in its spot for proper lighting. There will be four initial roles assigned. Then each week one person from the group will be responsible for feeding the plant.
14. After each plant has been placed, the teacher will hand out leaf specimens and magnifying glasses and ask the children to draw a leaf, in their journals, exactly the way the observe it under the glass.
15. Students will observe and record changes in leaves daily.

III. If It Don’t Snap...Put It Back!

Objectives:

- a. Students will identify foods from farm, factories, farmers markets, super markets and grocery stores
- b. Students will categorize fruits and vegetables using root, stem, bulb, flower, fruit, and leaf
- c. Students will make butter.

Vocabulary: farm, factory, farmers markets, super markets and grocery stores fruits, vegetables, grains, dairy and protein, fresh, processed, organic, healthy, snacks

Materials: color words, food cut outs from The Very Hungry Caterpillar, “What Will We Eat” worksheet, tape, plants, fruits, vegetables, flowers, microscope, science journal, chart paper, glue

Day 3: Whole Group

16. Teacher will lead the class in a rendition of “Old Mac Donald.” Naming people, places, animals, and foods that come from farms.
17. Teacher will review all of the things the students have learned about plants and leaves. Then using a sentence strip will write: “How do people get their food?”
18. The teacher will write the responses on a chart using chart paper.
The teacher will then review vocabulary words: farm, factory, farmers markets, super markets and grocery stores

19. The teacher will then introduce the USDA Food pyramid and ask children to identify and name their favorite food.
20. The teacher will then introduce concepts: fruits, vegetables, grains, dairy and protein then ask the children to match a food with a food group.
21. The teacher will then read “From Farm to Factory” and ask children to remember the foods that come from plants and animals on a farm.
22. The children will then be asked to match the food with the plant or animal using cutouts and a wipe off board.
23. Students will be asked to take out their collection of seeds, roots, stems, leaf, bulb and flowers from the previous day. They will then paste them onto Pre-labeled poster boards for seeds, roots, stems, leaves, bulbs, and flowers, displayed around the classroom.
24. The children will then be given a homework assignment: Make a grocery list with your family. Be sure to include all of the food you would eat in one day.

Lab:

Vocabulary: dairy, milk, cheese, butter, farm, animals, things, places, people

Materials: from “Food and Nutrition Activity, page 175 – 177, science journals,
“Food and Farming Activity, page 6 and 7

25. Teacher will post on the board a sentence strip that asks, “How is butter made?”
26. The teacher will ask student volunteers to answer the questions then record their responses on the board.
27. The teacher will then review the food pyramid then ask students to name products that come from animals’ milk.
28. The teacher will then ask, “do you think we can turn milk into butter like farmers do?”
29. The teacher will then model the investigation while asking children to look closely, using their senses to observe the changes that occur.
30. Children will then complete the experiment at the tables, recording the steps and changes in the liquid over time.
31. Students will complete the Food and Farming Activity for homework.

IV. Taste This!

Objectives:

- a. Students will investigate the characteristics of taste sensations
- b. Students will describe the mechanical components of taste
- c. Students will create a classroom app for healthier alternatives
- c. Students will measure energy consumed with energy used

Vocabulary: Taste, taste buds, tongue, salty, sweet, sour, spicy, energy, Food for Health book, Your Health Page 81 and 82,

Materials: mirror, poster board, scissors, glue, Nutrition Activity book, Food and Nutrition for Every Kid, pages 91 -1118)

Day 4: Whole Group

32. Teacher will ask students to find a partner then look at each other's tongues. Students will discuss what they see.
33. The teacher will then post a sentence strip on the board that asks, "Why do foods have different tastes. The teacher will read the strip then ask for volunteers to answer the question. The teacher will record each answer.
34. The teacher will then introduce properties of the tongue by drawing a tongue on chart paper, while labeling and explaining key concepts' papillae (bumps on tongue), taste buds (cells), bud pore (opening where liquids enter), nerves (send a message to and from the brain, wetness (saliva dissolves chemicals). The main tastes: sweet, salt, sour and bitter, and their locations on the tongue.
35. The teacher will then instruct students to label the tongue in their science journals using the pre-cut labels on their desk.
36. The children will then be given a homework assignment: gather ten foods from their home refrigerator. Then sort the foods into categories: salty, sweet, sour and bitter then record them in their homework books.

Lab:

Materials: blind folds, sugar, salt, lemons, hot peppers, water, science journals, scissors, glue, tongue worksheet

37. Teacher will review yesterday's lesson about taste and read the inquiry question.
38. The teacher will ask students to form a line then blind fold each student and tell them they will taste a food item, then record which taste elicited the most saliva, in the journals.
39. The teacher will then ask students to graph the taste according to flavor as recorded in their journals. Responses will be tallied and the class will make observations about the findings. Which taste elicited the most saliva, the least saliva?
40. The teacher will then ask students to name foods that are associated by taste. Students will then sort pictures of foods onto a worksheet of a tongue, according to taste.

V. Take That!

Objectives:

- a. Students will compare their lunch with recommendations from the USDA
- b. Students will create cultural comparable lunch
- b. Students will visit a farm
- c. Students will prepare a healthy snack using farm fresh foods

Day 5: Whole Group

41. Teacher will lead the class in a chanting game called:

“Hands Up to 85”

Hand up to 85

Goanna Give

Names of

Farm Foods

_____ a piece

And no repeats

No hesitation

Or Concentration

Beginning with...

asking students to name foods that come from farms. When the chanting ends the teacher will record the foods on chart paper then ask volunteers to sort them according to taste properties.

42. The teacher will then create a shared writing list of the foods the children ate during lunch.
43. The teacher will introduce the recommended daily allowances (1200 – 1400, 1400 – 1600, 1400 – 1800) then use the website calorie king to record the caloric intake.
44. The teacher will then ask the children how they could substitute their food choices for healthier alternatives. The teacher will record the new choice and their caloric intake.
45. The teacher will then introduce a video, which shows lunch meals around the world, and ask children to look for similarities and differences in their lunch meals.
46. After the video students will use a Venn diagram to compare and contrast American student lunches with Asian student lunches using shared writing.
47. Students will then be placed into four groups. Each group will have a menu: Italian, Jamaican, Chinese, and Vegetarian. Each group will be directed to create a lunch, dinner, or breakfast meal using construction paper and glue, based on the picture offering on the menu.

Lab: Solly Brothers Farm Trip

Objectives: Students will visit Solly Brothers Farm

Students will create a healthy snack

Standards addressed:

Science and Technology

3.1A Explore patterns that regularly occur in nature

3.2E Use the senses as tools with which to observe, collect information, classify and describe

3.3A Describe the needs of plants and animals

3.3 D Identify changes in living things over time

Environment and Ecology

4.6.4 Understand concept of cycles

4.6A Describe the basic needs of organisms

4.4.4 – Know the importance of agriculture to humans

4.3.4 – Identify how human actions affect environmental health

4.2.4 – Identify the needs of people

4.8.4 – Explain how human activities may change the environment

Know the importance of natural resources in daily life

Family and Consumer Science

11.3D – Classify foods by groups within MyPyramid including serving size and nutrient function with the body

10.1E/F – Recognize there are a variety of foods that can be grouped; Develop an understanding of the importance of eating healthy and the role of food in keeping the body healthy

Social Studies

6.1A Identify the role of people in a community and what they do to make a living

7.3A Identify how physical systems impact people

Vocabulary: crops, harvest, beehive, pollination, calcium, green house

Materials: Fresh fruit, vanilla Greek yogurt, cups, blender, labels from farmer markets, grocery stores, supermarkets, and factories.

Solly Brothers is a family owned farm operating in Ivyland, PA – specializing in education tours for school children. Trips will include a farm tour, agricultural lessons, and food tasting (see details below).

Farm Tours will include the following agricultural lessons and food tasting:

More Matters Super Heroes

- Farmer introduces a variety of fruits and vegetables that grow on the farm and has children identify them
- Farmer chooses a boy and girl volunteer and dresses them up with a cape and apron that identifies them as More Matters Superheroes
- Farmer asks why we need to eat lots of fruits and vegetables
- Farmer asks how many fruits and vegetables we should eat each day (5 – 9)
- Farmer asks children to hold up 5 fingers and count them
- Everyone takes the promise to eat 5 -9 fruits and vegetables each day

Farm Fun Factor

- Farmer asks children if they have ever watched “Fear Factor” on T.V. and explains that at the farm we will play a game called “Farm Fun Factor”.
 - In this game, children will be given some fruits or vegetables that grow at the farm but will have to eat them without knowing what they are.
 - They will close their eyes, put their hand out and wait until the farmer places some item in their hand.
 - When the farmer says “GO”, the children who have volunteered will put the food in their mouth, chew it up and stick their tongue out when they have finished eating it.
 - Children get to guess what fruit or vegetable they ate.
 - During the time the children are chewing, the other children are cheering them on.
- The goal here is to get children to try new fruits or vegetables without being afraid

Greenhouse Growing

- Children have a lesson in a greenhouse where they learn what a “greenhouse/hothouse” is and why it has its name.
- While in the greenhouse, children learn about how plants grow, in which seasons plants can grow and why and when the farmer needs to use a greenhouse for some plants

Bee Magic

At this rotation, children learn about the “magic” that bees do on the farm and how important it is to the growing of all food on the farm. The farmer has an enclosed glass beehive and the children get to see a hive in action.

- The farmer asks students if anyone there thinks they can turn some flowers into an apple.
- The farmer asks for a student volunteer and then all the children get to guess what magic words they should say when the student tries to turn the flowers into apples.
- Then, as the child holds the flowers, the farmer covers his/her hands with his own and everyone shouts out the magic words (abracadabra, ala peanut butter and jelly, etc.)
- When the child cannot make the flowers turn into apples, the farmer introduces the bees and tells about how they make magic by collecting the pollen and spreading it to the other flowers.
- The farmer shows the children on the apple blossom where the fruit will grow from after the bee does its magic.
- The farmer stresses how the bee is a good helper to farmer and very important to the growing of fruits and vegetables

Seasonal Crops

SPRING:

- Farmer talks with students about what is happening on the farm in spring and what chores the farmer has to do to ensure the crops grow in spring

- Tour of farm in hay wagon
- Children get to pick strawberries in the field to take home with them
- Children will taste test freshly picked strawberries that will be rinsed prior to tasting.

Milking the Cow Game

At this rotation, children learn about how the farmer gets milk from a cow and why it is important for them to drink milk

- The farmer discusses the importance of getting calcium for strong bones and teeth.
- Children play a relay game in which they "milk" a large wooden cow

48. Upon return, teacher will ask students to review how people get their foods from farms, factories, supermarkets, and grocery stores.
49. Students will then be asked to sort food items according to packaging.
50. The teacher will then ask students which foods are most nutritious then list the labels by nutritional value.
51. Students will then wash their farm fresh fruit and place it in the blender.
52. The teacher will add yogurt then blend and distribute.
53. Teacher will ask students to draw pictures of healthier substitutes for snacks they purchase at their corner stores.

Annotated Bibliography

Articles

ChopChop. The Fun Cooking Magazine for Families.2013. ChopChop Kids

This magazine is used in connection with the Eat Right Now program that provides nutrition lesson throughout the School District of Philadelphia.

McMahon, Karen A. 2008.*Supertasters- Updating the Taste Test For the A & P Laboratory*.Pages 398- 405 in Tested Studies for Laboratory Teaching, Volume 29(K.L. Clase, Editor)

This article was used a supplement to the Taste This lesson.

Royce, Christine Anne 2013.*Pondering Plants* in Science & Children. Pages 18 – 20, Volume 51 Number 3

This article was used as a reference for the photosynthesis lesson.

Books

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This book was recommended for the Biology of Food class.

Freeman, Sara E. and Hernandez. Cathy (2000) *Food and Farming*

This book was used for worksheets

Levetin, E. and K. McMahon (2008) *Plants and Society*, 6th edition.
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Lovenhem, P. (2002) *Portrait of a Burger as a Young Calf*
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McGee, H (2004) *On Food and Cooking: the Science and Lore of the Kitchen* .2nd edition.
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Siepek, Karen Lee (1994) Keeping Healthy (pp35 - 47)
This Step-By-Step Science Series was used for Nutrition and Food Cards.

Tolman, Marvan N. and Morton, James O. (1986) *Life Science Activities for Grades 2-8.*
Book 1.
This book was used as a reference for plant investigations.

Van Cleave, Janet (2002) Food and Nutrition for Every Kid
This book was used to supplement investigations on taste sensations.

Wedman-St.Louis, Betty. Nutrition Activity Book for Grades 1- 4. Page 24
This book was used to supplement investigations on energy /calories /physical activity.

Internet Resources

<http://www.brevardcounty.edu>. Brevard Public Schools k-8 Health Curriculum Guide.
This resource was used a reference on the needs of nutrition education in schools.

www.calorieking.com
This website was used as technology for an investigation on calories consumed.

<http://kids.niehs.nih.gov/games/songs/childrens/singarainbowmp3.htm>
This website was used for a song.

www.pde.state.pa.us
This website is a reference for Pennsylvania teaching standards for all content areas.

<http://fnic.nal.usda.gov/dietary-guidance/dietary-guidelines>
This reference website was accessed to help determine the daily caloric allowance for primary children.

<http://hbschool.com>

This website was accessed to use a reference for research on the preventable diseases of children, and statistical information.

www.TheMagicOfNutrition.com

This website was used in conjunction with a student handbook to reproduce age appropriate worksheets on foods and nutrition.

www.fastplants.org

This website was recommend and used to help create an artificial light source for the investigation of photosynthesis.

Miscellaneous

101 Ready to go Activities for Every Subject You Teach. Compiled by Mary Beth Spann. My Five Senses, page 38

This trade book was used for labels for the five senses investigation.

It's a Wonderful World. Teachers Guide. 2005 k12 Inc.

This Teachers Manual was used as part of the School District of Philadelphia's Science curriculum for Kindergarten.

Your Health. Teaching Resources. Grade K. 2000. Harcourt Brace and Company

This resource was use as an extension for learning using pull out books.

Nutrition Counts. The Magic of Nutrition. K-2 student Workbook. Eat Right Now

This student handbook to reproduce age appropriate worksheets on foods and nutrition

