Science
Unit 1
Food

- What is food and why is it important?
- How do we study food in Science?

UBD-Unit Plan[1]

[1] Adapted from: *Understanding by Design, Unit Design Planning Template* (Wiggins/McTighe 2005). Each unit plan is designed for 6-8 weeks of instruction, depending on student levels and length and frequency of class periods. The unit is mapped out in more detailed in the Unit Guide.

OVERVIEW[2]

Introduction

In Unit 1, students use everyday and special occasion breakfast foods to connect to home culture. It also introduces important scientific process skills, including making observations; sorting and classifying based on observations; using scientific tools; collecting and visualizing data; and communicating and sharing knowledge. Throughout the unit, language forms and functions come out of content targets to support students in the multiple literacies needed to communicate personal experiences and conceptual understandings around content knowledge and skills. As the first unit in the curriculum, we are tapping into student interest around food, specifically breakfast foods, and using this a way to get students excited about science.

The unit begins with students sharing breakfast foods as a way to learn more about home culture as well as the purpose of eating breakfast. Students will learn that despite the different foods eaten in their class and around the world, similarities exist across cultures. This will lead to the study of food groups with understandings of how to classify each group. Students will then progress into the scientific process of observation, using their five senses to explore food and food groups. They will learn how their senses work to gather information, exploring how senses can be enhanced using tools, such as magnification and scales for measuring the mass of different foods. Reading nutrition labels and understanding serving size will end the unit. Note that there is an instructional sequence that repeats across each set in Unit 1. The lessons progress using common routines that move students from experience to oral language to reading and writing print, then to review and assessment.

For the Unit 1 performance task, individual students will create and present their own chapter of a class book titled *What Does Our Class Eat for Breakfast?* The chapter contributions of each student will be compiled into a class text that students will use a resource throughout the rest of the year and return to in Unit 4. This product will be finalized during Week 6, and at the end of the unit, students will share their product in a gallery walk presentation.

Content Connections

Unit 1, across all content classes, introduces students to the discipline. Students begin with the foundations in each discipline, on which Units 1–4 will build.

- **Unit 1 ELA**: Students begin the year unpacking the concept of identity as a bridge to understanding character. Students create identity maps for themselves and analyze their shared characteristics. The identity map is the touchstone graphic organizer for labeling and describing people, including: name, gender, age, country, language, interests, and beliefs. Students begin to use the identity categories as way to analyze characters in text. Unit 1 builds the foundation for the Unit 2 study on human rights through the story *Nasreen's Secret School*.

- **Unit 1 FLL**: Students who are new to print begin Unit 1 with an introduction to the class and school community. Students learn the foundational oral and written skills of providing personal information (name, address, phone numbers, etc.) and how to navigate school (school layout, reading a map,

[2] This is a summary of the unit. The sections on the following pages describe the unit in more detail.

reading a schedule). Students are also introduced to the foundations of literacy as they learn beginning consonants and their sounds as well as beginning sight words and letter formation.

- **Unit 1 Math**: The first Math unit centers on the introduction of academic math and its real-world applications. For most and often all Bridges students, it is their first encounter with math instruction in a United States high school classroom. Therefore, a primary goal of Unit 1 is to encourage students' positive attitude and curiosity for mathematics. The unit essential question—*How do we use math to describe the world around us?*—builds the foundational understanding that we rely on math to describe, function in, and make sense of the world around us.

- **Unit 1 Social Studies**[3]**:** Unit 1 Social Studies introduces students to the foundations of geography and culture. Students enter into basic map literacy as they identify physical features (land, water, mountains, deserts) in pictures and on maps. They learn cardinal directions as they create maps of their home community. Through the culminating travel guide project, students connect the physical features of their home communities to cultural practices. Unit 1 builds the foundation for the Unit 2 study of the Trans-Saharan Salt and Gold Trade, a case study for the intersection of geography, resources, and culture.

[3] The Social Studies curriculum has not been revised, but the content of the existing Unit 1 for Social Studies is described here.

Texts			
Type	**Title**	**Author**	**Notes**
Non-Print: Video	*What Does the World Eat for Breakfast?*	Buzzfeed Yellow YouTube Channel	https://www.youtube.com/watch?v=ry1E1uzPSU0 *(Note: This video is on YouTube, so you will need to download it if your school does not allow YouTube access.)*
Non-Print: Video	*The 5 Fabulous Food Groups*	SciShow Kids	https://www.youtube.com/watch?v=L9ymkJK2QCU *(Note: This video is on YouTube, so you will need to download it if your school does not allow YouTube access.)*
Central: Whole-Class Text	*The Facts About Food Groups*	Bridges Science Curriculum Team	Included in materials for Set 2. All students need a copy.
Central: Whole-Class Text	*Understanding Our Senses*	Bridges Science Curriculum Team	Included in materials for Set 3. All students need a copy.
Central: Whole-Class Text	*Facts About Flavors*	Bridges Science Curriculum Team	Included in materials for Set 4. All students need a copy.
Central: Whole-Class Text	*Figuring Out Food Labels*	Bridges Science Curriculum Team	Included in materials for Set 5. All students need a copy.

STAGE 1 – DESIRED RESULTS						
Unit Targets[4]	**SET 1**	**SET 2**	**SET 3**	**SET 4**	**SET 5**	**SET 6**
I can **use my five senses to describe** (in oral and written language) the qualities of an object (e.g., color, shape, size, texture, arrangement). (P4)[5]			X	X	X	X
I can **use tools of science to describe in more detail**. (P4, P5, CC3)					X	X
I can **make observations about an object by comparing it to another object** (using prior knowledge of objects and adjectives related to appearance and other traits). (P4, CC3)			X	X	X	
I can **use numbers to describe an object**. (P4, P5, CC3)	X	X			X	X
I can **sort and classify my observations into groups** based on the presence or absence of characteristics. (P4, P6, CC1)	X	X	X	X	X	X
I can **justify my sorting and classification** using my observations. (P4, CC1)		X	X	X	X	X
I can **further sort and classify using more detailed observations**. (P4, CC1)		X			X	
I can **use my observations and my background knowledge about objects to make inferences** about an object's properties and processes. (P4, P6)			X	X	X	
I can **use my observations and inferences to develop a question and define a problem**. (P1, P6)						
I can **use my observations to make inferences** about the structure and function of an object. (P4, P6, CC1, CC4, CC6)		X			X	
I can **use my observations to make inferences and predictions** about relationships among objects and events. (P4, P5, P6, CC4, CC6, CC7)				X	X	X
I can **represent my observations** (quantitative and qualitative) in both tables and graphs. (P4, P5)	X	X	X	X	X	X
I can **explain the patterns and relationships** that I see in these tables and graphs. (P4, P6, CC1, CC2)		X	X	X	X	X
I can **convert my data** from numerical/visual to textual/verbal form. (P4, P4, P5)		X	X	X	X	X
I can **communicate results** orally and textually. (P8)	X	X	X	X	X	X
I can **develop a model**. (P2, CC4)	X			X		X
I can **use a model to describe and explain the function of an object or system**. (P2, P8, CCC4)	X			X		X

[4] Only targets new to this unit are included here.
[5] All standards refer to the Next Generation Science Standards (NGSS), Scientific Practices (P), and Crosscutting Concepts (CC).

Essential Questions & Enduring Understandings

Students will understand that ...

What is food and why is it important?

Food provides our bodies with energy. We need energy to do everything (walk, run, work, think, etc.). Breakfast is an important meal because it helps provide energy and nutrients for growth, keeps you awake during the day, and helps with learning. We make decisions about the food we eat every day. Foods can be categorized into bigger groups, such as healthy and unhealthy, or into the standard food groups (dairy, vegetable, fruit, etc.). These food groups are connected to where the food comes from, and remain constant across cultures (although people eat different types of foods). We need to balance the foods we eat across the food groups because different food groups do different things for our bodies. Food also connects us to our culture and memories. We can observe and share about our foods to build community in our class.

How do we study food in Science?

We get information about the world using our five senses, which are associated with specific body parts. We use these five senses to make observations about what we see, hear, smell, taste, and touch. Using these observations, we can describe foods based on different properties like colors, shape, size, smell, and texture. We can make more precise observations using tools, such as scales and hand lenses. We collect and analyze data to see patterns, and group things into categories based on common characteristics. We then represent this data in tables and graphs.

Set	Guiding Questions & Knowledge *Students will know that ...*	Skills *Students will be able to ...*
1 5 lessons	**What do people eat for breakfast in the U.S. and in their home countries? Why is breakfast important?** *Our bodies need food to survive because it provides us with energy essential for our body to function. Breakfast is an important meal because it gives us energy to start and work throughout the day and nutrients that our bodies need to grow and stay healthy. We make choices about food depending on many things, such as availability, affordability, and cultural experiences. Food connects us to our culture and memories, and sharing about our foods builds community in our class*.	• understand visual representations of numbers that describe the types of breakfast foods the class eats • sort and classify observations of breakfast foods into common groups of foods
2 5 lessons	**How do I classify foods into food groups?** *We make decisions about food we eat every day. Foods can be categorized into bigger groups called food groups (grains, fruits, vegetables, proteins, dairy, and other), which are connected to where the food comes from. People eat different foods across the world, but all from the same food groups. A healthy meal will have a balance of these different food groups.*	• collect and record data in a table • convert data into a bar graph • sort and classify observations into groups based on the presence or absence of characteristics • explain nutritional importance of eating a balanced meal with food from each group
3 5 lessons	**How do we observe and get information about foods? What can we learn about food using sight and touch?** *We use our bodies' senses (sight, touch, taste, hear, smell) to observe the world around us. These observations help us sort foods according to shared properties. Sometimes we use more than one sense when making observations to get more details.*	• use their five senses to describe (in oral and written language) the qualities of food • sort and classify observations into groups based on the presence or absence of characteristics • understand the connection between body parts and senses • collect and record data in a table • convert data into a bar graph

4 5 lessons	**How do we observe and get information about foods? What can we learn about food using taste and smell?** *When we eat, we use our senses of taste and smell. Taste buds on our tongue help us identify foods. Smells work with taste to help us identify flavors of foods. Smells also connect to memories and emotions. They can remind us of stories and experiences of eating from our culture.*	• use their five senses to describe (in oral and written language) the qualities of food • sort and classify observations into groups based on the presence or absence of characteristics • label body parts on a diagram • illustrate how senses work together • make inferences about foods based on observations • make connections between smells and memories/past food experiences
5 5 lessons	**How do we use tools to help us get more detailed observations of our food?** *Our senses are limited. In order to know more details about the world around us, we use tools to help enhance our senses. Such tools include hand lenses to magnify our sense of sight and scales to measure mass of foods. We can represent this data in tables and graphs, and can analyze it to know the nutrition of foods. This is important for staying healthy and it helps us choose more healthful foods to eat.*	• describe foods in more detail using tools of science (e.g., hand lens, microscope, scale) • use numbers to describe the amount and mass of food and serving size. • order foods according to mass • use numbers to compare the amount of nutrition content in different types of cereal • sort and classify my observations into groups based on the presence or absence of characteristics • read and interpret nutrition labels of foods and beverages
6 6 lessons	**How do I describe my breakfast experience in my home?** *Food connects us to our culture and memories. Observing and sharing about our foods builds community in our class. People eat different foods across the world, but all from the same food groups*	• create a model of their special occasion breakfast • label foods, food groups • record data in a table • convert data into a bar graph • make observations of foods using senses and tools • use numbers to describe their breakfast food, including how many food groups and nutrition represented • explain cultural significance of special occasion breakfast • use a self-assessment checklist to evaluate their work

STAGE 2 – ASSESSMENT EVIDENCE	
Major Assessments	
Beginning Assessment On Demand[6] - Individual	**Answer the EQs** (NGSS P6, P8) In the beginning of Set 1, students will use their own prior experience and knowledge to answer the essential questions of this unit. These responses will be compared with the final assessment.
Mid-Unit Assessment On Demand - Individual	**Survey of Our Favorite Breakfast Foods** (NGSS P4, P5, P6, P8, CC1, CC3) At the end of Set 3, the class will complete a poll about what everyone prefers to eat for breakfast, out of five choices. Each choice represents a different food group. The class will tally results of the poll. Individual students will then graph the numbers of each choice, identify the corresponding food group that matches each choice, and add descriptions and observations of each food group.
Performance Task[7] Over Time - Individual	**Book Chapter & Gallery Walk: *What Does Our Class Eat for Breakfast*?** (NGSS P2, P4, P5, P6, P7, P8, CC1, CC3, CC6) Throughout the unit, students will practice the individual tasks that go into their class book *What Does Our Class Eat For Breakfast?* Their chapter will include a diagram of a special occasion breakfast plate and beverage, the names and food groups for the individual foods, a written text with physical and cultural description of the breakfast, and nutritional information. Students will produce a diagram and written text and present their final product in a gallery walk in Lesson 30.
Final Assessment On Demand - Individual	**Answer the EQs** (NGSS P6, P8) In Lesson 31, students will use what they have learned and experienced in the class to re-answer the essential questions of the unit. These responses will be compared to their Beginning Assessment to evaluate growth.

[6] On Demand refers to an assessment completed in one sitting, without teacher support.
[7] See the Performance Task Description and Student Model for more details on this assessment.

STAGE 3 – LEARNING PLAN	
SET 1	**What do people eat for breakfast in the U.S. and in their home countries? Why is breakfast important?**
1	Kinesthetic Experience: Sharing and Graphing Breakfast Foods
2	Oral Language Building: Drawing My Special Occasion Breakfast
3	Reading Text: Comparison of Common Breakfast Foods
4	Writing: Describing My Special Occasion Breakfast
5	Reviewing/Assessing Skills: Sharing My Breakfast
SET 2	**How do I classify foods into food groups?**
6	Kinesthetic Experience: Properties of Food Groups
7	Oral Language Building: Classifying Food Groups
8	Reading Text: Food Groups and Introduction to Nutrition
9	Writing: Classifying Breakfast Foods into Food Groups
10	Reviewing/Assessing Skills: Quantifying and Representing Food Group Class Data
SET 3	**How do we observe and get information about foods? What can we learn about food using sight and touch?**
11	Kinesthetic Experience: Making Observations of Food
12	Oral Language Building: Observing Foods Using Our Senses of Sight and Touch
13	Reading Text: The Story of Our Senses
14	Writing: Observing a School Cafeteria
15	Reviewing/Assessing Skills: Mid-Unit Assessment
SET 4	**How do we observe and get information about foods? What can we learn about food using taste and smell?**
16	Kinesthetic Experience: Exploring Foods with Our Sense of Taste
17	Oral Language Building: Describing Foods Using Our Senses of Smell and Taste
18	Reading Text: Facts About Flavors
19	Writing: Smell and Memory
20	Reviewing/Assessing Skills: Sharing Stories About Food
SET 5	**How do we use tools to help us get more detailed observations of our food?**
21	Kinesthetic Experience: Enhancing Our Sense of Sight Using Tools
22	Oral Language Building: Measuring Mass of Food
23	Reading: The Importance of Measuring Foods for Nutrition
24	Writing: How Do I Interpret Nutrition Labels of Foods?
25	Reviewing/Assessing Skills: Evaluating Nutrition Labels of Foods

SET 6	How do I describe my breakfast experience in my home?
26	Kinesthetic Experience: Introduction to Performance Task
27	Oral Language Building: Performance Task: Breakfast Food Groups
28	Reading Text: Performance Task: Physical Descriptions of Food
29	Writing: Performance Task: Cultural Significance of Breakfast Foods
30	Reviewing/Assessing Skills: Sharing Final Performance Task
31	Reviewing/Assessing Skills: End of Unit Wrap-Up