Learning Gardens

Lesson Ideas from Our SEED Gardens

PREL

Learning Gardens: Lesson Ideas from Our SEED Gardens is a lesson guide developed by the teachers and PREL specialists engaged in Successful Early Ecoliteracy Development (SEED). From 2013-2016, SEED teachers and partners developed and implemented these garden-based lessons, designed to support students' literacy development in local languages and English as they explore their place, local foods, and cultural resources in and through the garden. Lessons were implemented at summer garden camps and during the school year.

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About SEED
Starting in 2013, SEED has been working to close the gap in literacy achievement through garden-based learning for students on Majuro, Republic of the Marshall Islands (RMI) and Kosrae, Federated States of Micronesia (FSM). SEED brings together schools, libraries, and museums to collectively support student achievement of local standards for language arts and science, targeting grades 2-3.

Thank you to all of the partners that helped to grow our SEED program!
RMI Ministry of Education · RMI Public School System · Alele Museum, Library, & National Archives · Kosrae State Department of Education · Rose Mackwelung Library · Kosrae Historic Preservation Office · Utwe Parents Association · Kosrae State Department of Resources & Economic Affairs, Division of Agriculture · College of Micronesia Land Grant (Kosrae) · PMW Farm (Malem, Kosrae) · Institute of Museum & Library Services · Pacific Resources for Education and Learning

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APPENDICES

PLANTING: PARTS OF A PLANT

LEARNING GOALS

- Use key vocabulary such as roots, stem, leaves, flower, fruit and "this is" and "these are" to name parts of a plant
- Create a labeled drawing for a plant found in the school community
- Summarize learning using sentence frame "We learned about…"

Approximate time: 1 hour 30 minutes

MATERIALS

- Pictures: eggplant (page 3), picture cards to go with key vocabulary (page 4)
- *From Seed to Plant* by Gail Gibbons (pp. 3-5, 20-29)
- Word wall cards
- Real plants from the community (if possible)
- Paper for drawing

SEQUENCE

Ongoing Observation	5 minutes	Have students record their observation and measurement for both lettuce and bean in English.
Activating Prior Knowledge	5 minutes	Show the picture of an eggplant plant Ask students what they see on the picture, and what makes up an eggplant plant Explain today we will learn about parts of a plant
Building Background/ Vocabulary (Word Wall)	10 minutes	Use the same picture of an eggplant Point to each part of the plant at different stage (stem, leaves, flower, fruit), say and label the name of each plant part, using "this is" and "these are". Have students practice naming the plant parts. Create word wall with all the key vocabulary words
Reading	30 minutes	Show the cover of *From seed to plant*, and ask students for title, author, and prediction on what they will be reading Read pp. 3-5 and 20-29 aloud. Name plant parts from text and on illustrations, using "this is" or "these are". Point out the words "roots" and "sprout", teach meaning, and add words to word wall. Reread the pages again. This time, ask comprehension questions throughout. E.g., • Page 3: do we have these plants in Kosrae/RMI? • Page 4: what are the different shapes, sizes, and colors of seeds? Add new words to the word wall as needed.

		• Pages 20-21: what are the children doing? • Pages 22-23: what do seeds need in order to grow? (review of previously learned concepts) • Pages 24-27: what plant parts do you see? Can we usually see the roots? • Pages 29-30: do you eat any of the foods? What plant parts do these foods come from? (fruits, seeds, roots)
Writing	30 minutes	Either bring different real plants from the school community to the classroom, or take students outside to observe different plants Have students pick a plant and draw it out. Label the different plant parts on the drawing Have students practice naming the plant and the different plant parts, using “this is” and “these are” Ask for volunteers to share out.
Wrap-Up	10 minutes	Review the key vocabulary from word wall. Have students pair up with a partner and teach each other the meaning of the words. Model and practice how to summarize learning, using the sentence frame “We learned about…”

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http://1.bp.blogspot.com/_TA21Q3gw-so/TH-9u1Hw8XI/AAAAAAAAAD0/8XzUNuDbYwU/s1600/seed_to_a_plant.jpg

https://pixabay.com/en/sapling-plant-growing-seedling-154734/

WHAT DO PLANTS NEED TO GROW?

LEARNING GOALS

- Use key English vocabulary such as seed, soil, water, and sun to explain orally and write what plant seeds need to grow
- Use the correct article (a, an) when writing

Approximate time: 1 hour 30 minutes

MATERIALS

- *How a Seed Grows* by Helene Jordan (pp. 3-8, 28-31)
- Pictures of different food plants (pages 3-6)
- Index cards with key vocabulary words
- Index cards with pictures for corresponding key vocabulary words
- Template for descriptive text (page 7)
- UHU
- Markers
- Board/chart paper

SEQUENCE

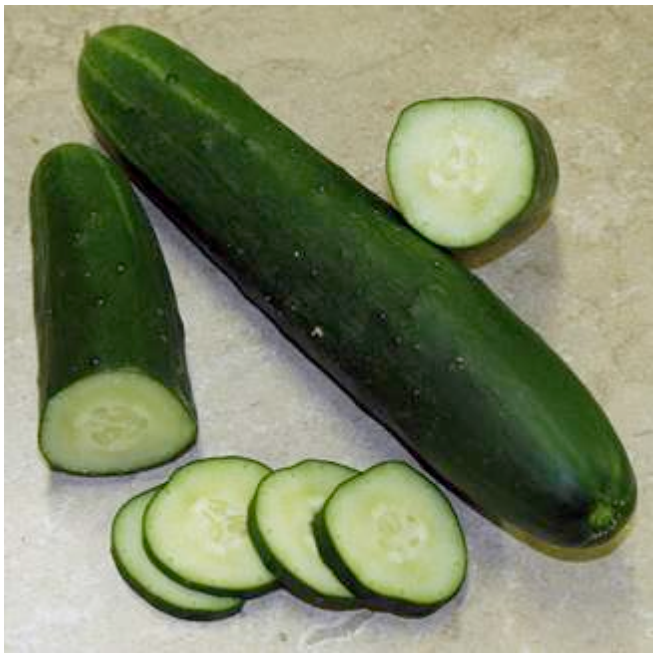
Activating Prior Knowledge	5 minutes	Briefly review what students learned in the previous activities. Ask the following questions: • What does the lettuce garden look like? • Why does the lettuce garden look that way?
Building Background/ Vocabulary (Word Wall)	10 minutes	Introduce the following words: seed, soil, water, and sun. Go over meaning and model making meaningful sentence for each word. Invite students to make additional sentences. Create word wall with students by matching each word with corresponding picture card.
Reading	25 minutes	Show the cover of *How a seed grows* and ask students for title, author, and prediction on what they will be reading. Read pp. 3 to 8, and 28 to 31, and point out key vocabulary. Read pp. 3 to 8, and 28 to 31 one more time. This time, ask comprehension questions throughout text. E.g., • After reading p. 3: What other plants come from seeds? Does the lettuce come from seed? • After reading p. 4: What does the tree seed look like? • After reading p. 5: What does the flower seed look like? Do we have flowers like this in Kosrae/RMI? • After reading p. 6: How many years does it take for trees in Kosrae/RMI grow?

		• After reading p. 8: explain to students we will be doing something with beans tomorrow ☺ • Before reading aloud the sentences on p. 29: what does a seed need to grow? Read the text together as a whole class. Ask students to identify key vocabulary words as they read the text.
Writing	45 minutes	10 minutes • Show pictures of different food plants. Use UHU to post onto board/chart paper, and label the food plants • Pick one food plant (e.g., eggplant), and explain the eggplant comes from an eggplant seed. Model: draw a picture of an eggplant seed growing in the soil, with water and rain. Write the following sentences: "This is an eggplant seed. An eggplant seed needs sun, water, and soil to grow." • Pick another food plant (e.g., cucumber). Ask a volunteer to explain where a cucumber comes from (cucumber seed). Ask another volunteer to draw a picture of a cucumber seed growing. As a class, come up with and write the following sentences onto board/chart paper: "This is a cucumber seed. A cucumber seed needs sun, soil, and water to grow." 5 minutes • MINI LESSON: Read the two sentences together. Point out the use of "an" for eggplant and "a" for cucumber. Ask students why we used different words to explain the concept of one. Explain in English, we use the word "an" in front of words starting with vowels. Practice with a few common English words (desk, apple, pen) 20 minutes • Have students work in pairs to pick a food plant from the pictures, and draw and write their own text. 10 minutes • Have students share their drawing and writing
Wrap-Up	5 minutes	Review the key vocabulary from word wall Ask students: what do plants need to grow?

http://plantfinder.sunset.com/sunset/images/eggplant-m.jpg

http://ngb.org/images/year_of/hi_res/Eggplant_Twinkle_Seminis.jpg

http://vegetablegardeningideas.com/wp-content/uploads/2009/04/how-to-grow-cucumbers-300x225.jpg



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http://media.vocativ.com/photos/2015/01/Banana-Chemical-Compounds-Poster-013733292695.jpg

http://upload.wikimedia.org/wikipedia/commons/b/b6/Banana.plant.kewgardens.arp.jpg

http://www.esri.com/news/arcnews/summer12articles/summer12gifs/p7p1-lg.jpg

http://2.bp.blogspot.com/-M_AGQKM8CpE/T18aSg1Jool/AAAAAAAAE3w/z2brnQBoGq4/s1600/breadfruit+cut.jpg

What do Plants Need to Grow?

Name: _____

Date: _____

Pick a food plant. Draw a picture of the plant seed growing. Write about what the plant seed needs to grow.

This is _____.

_____ needs _____

_____ to grow.

MEASUREMENT (LENGTH AND HEIGHT)

LEARNING GOALS

Use key vocabulary such as long, tall, and inches to measure length and height of different things

Approximate time: 1 hour 15 minutes

MATERIALS

Two pencils of different length, printable 12-inch ruler (page 3), word wall cards, picture cards to go with word wall cards

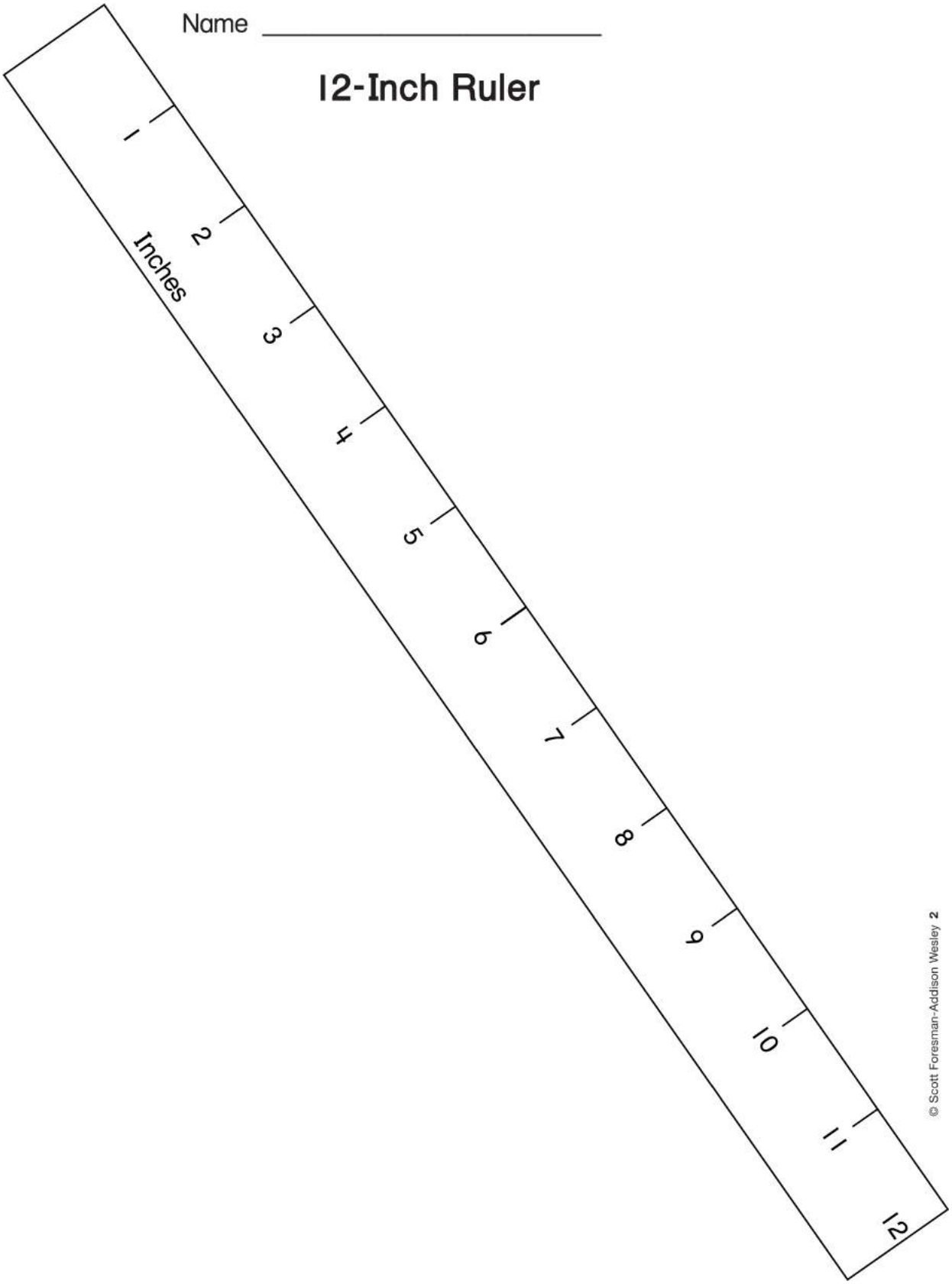
SEQUENCE

Activating Prior Knowledge	5 minutes	Show students two pencils of different lengths. Ask which one is longer Ask students what can they do to find out how long each pencil is. Possible responses include non-standard tools such as the span of hand, a piece of string, and standard tools such as ruler. Explain today we will do some measuring activities
Building Background/Key Vocabulary (Word Wall)	10 minutes	Introduce the following words: long, tall, inches, ruler, measure. Go over meaning (differentiate between long and tall in the measurement sense: long is going sideways, tall is going up and down), and model making meaningful sentence for each word. Invite students to make additional sentences. Create word wall with students by matching each word with corresponding picture card.
Interactive Practice	55 minutes	• Give each pair of students a 12-inch ruler • Have them look closely at the inches indicators. Have them put their fingers on the beginning of the ruler. Repeat for the end of the ruler. • Ask questions such as the following: where does the measuring part of the ruler start? Where does it end? How long is 6 inches on your ruler? • If students are unfamiliar with using their ruler, ask them to draw a line 6 inches long on a piece of paper, and pass their line to another person or team to be checked. • Hold up one pencil and ask: How long is this pencil? How do you use the ruler to measure? Call on volunteer to demonstrate. Guide volunteer to show the correct way to use the ruler—place the ruler against the pencil, identify the starting point to measure, move to the end point of the pencil you are measuring, and read the last number on the ruler that is alongside the pencil.

		• Ask students to take out their pencils and measure how long their pencils are. Ask volunteer to share, using the key words: The pencil is _____ **inches long**. • Ask students, how long is a desk (in the classroom). Ask student volunteer to demonstrate. Guide volunteer to show how to measure something that is longer than the ruler: the end point becomes the start point; add up the total number of inches. • Ask students to work with their partners to measure how long their own desks are. Ask volunteer to share, using the key words: The desk is _____ **inches long**. • Ask students, how tall is a chair (in the classroom). Ask student to volunteer to demonstrate. Guide volunteers to show how to place the chair against the wall or a piece of chart paper, use a book or other flat object to be placed on top of the chair, and use a chalk or other marker to create a height marker on the wall or chart paper. Once the height marker has been placed, the student volunteer may sit down and the class can coach the teacher through measuring the height of the marker, using the ruler. • Have students work in pairs to measure how tall a chair is. Ask volunteer to share, using the key words: The chair is _____ **inches tall**. • Assign student pairs with different classroom objectives to measure how long or how tall those objects are. E.g., door knob, book case, chalk board. • Have each student pair share out their measurement, using the key words: The _____ is _____ **inches long/tall**.
Wrap-Up	5 minutes	Review the key vocabulary from word wall Ask students, what can we use to measure?

Name _____

12-Inch Ruler



MAKING OBSERVATIONS AND PREDICTIONS

LEARNING GOALS

- Use adjectives to make observation
- Ask questions about observation
- Use the word "I think" and "will" to make prediction

Approximate time: 30 minutes

MATERIALS

pictures of lettuce plants at different growth stages (pages 3-4); index cards, markers; a set of leaves from the same plant, enough to have one leaf for every pair of students; different types of leaves from the school community, scratch paper for drawing

SEQUENCE

Activating Prior Knowledge	5 minutes	Show students one picture of lettuce plants. Ask: • What is this? • What does it look like? Show students another picture of lettuce plants. Ask the same questions again. Explain today we are going to learn how to observe
Building Background/Key Vocabulary (Word Wall)	10 minutes	Introduce the following word: observe Go over meaning (to see and notice something) and model making meaningful sentence (e.g., We observe the lettuce grow in the garden) Ask students: what else can we observe? Can we observe a baby grow? Can we observe a fish move? Can we observe food being made? Have students explain how they make the above observations. Add the word "observe" to the word wall. Ask students for ideas for a picture to go with the word (e.g., eyes), and add to word wall
Interactive Activity	50 minutes	Introduction • Create a word bank on board/chart paper with the following columns: color, shape, size. • Give each pair of students a leaf from the same plant. Introduce the word "leaf" and add to word wall. • Model for students how to describe the leaf using the three categories from the word bank, and record examples. Clarify with terms in local language if needed and add next to the English words.

		• Ask students for more examples and record onto word bank. Students can give their examples in the local language first, and teacher can teach the corresponding English words. • Model for students how to use the descriptive words to describe the leaf: _____ *looks* _____. _____ *is* _____. Practice • Show students another leaf. Ask students questions about the leaf, e.g., "Is the leaf green?" "Does the leaf look round?" Teach students how to convert the descriptive statements into questions: *Does* _____ *look* _____*?* *Is* _____ _____*?* • Have a student volunteer come up and show him/her a different leaf. Have the student observe the leaf carefully. • With support from teacher, have student volunteer describe observation to rest of class, using sentence frames and word bank. Teacher records the observation on board/chart paper. • Rest of class can ask student volunteer additional questions about the leaf. • Using the information they are given, the rest of class draws draw the leaf from the description within a time limit (no more than 5 minutes) • When time is up, have student volunteer show the leaf and rest of class show their drawing. • Have another student volunteer come up and repeat. Making Prediction • Refer to lettuce observation done earlier. Show student an example illustration for observation. Use the word bank to describe the observation (e.g., "The lettuce is very small."), and write onto board/chart paper. • Explain to students it is helpful to make prediction to guess what will happen next. • Refer to the example lettuce observation. Model for students how to make prediction: I think the lettuce will look _____. Have students practice making prediction orally, using the sentence frame.
Making Observation and Prediction in English	20 minutes	Have students work independently to record their observation and prediction in English in their journal. Have students share their observation with a partner. Ask volunteer to share out.
Wrap-Up	5 minutes	Review the key vocabulary from word wall Ask students: how do we make observation? What words do we use to make observation and prediction?

http://rlsnyder.us/blog/2013/01/

http://sunnyfortuna.com/gardening/lettuce/dcp_8517.jpg

https://pixabay.com/en/lettuce-green-farming-field-plants-985499/

WHERE DOES RAIN COME FROM?

LEARNING GOALS

- Use key vocabulary words to explain where rain comes from
- Use the word "because" to explain why rain is important

Approximate time: 1 hour 30 minutes

MATERIALS

- A glass or bottle of water
- Pictures of rain in Micronesia (pages 3-4)
- *The adventures of Drippy the Raindrop* short story (pages 5-20)
- Diagram of the story setting (ocean, sun, sky, mountain, stream)
- Cut-out of Drippy the Raindrop
- UHU

SEQUENCE

Ongoing Observation	5 minutes	Have students record their observation for both lettuce and bean and prediction for bean English.
Activating Prior Knowledge	5 minutes	Show students a glass/bottle of water. Ask • What's in here? (water) Where does water come from? Students will probably give a range of responses such as the store and home. Show students different pictures of rain. Ask: • What is this? • What does rain give us? Explain today we are going to learn more about where rain comes from, and why rain is important.
Building Background/ Vocabulary (Word Wall)	10 minutes	Introduce the following words: raindrop, cloud, sky, heat Go over meaning and model making meaningful sentence for each word. Have each student draw pictures to show the meaning of one word. Add words and pictures to word wall.
Reading	40 minutes	Show cover of *The adventures of Drippy the Raindrop* short story, and ask students for title, author, and prediction on what they will be reading, using the key words "I think", "will" (from Making Observation and Prediction activity) Read aloud story with expression, and point out key vocabulary. Read aloud story again, this time pause throughout and ask comprehension question. E.g.,

		• Page 3: Why is Drippy getting hot? • Page 5: How does Drippy fly to the cloud? • Page 9: [Point to the clouds] What do you think will happen near the mountain? • Page 11: What's happening here? [it's raining!] • Page 16: Why is the stream moving faster? Where do you think the stream will take Drippy to? Show diagram of the story setting Together, label the different parts of the setting (ocean, sun, sky, mountain, stream) Show the cut-out of Drippy and ask where Drippy was at the beginning of the story. Place Drippy on ocean. Ask what happens next. Have a student volunteer go up to diagram and move Drippy to the next destination. Do the same to go through the rest (cloud, mountain, rain, stream) State that Drippy is a drop of rain. Where does rain come from? Ask why we need rain. Record students' responses. Have students practice using the word "because" to explain: We need rain because _____.
Writing	15 minutes	Ask if Drippy comes to Kosrae/RMI, what places will he go to? Have students draw out the setting of the places, and label with key vocabulary. Have students explain on the drawing why we need rain, using the sentence frame "We need rain because _____."
Wrap-Up	5 minutes	Review the key vocabulary from word wall Ask students: where does rain come from? Why is rain important?

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http://www.abc.net.au/news/2012-12-21/a-rainbow-shines-over-a-bay-in-the-pacific-island/4440114

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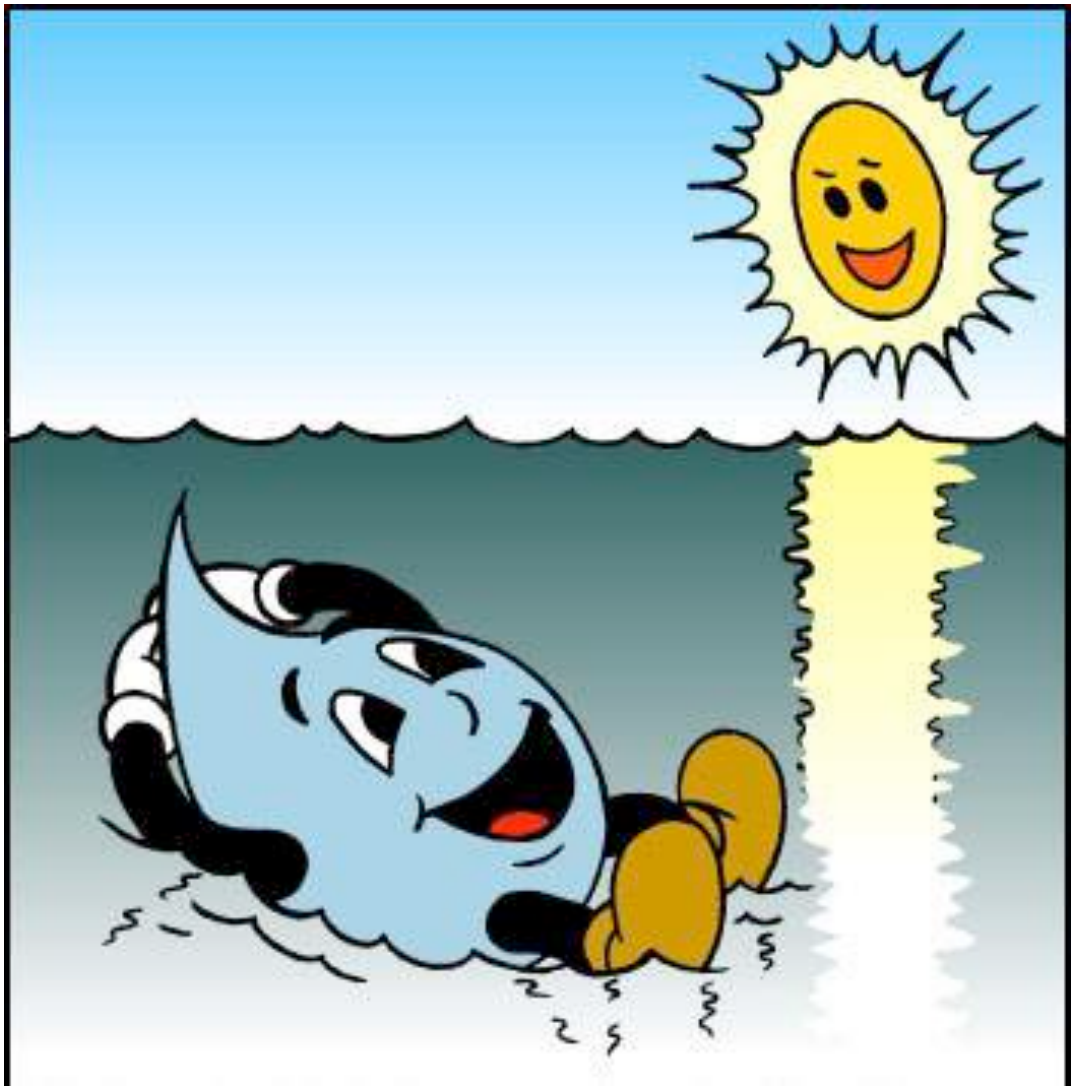
Adapted June 2014

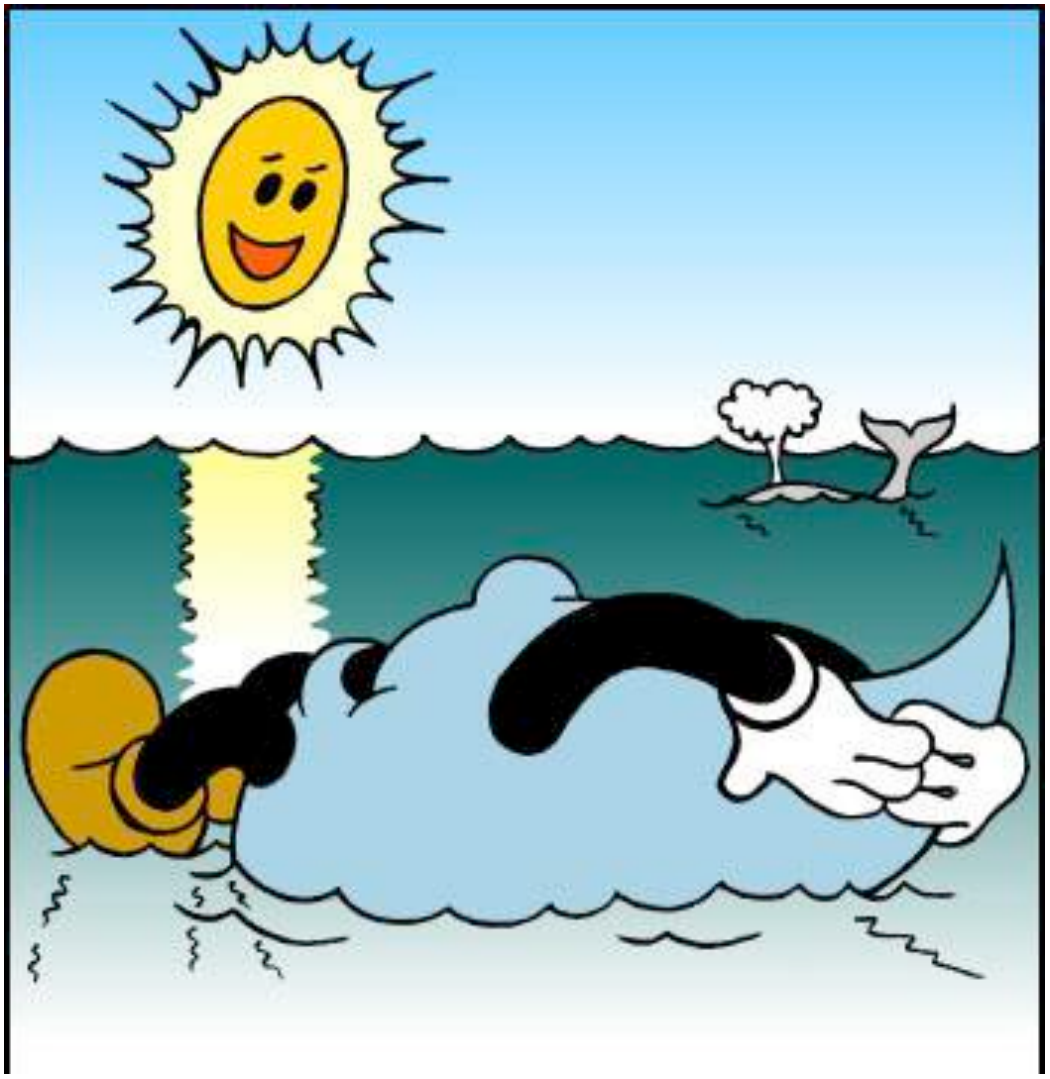
Retrieved and adapted from
http://www.drippytheraindrop.com/DrippysWorldTrialStories/ToMountainsAndBack/Entry.htm



Drippy the Raindrop is floating on the ocean.

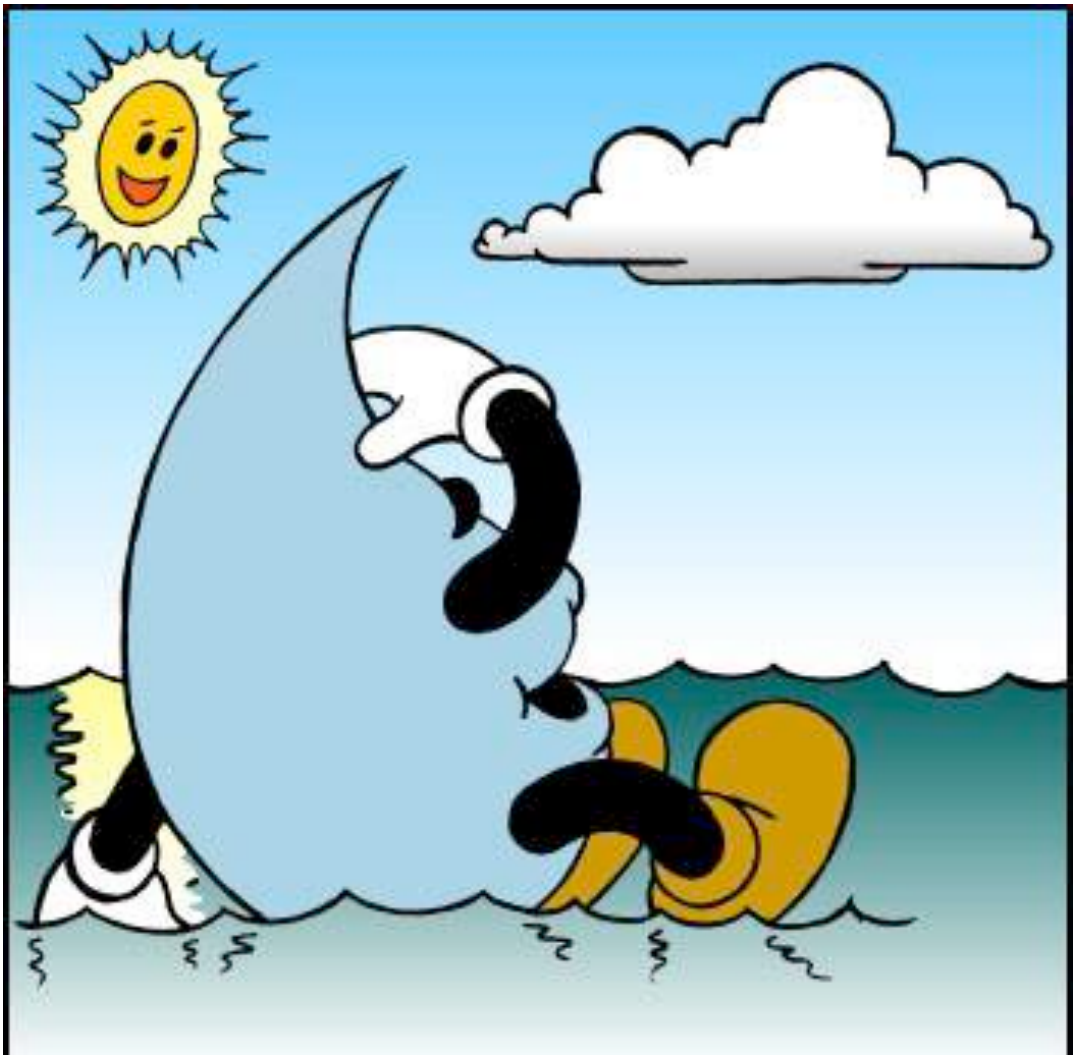
He looks up and sees his friend, Mr. Sun.

“Hi, Mr. Sun!” says Drippy.



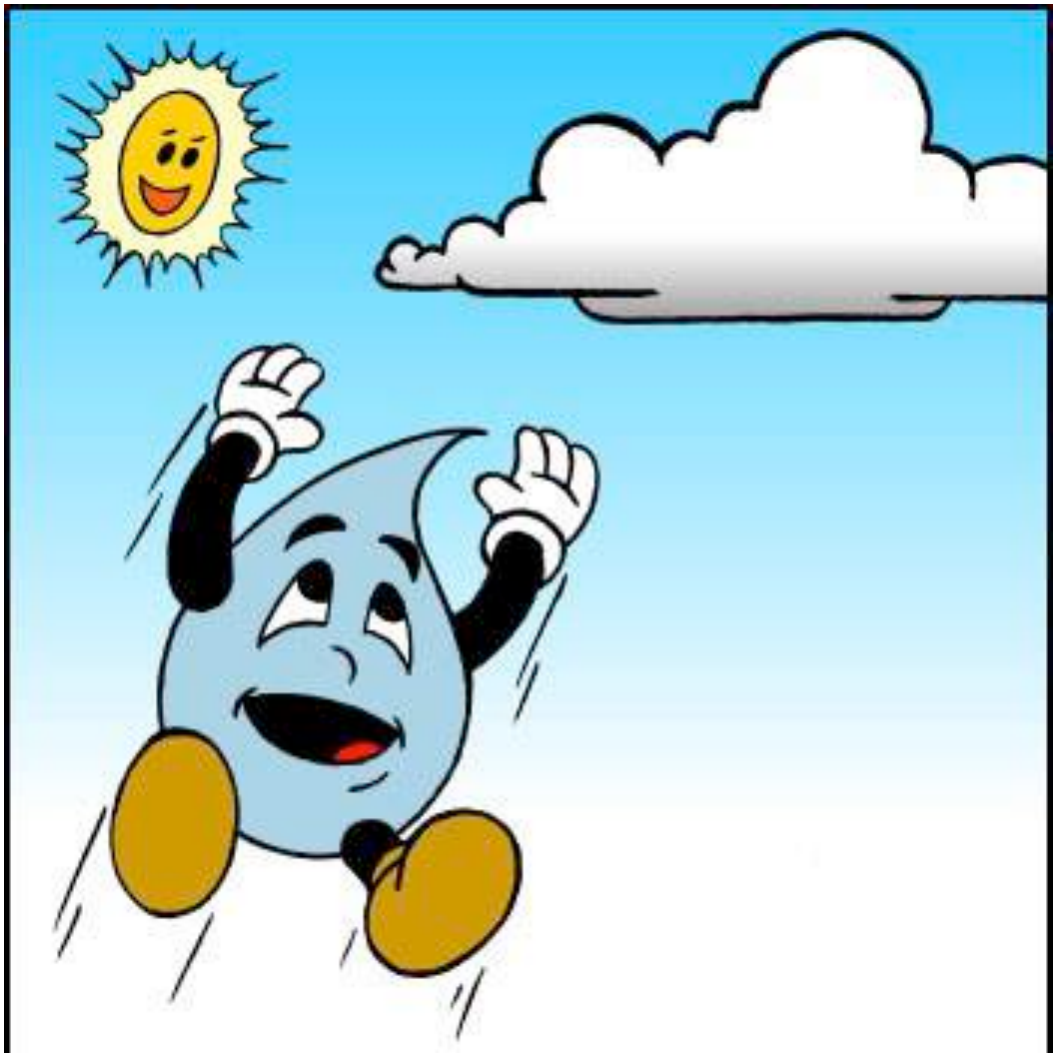
Mr. Sun rises higher and higher in the sky.

The heat makes Drippy very hot.



Drippy sees a cloud moving across the sky.

Drippy thinks, “The cloud looks nice and cool. Can I fly to the cloud?”

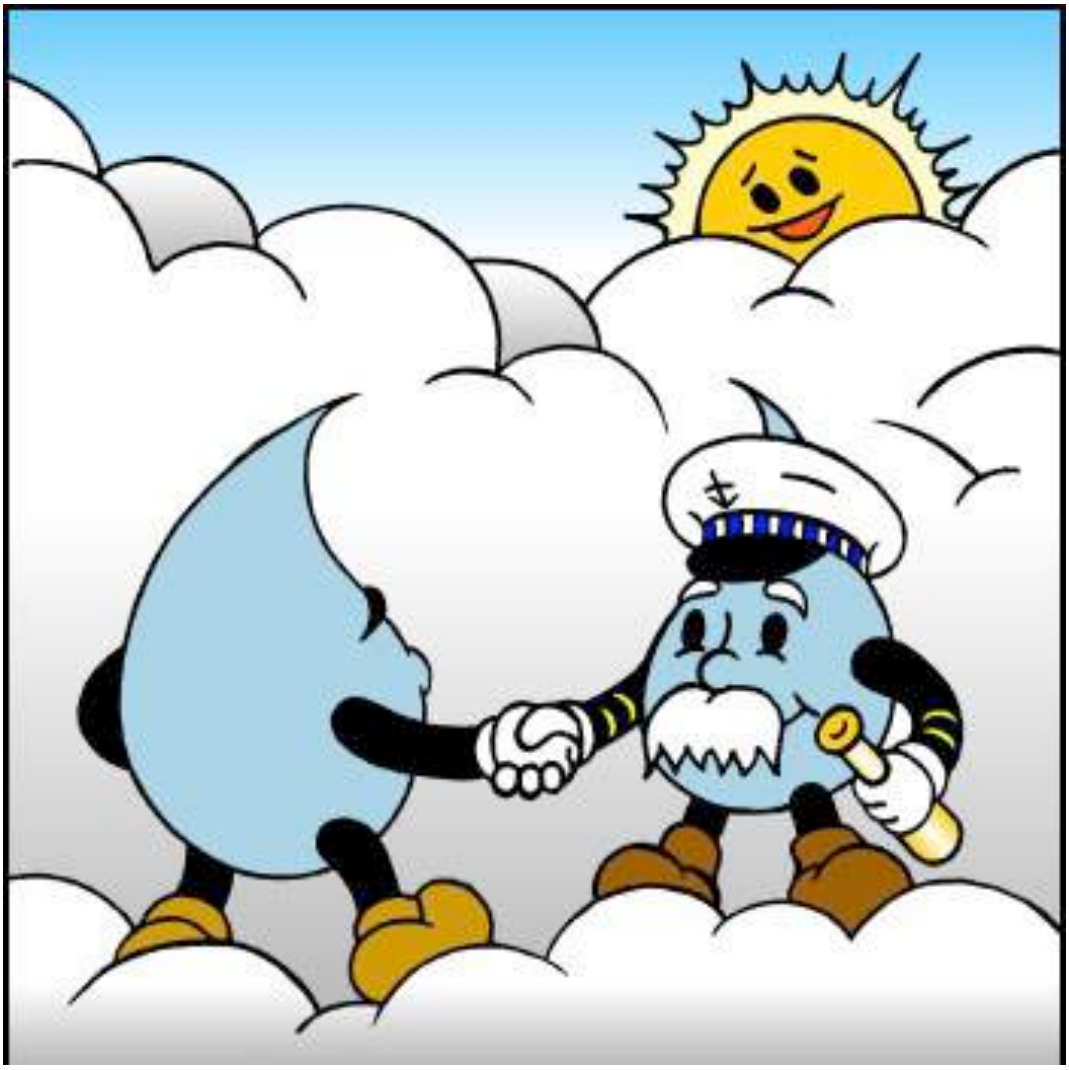


The heat from Mr. Sun makes Drippy lighter and lighter.

Drippy starts flying.

Up, up, up in the sky to the cloud!

Drippy lands on the cloud. He meets another raindrop.



"Hi!" says the other raindrop. "Nice to meet you! My name is Salty. What's your name?"

"My name is Drippy. I came here to cool off." says Drippy.

"Where did you come from, Drippy?" asks Salty.

Drippy points to the water below and says, "I came from the ocean, there."

"Where is the cloud going to?" asks Drippy.

"Over there!" Salty points to a range of mountains.

"When it gets too crowded near the mountain, be ready to jump off!" says Salty.

Drippy thinks, "It will be fun to visit the mountain!"

The cloud gets crowded near the mountain. The cloud starts to bounce.

Drippy jumps from the cloud with other raindrops.

Drippy looks down and sees a stream through the mountain.

"That looks like a good place to land!" says Drippy.

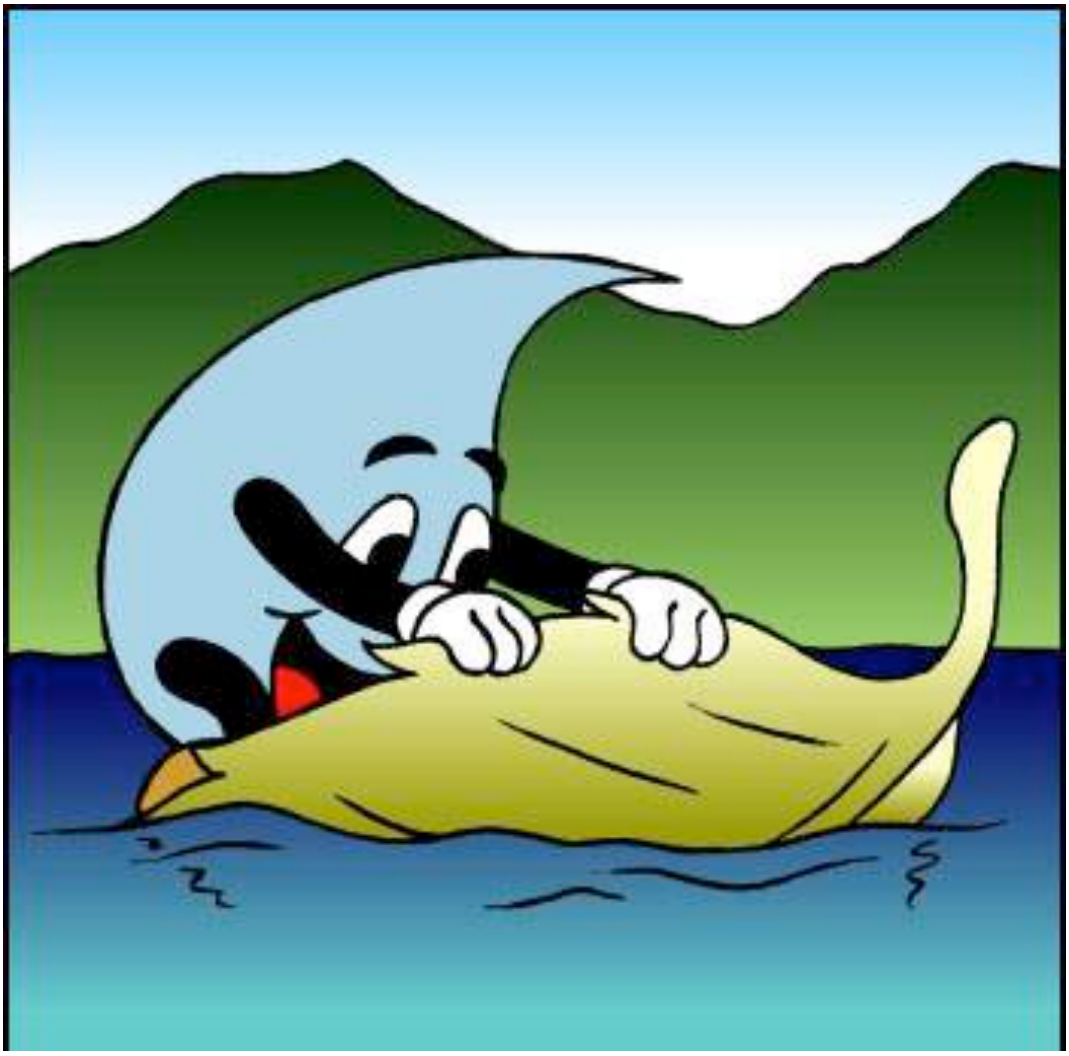
Drippy first lands on a tree. He bounces from one tree branch to another tree branch.

Drippy slides onto a rock and falls into the stream.

"This is fun!" says Drippy.

The rain stops. Drippy floats along the stream.

"This is nice!" says Drippy.



Drippy finds a leaf. He climbs onto the leaf.

The stream starts to move faster.

“This is fun! I wonder where I will go to next?” asks Drippy.

FOOD CROPS

LEARNING GOALS

By the end of the lesson, students will be able to:

- Use key vocabulary for plant parts to describe food crops, orally and in writing
- Use sequential words such as *first, then, finally* to describe how plants grow, orally and in writing
- Use the article "the" to describe plant growth, orally and in writing
- Summarize learning, using sentence frame "We learned about…"

Approximate time: 3 hours (2 days)

MATERIALS

- Diagram showing how a seed grows into a plant (page 4)
- Diagram showing growth of an eggplant plant (page 4)
- *From Seed to Plant* by Gail Gibbons (pp. 22-29)
- Word wall card for "food crops", "first", "then", "finally"
- Pictures of different food crops (page 5-8)
- Sets of life cycle of plant pictures (from p. 1 of life cycle of plants handout) (page 9)
- Chart paper/board, markers
- Food crops writing template (pages 10-11)

SEQUENCE

Ongoing Observation	5 minutes	Have students record their observation and measurement for both lettuce and bean in English. Refer to the word wall if needed for support.
Activating Prior Knowledge	5 minutes	Show the diagram of how a seed grows. Ask students what they see (review of plant parts). Show the diagram of how an eggplant plant grows. Ask what grows at the end (eggplant), and what plant part is an eggplant (fruit). Explain today we will learn about food crops that can be found in Kosrae/RMI, and how they grow.
Building Background/ Vocabulary Word Wall	20 minutes	Introduce the term "food crops" and teach meaning (plants grown for food). Remind students about the guest speaker. Ask students to name some food crops found in Kosrae/RMI. If students need hint, show pictures of different common food crops. Ask students how they would put the different food crops in different groups (e.g., by color, by shape, by size).

Reading	60 minutes	• Refer to the common food crops and ask students when we eat each food crop, what plant part do we eat? Take a few guesses and let students know we will return to that question later. • Reread pages 22-29 of *From seed to plant*. Pay attention to what plants need to grow (review). Pay attention to the use of "first", "then" on p. 23, "finally" on p. 27. Add the sequential words to word wall. • Using the illustrations as support, ask students how a seed grows into a plant. Model and practice using the sequential words "first", "then", "finally". E.g., "First, the seed goes into the soil. It gets rain and sun. Then, the roots grow. Then, the stem and leaves grow up. The plant gets big. Finally, the plant grows flowers and fruits." Have students practice with a partner MINI LESSON on article "the": use "the" instead of "a" or "an" when we are specific about which object we are referring to. In this case, we are specific about the plant parts. • Distribute sets of the Life Cycle of Plant cards to pairs of students. • Have students work with their partners to arrange the cards in the order plant's growth, starting from the beginning. Afterwards, orally talk about the order of plant growth, using the sequential words. Have student volunteer share out the order. • Refer back to the common food crops from earlier, and ask students when we eat each food crop, what plant part do we eat? • Go over the plant parts for the food crops (e.g., cucumber, banana, breadfruit: fruits; taro: roots; rice: seeds; lettuce: leaves) • Ask students what other food crops do we eat in Kosrae/RMI? What plant parts do those food crops come from? Record the names of the food crops and plant parts on chart paper or board
Writing	60 minutes	• Select one food crop, and draw on chart paper/board a series of pictures showing how the food crop grows from a seed. (e.g., how a cucumber seed grows cucumber). • Model for students how to write the first sentence on chart paper/board to describe the first stage, using sequential word and "the" (e.g., First, the cucumber seed goes into the soil.). • Ask student volunteer to come up and write the next sentence based on the second picture. Engage rest of class to help write the sentence. (e.g., Then, the rain falls. The sun comes out.) • Repeat the above step until all pictures have sentences. • Together, write a concluding sentence about eating the food crop (e.g., I like to eat cucumbers. They are the fruits of the cucumber plant.) • Explain to students they will now pick their favorite food crop (except food crops that are seeds) and draw and write about how the food crop grows from a seed.

		• Distribute a couple pieces of template to each student so they can draw and write a series of more than 3 pictures. • Have volunteers present their drawings and writing.
Wrap-Up	15 minutes	Refer back to how students group the food crops from Vocabulary Instruction/Building Background. Ask students if they can group them another way (by plant parts). Ask students to show how to group the food crops by plant parts. Summarize learning using sentence frame "We learned about _____"

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https://pixabay.com/en/sapling-plant-growing-seedling-154734/

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http://upload.wikimedia.org/wikipedia/commons/b/b6/Banana.plant.kewgardens.arp.jpg

http://www.esri.com/news/arcnews/summer12articles/summer12gifs/p7p1-lg.jpg

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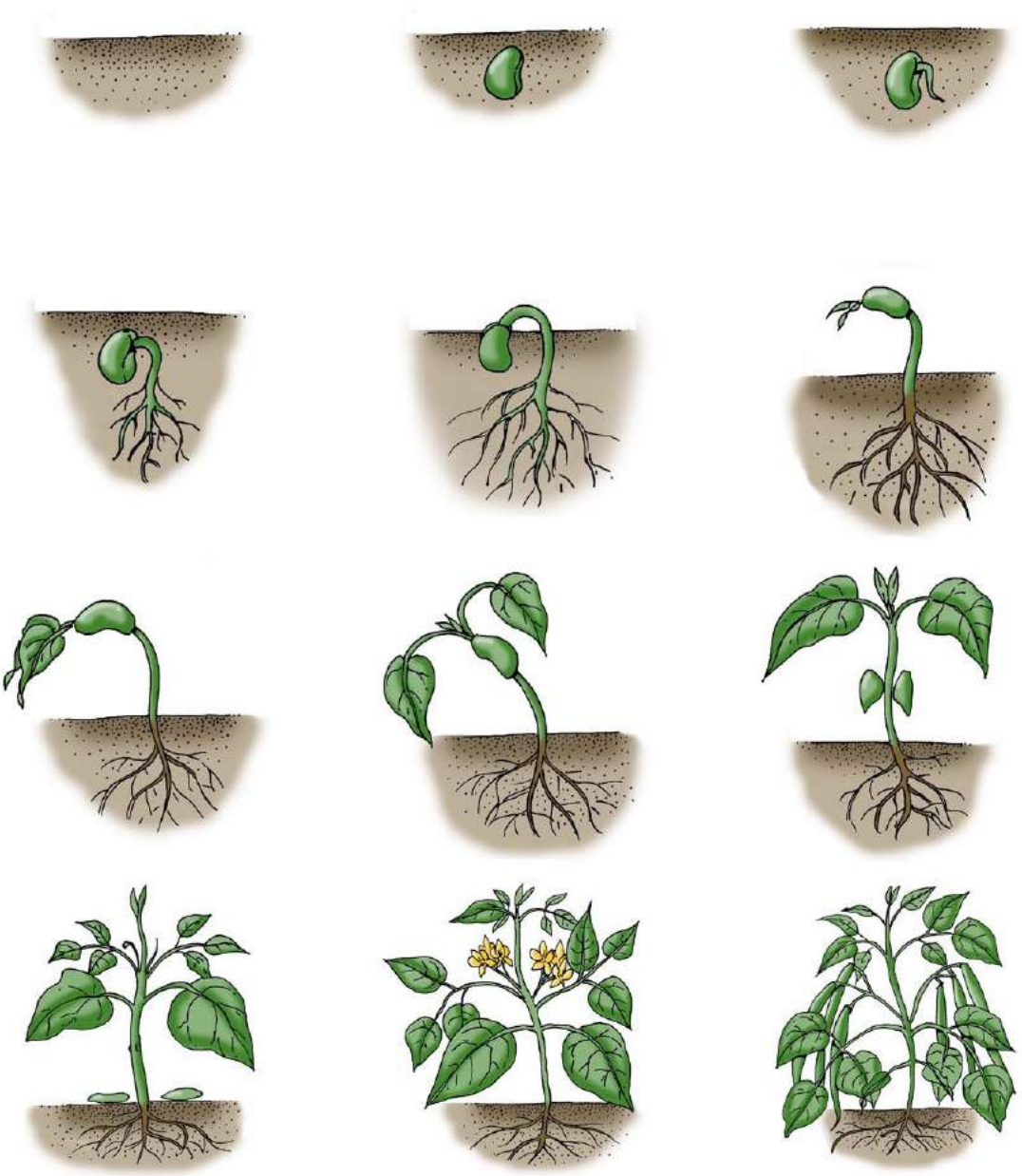
http://adalidda.com/wp-content/uploads/2013/07/rice-field.jpg

http://www.fda.gov/ucm/groups/fdagov-public/documents/image/ucm319871.jpg

http://upload.wikimedia.org/wikipedia/commons/4/49/Lettuce_mix.jpg

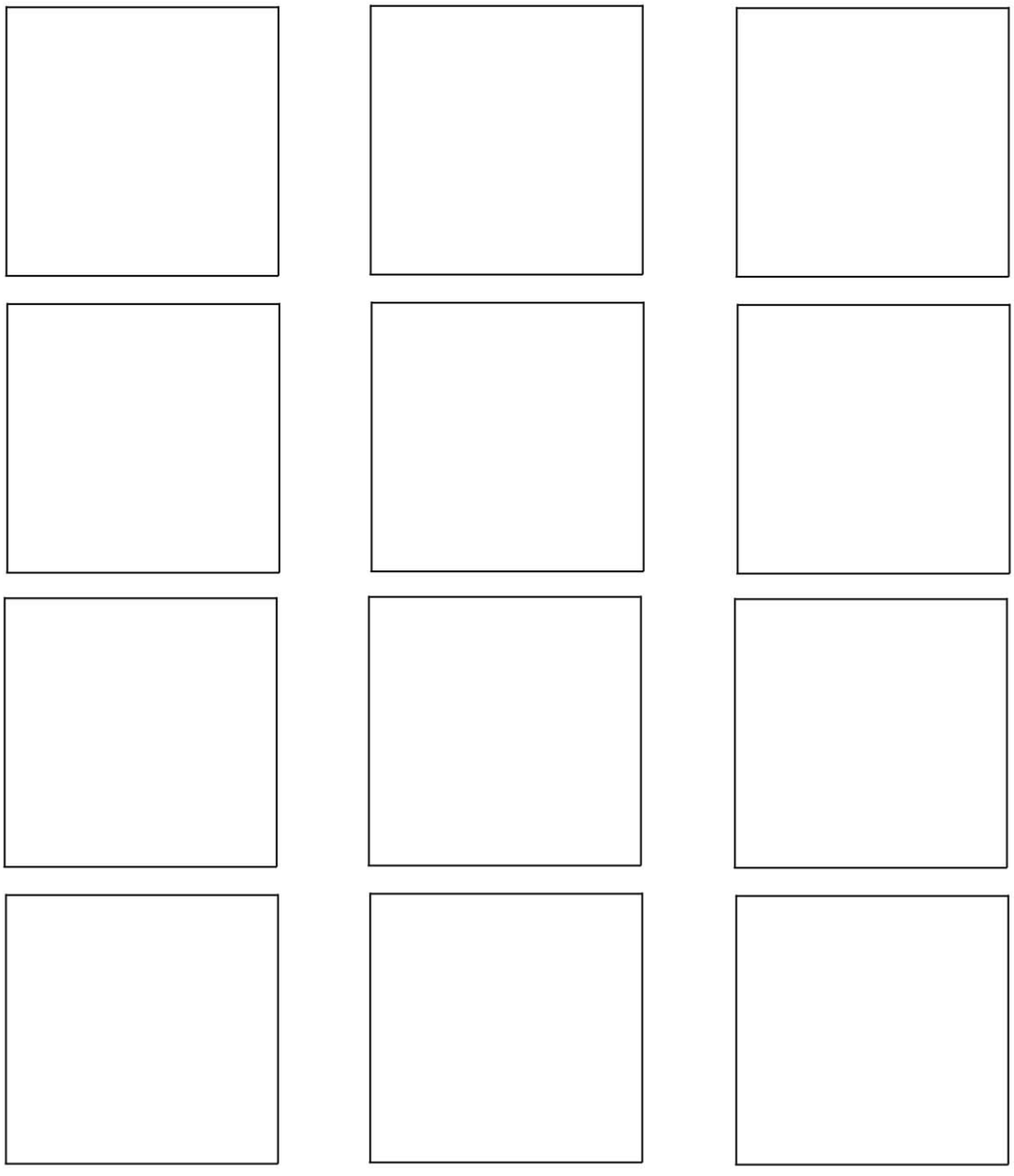
Learning the Plant Life Cycle

Cut up the plant squares and ask students to put them in order on the Life Cycle of Plants answer sheet.

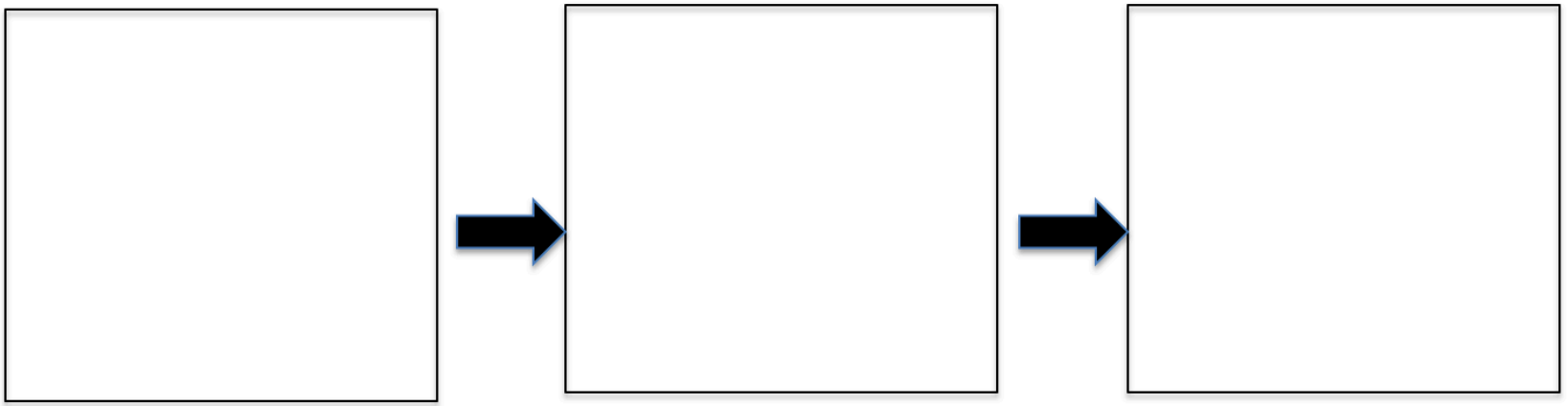


The Life Cycle of Plants

Arrange the different stages of the plant life cycle in the correct order.



www.exploringnature.org



_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

EATING LOCAL:
MY KOSRAEAN/MARSHALLESE PLATE

Grade 3 / **Essential Questions: Where does our food come from?**

LEARNING GOALS

By the end of the lesson, students will be able to:

- Identify foods that are grown locally
- Explain where common imported foods come from
- Conduct an informal interview
- Make informed predictions
- Create a diagrams to organize information, including an infographic and a Venn diagram

Approximate Length of Unit: 3-4 sessions

Approximate Number of Minutes Daily: 45 minutes

SUMMATIVE ASSESSMENT

Students will write a letter to their grandchildren, recalling information gathered from their interview and with predictions about the future of food in Kosrae / the Marshall Islands

FORMATIVE ASSESSMENT TOOLS

- Venn diagram
- Student-created infographics
- Interview notes
- Student responses in discussions

FOCUSED LANGUAGE FEATURES

Language Functions	Examples	Vocabulary
Explain a concept (e.g., where foods come from)	We can buy _____ in the grocery store.	
State measurement	_____ traveled _____ miles from _____ to Kosrae.	
Summarize key points, observation, and measurement	My family had a _____ when my parents were young.	

	_____ traveled the most to reach the Marshall Islands.	
Make a prediction (e.g., about the future of food in a letter to their grandchildren)	In the future, we will not be able to buy _____.	

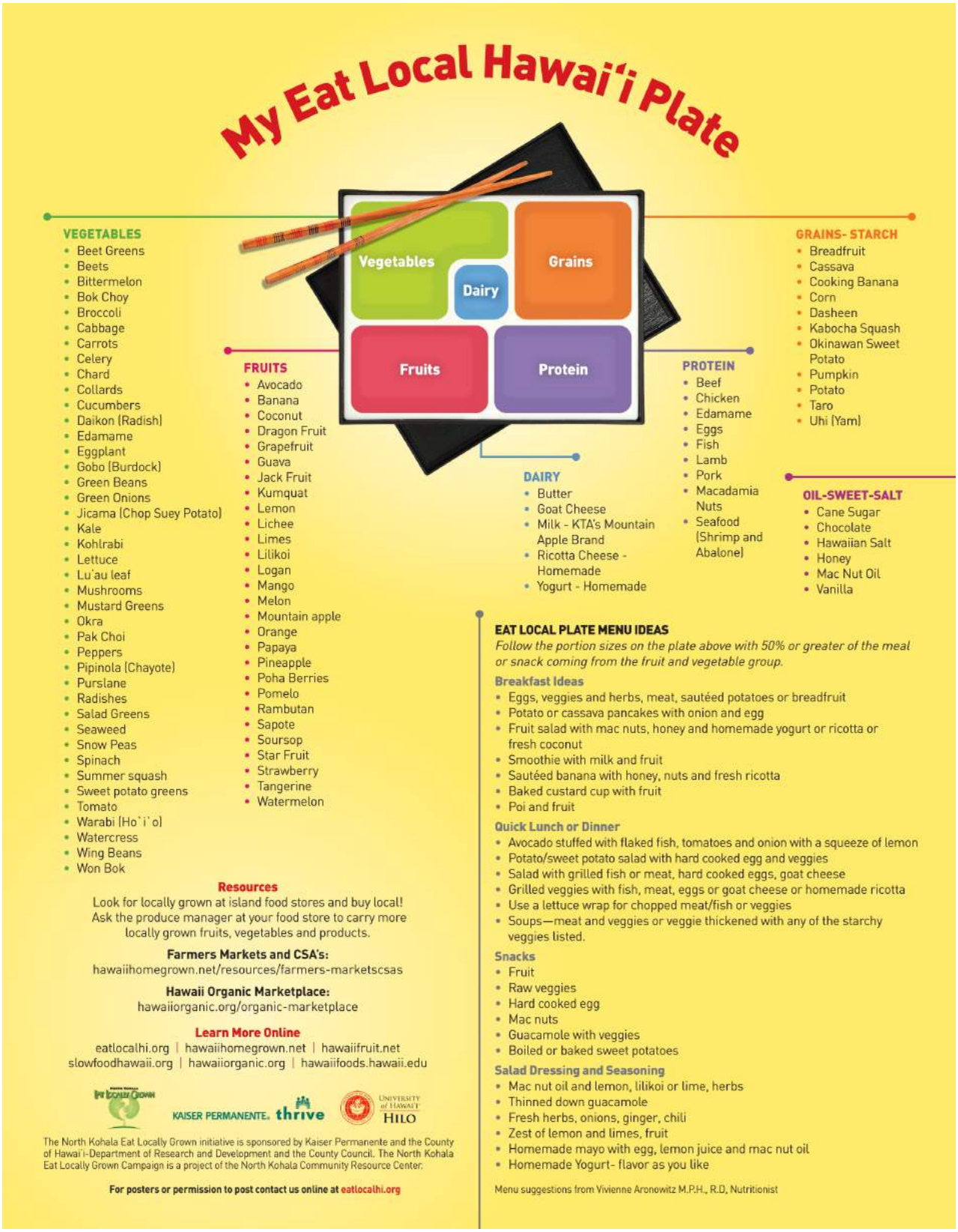
SEQUENCE

Activating Prior Knowledge: What Do We Eat?	Day 1	On the board or chart paper, draw out a plate divided into sections = vegetables, grains, fruits, dairy, protein • Use "My Hawaii Plate" infographic as inspiration • Explain or give examples of each category to class Ask students to list 2-5 examples of each type of food • Students can either call out or come up to the infographic to write a the list in each section of the plate • Can be done in local language and English Discussion: Ask students to think about what they know about where foods come from. • Which is my favorite food? • Which of these foods can we buy at a grocery store? • Which of these foods can be grown here?
Venn Diagram: Garden, Farm, or Store?	Day 1	Students can work independently or in pairs to create a Venn diagram = Garden or Farm versus Grocery Store • Which of the examples given during the Activating Prior Knowledge activity come from a house garden? A farm? A grocery store? Students can share their diagrams with the class or do a gallery walk Ask students to look at the diagrams and observe: Where do most of our foods come from?
Homework	After Day 1	Ask each student to bring 1-2 food wrappers to class that have a "place of origin" (e.g., "made in,""packaged in")
Food Mapping + My Local Plate Infographic	Day 2	Find our food on a map • Ask each student to identify the places of origin of their food wrappers • Using a world map, find and label Kosrae and each place of origin (with location and foods) How far did our food travel? • Demonstrate how to measure distances on a map • Ask students to measure the distance between Kosrae and the places of origin • Create a class data table and have students track their data (see example) Suggested discussion questions

		• Which food traveled the most? • Which food traveled the least to Kosrae? • Where are most of the foods from? Brainstorm: What are some local substitutes for these foods? My Local Plate Infographic* = Ask students to create their own infographic with local substitutes for their favorite foods • 1-2 examples in each sections; English and local language • Use the same format as the Activating Prior Knowledge activity
Interviewing Elders: Has Our Food Changed?	Day 3	Ask students to develop 4-6 questions to ask their parents or grandparents about past food sources in Kosrae / Marshall Islands Students do interviews and record answers on a worksheet Sample questions • As a child, where did your family get food? • Did your family have a garden or farm? Where? • Did your family buy food? From where? • Were there grocery stores? What were they like? What could you buy? • What was your favorite food when you were growing up? Where did you get it?
End Task: Letter to My Grandchildren*	Day 4	Students can write a letter to their grandchildren, telling them about what food is like in Kosrae today (answering the same questions they asked their parents/grandparents) Ask students to write a letter to their grandchildren. The letter should: • Recall some information gathered from their interview • Have a prediction about food will be like in Kosrae / the Marshall Islands ○ For example: Will your favorite food still be available? What new food will you be able to buy or grow? *Keep copies of letters and infographics for bulletin board at library / museum

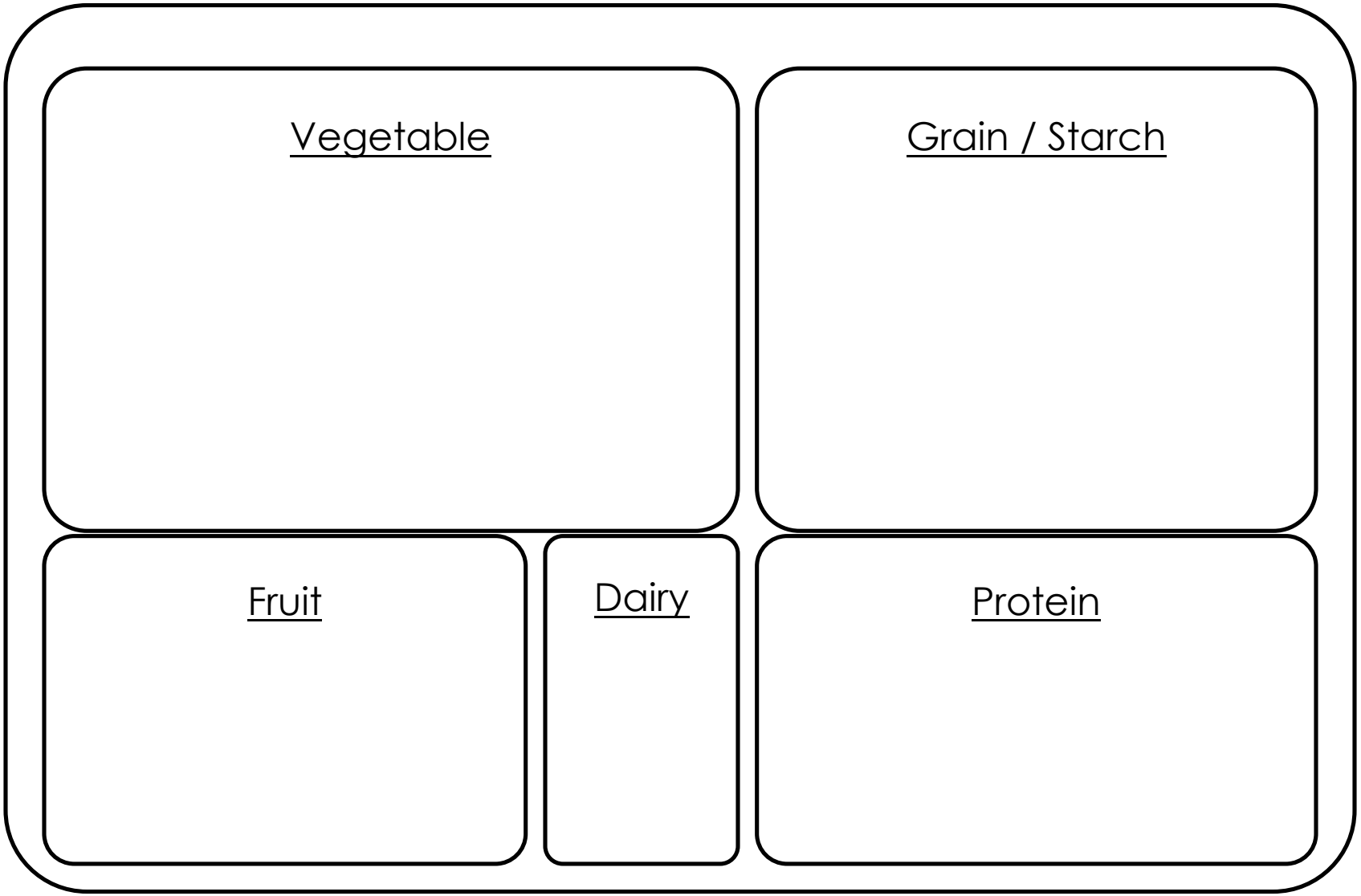
RESOURCES

- Local plate infographic (pages 4-6)
- Venn diagram worksheet (page 7)
- World map (Pacific-centric) (page 8)
- Interview Worksheet (pages 9-11)

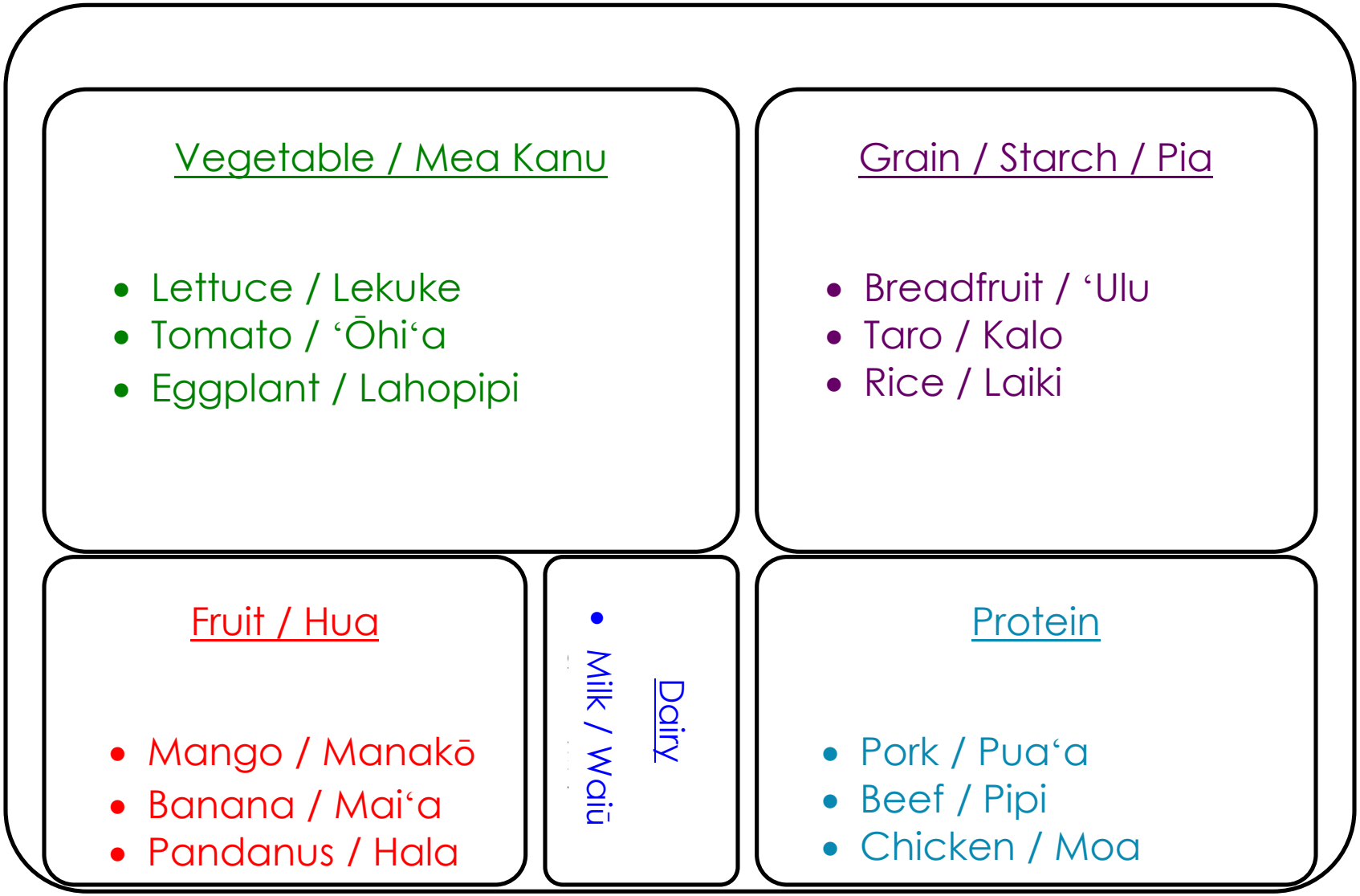


From Food Hub Kohala: http://foodhubkohala.org/wp-content/uploads/2012/02/Eat-Local-Hawaii-Plate1.pdf

My Local Plate

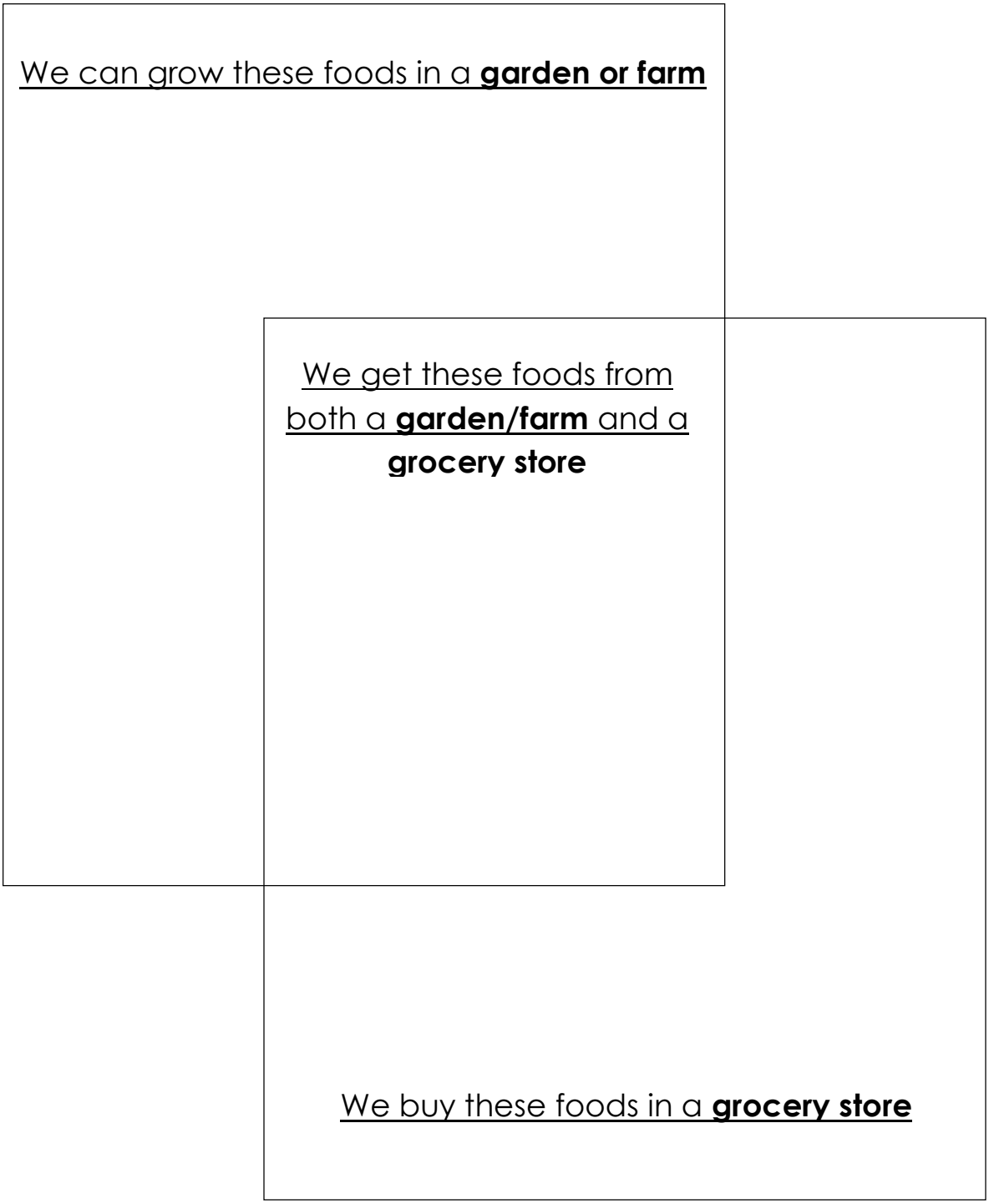


My Local Plate (Hawaii / Bilingual Example)



Garden / Farm or Grocery Store?

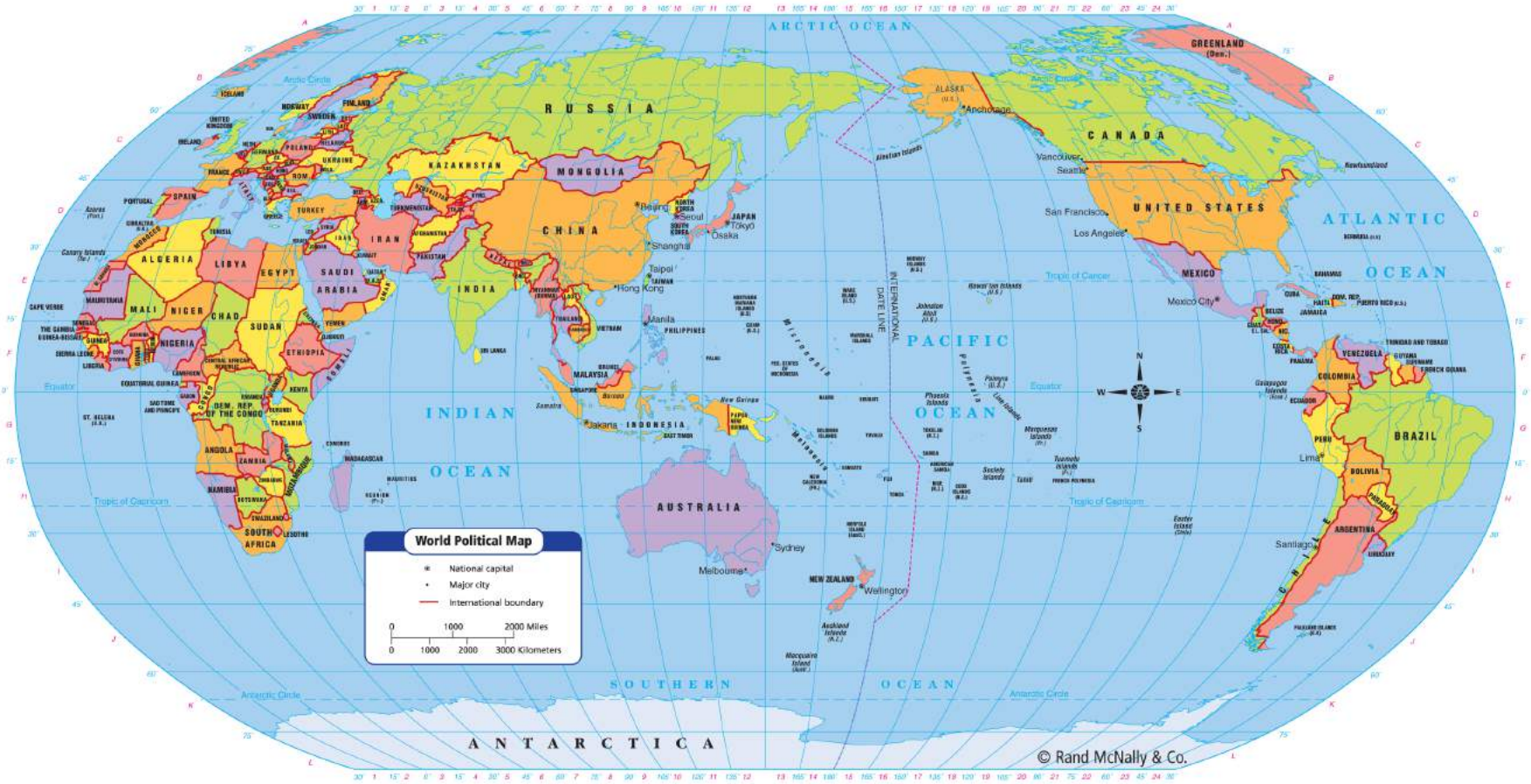
Venn Diagram



RAND McNALLY

World Political Map (Pacific-Centered)

www.randmcnallyclassroom.com



How Far Did Our Food Travel? Data Table

Food	Place of Origin	Miles from Kosrae

Which food traveled the most distance?

_____

Which food traveled the least distance?

_____

Where are most of our foods from?

_____

Interviewing Elders: Has Our Food Changed?

1. As a child, where did your family get food?

2. Did your family have a garden or farm? Where?

3. Did your family buy food? From where?

4. Were there grocery stores? What were they like? What could you buy?

5. What was your favorite food when you were growing up? Where did you get it?

FEEDING OUR PLANTS WITH SEA CUCUMBER FERTILIZER

Fertilizer recipe by Dako Natting (Marshall Islands High School)

LEARNING GOALS

By the end of the lesson, students will be able to:

- Use key vocabulary to explain how plants absorb nutrients (get food) from their roots
- Use sequential language to explain how to make and use fertilizer

Approximate time: 30 to 60 minutes

TEACHER BACKGROUND INFORMATION

When you take a close look at soil in the ground, you will see that it is alive. Many types of decomposers are living in the soil, breaking down organic material and turning it into nutrients to feed plants. There are insects, worms, snails, and many other invertebrates crawling around in the soil. These "shredders" work to break down organic matter—like leaves, manure, bark, roots and fruits—into tiny pieces.

Microorganisms also live in the soil. Our soil is full of these creatures, and they are so small that we need a microscope to see them. In fact, there are more microbes in one teaspoon of soil than there are people on our planet! Microorganisms decompose, or further break down, the tiny pieces of organic matter that were chewed up by the shredders. This helps the soil to better store water and air. Other microorganisms take nitrogen from the air and change it into food for plants. And still other microorganisms protect plants by attacking pests and diseases.

Fertilizers support healthy soils. By adding fertilizer to our garden plants, we are adding nutrients like nitrogen and potassium to the soil. Plants can absorb these nutrients through their roots. Additionally, these nutrients promote the growth of beneficial soil microorganisms to build organic matter in soil.

Fortunately, it is easy to make your own liquid fertilizer from sea cucumber! Making your own fertilizer is readily available, affordable, and environmentally friendly. This fertilizer will enrich your soil and reduce your need for chemical fertilizers and pesticides in your garden.

MATERIALS

Five-gallon bucket, knife, one sea cucumber, one-gallon container, 5 gallons of water, diagram of plant in soil (page 4), 9 word cards

Before class, write out directions for making and using sea cucumber, leaving blank the sequential words at the start of each sentence.

SEQUENCE

Activate Prior Knowledge	5 minutes	Show diagram of plant in soil, just the side of diagram with plant. Ask: • What do you see? Students will probably respond with a number of plant parts. Review plant parts (e.g., leaf, stem, root, flowers) • Does the plant need food? Where does its food come from? Explain that today we're going to learn how a plant gets food from the soil and how to feed our plants with fertilizer
Building Key Vocabulary (Word Wall)	10 minutes	Introduce the following words on word cards: fertilizer, soil, invertebrate, microorganism • Go over the meaning and model making a meaningful sentence for each word. • Label diagram using word cards Explain how plants absorb nutrients in soil through roots and how fertilizer feeds plants by adding nutrients to soil (a) for plants to absorb and (b) to promote the growth of beneficial soil microorganisms.
Hands On	15 minutes	Introduce sequential words on word card: First, Second, Next, Then, Finally Review directions for making and using sea cucumber. Ask students to help you fill in the correct sequential words. As a class, follow the directions for making sea cucumber fertilizer.
Wrap Up	5 minutes	Review key vocabulary from the word wall and diagram. Ask students: How do plants get food from their roots?

DIRECTIONS TO MAKE & USE SEA CUCUMBER FERTILIZER

Making Sea Cucumber Fertilizer

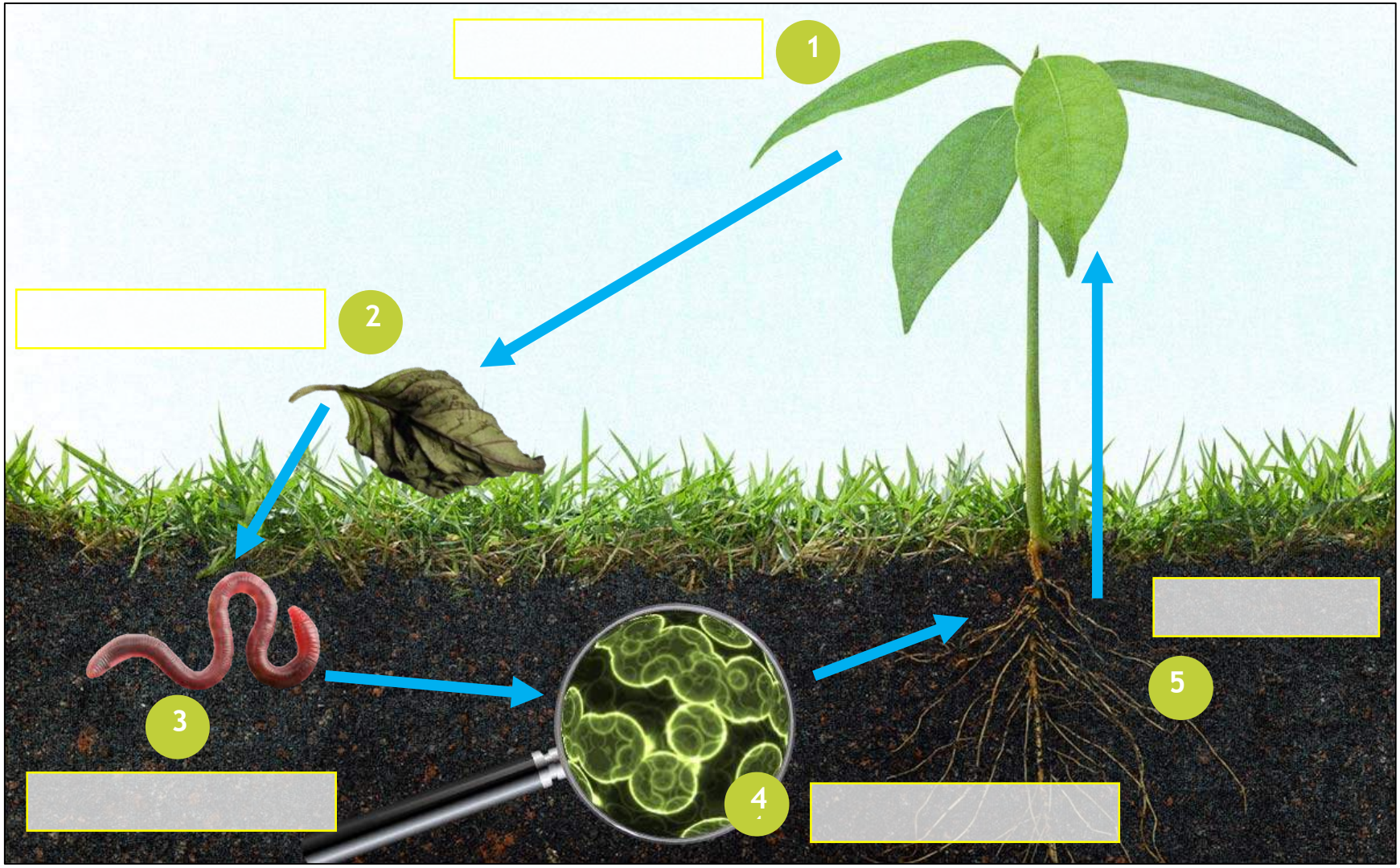
1. First, fill a five-gallon bucket with water.
2. Second, chop the sea cucumber into small pieces.
3. Then, add one quarter (1/4) of the sea cucumber to the bucket.
4. Finally, cover the bucket with the lid. Wait one to two months, stirring once per week.

Using Sea Cucumber Fertilizer

1. First, fill the one-gallon container with water.
2. Next, add half (1/2) a cup of fertilizer to the container.
3. Finally, water the soil around your plants with the water and fertilizer solution.

EXTENSION & INTEGRATION IDEAS

Math + Language + Science	Ask students to keep a daily observation journal to measure and record the growth of their plants, as well as the frequency and amount of fertilizer they use. Students can also record weather data, like rainfall, temperature, and wind speed.
Science + Math	Help students to design and run an experiment to find the ideal amount of fertilizer for a type of plant. For example, does a plant thrive best without fertilizer (control), fertilizer every day, or fertilizer once a month? Make sure to write a hypothesis before the experiment and a summary of findings at the end of the experiment to confirm or refute your hypothesis using data on plant growth.
Language	Write a fictional story about the day in the life of a composter, like a worm or microorganism (see Diary of a Worm)
Math	Ask students to measure plant growth every day and keep observations in a journal Have students practice fractions when cutting the sea cucumber and converting measurements to other systems of measurement (e.g., gallons → liters) when making the fertilizer.


1
2
3
4
5

[Insert Title in Local Language]

SEED Summer Program
My Journal

[Insert local language]/My Name: _____

[Insert local language]/My School: _____

[Insert Local Language]/Planting Lettuce

[Insert Local Language] _____.
The name of my seed is _____.

[Insert local language]
This is a picture of my seed.

[Insert local language]_____.
The color of my seed is _____.

[Insert local language]_____.
The seed feels _____.

[Insert local language]:
My seed needs these things to grow:

_____ _____ _____

_____ _____ _____

[Insert Local Language]/Observer: _____

[Insert Local Language]/Date: _____

[Insert local language]_____.
The lettuce looks _____.

[Insert local language]_____.
The lettuce is _____inches tall.

_____

_____

_____

_____

_____

_____

[Insert Local Language]/Planting Beans

[Insert Local Language] _____.
The names of my seeds are _____.

[Insert local language]
This is a picture of my seed # 1.

[Insert local language]
This is a picture of my seed # 2.

[Insert local language]_____.
The color of my seeds is _____.

[Insert local language]_____.
The seeds feel _____.

[Insert local language]:
My seeds need these things to grow:

_____ _____ _____

_____ _____ _____

[Insert Local Language]/Observer: _____

[Insert Local Language]/Date: _____

[Insert local language] _____. Bean #1 looks _____. [Insert local language] _____. Bean #1 is _____ inches tall.	[Insert local language] _____. Bean #2 looks _____. [Insert local language] _____. Bean #2 is _____ inches tall.

_____

_____

_____

_____

_____

_____

[Insert Local Language]
Rainfall Measurement

[insert local language]
Use the table below to record your rainfall measurements for seven (7) days.

Date	Inches of Rain

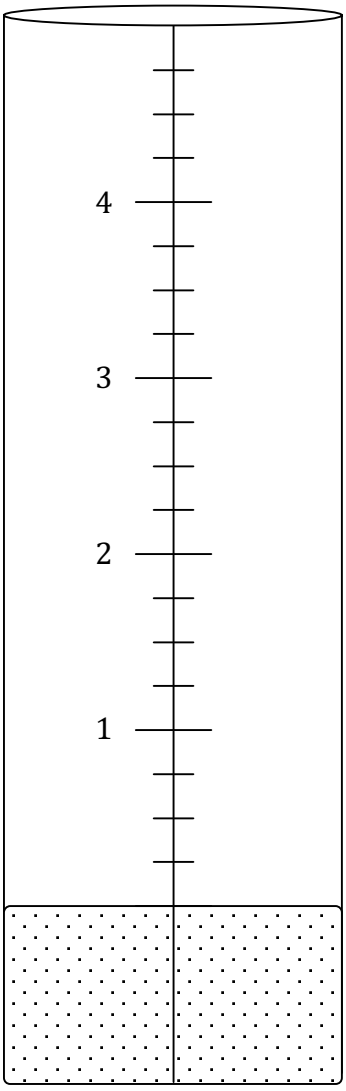
[insert local language]
Use the following sentence frames to share your rainfall measurement results:

It rained _____ inches yesterday.
It rained _____ inches in 2 weeks.
_____ rained the most.
_____ rained the least.

[Insert Local Language]/Observer: _____

[Insert Local Language]/Date: _____

Measure how much rain has fallen and record the measurements below. Then, make a predication about tomorrow.



Observation

Today, the weather is _____.

It rained _____ inches today.

_____

_____

Prediction

I think _____.

_____

_____

SEED Summer Camp 2014

Goals, Summative Tasks, and Daily Activities

Theme	- What do plants need to grow? - What are the common food crops growing in Kosrae/Majuro?
Goals	By the end of the unit, students will be able to do the following: - Name parts of plants - Explain that plants need soil, water, and sunlight to grow - Explain where rain comes from - Make observations of plant growth and rainfall - Identify and describe common food crops grown in Kosrae/Majuro
Summative Tasks	Students will create the following: - Individual journals of observations and experiments - A print and supporting visual display about common food plants and results of experiments
Week 1	- Discussion: What do plants need to grow? (Days 1–2) - Experiment: Set up lettuce garden (Days 1–2) - Experiment: Bean growing exercise (Day 3) - Discussion: Where does rain come from? (Days 4–5) - Experiment: Build and use a rain gauge (Days 4–5)
Week 2	- Observations and measurements of garden, rain gauge (Days 6–8) - Create bilingual display of common food crops, observations, and experiment results (Days 6–10) - Guest speakers on common food crops (Days 6–8) - Present display at Family Night (Day 10)
Local Language Activities	- Record observation journals - Instruction on key vocabulary and sentence structures - Oral language and writing practice throughout lesson
English Language Activities	- Read stories on gardening and plants - Respond to questions about readings orally and in writing

SEED Majuro Summer Camp 2015

Goals, Summative Tasks, and Daily Activities

Theme	Edible Plants in the Marshall Islands
Goals	By the end of the unit, students will be able to do the following: - Observe, classify, and compare plant parts and functions - Identify common plants eaten in the RMI and common ingredients - Understand harvest seasons - Describe and perform simple cooking techniques
Summative Tasks	Students will create the following: - A narrative story using garden observations - A bilingual recipe to be included in a class recipe book
Week 1	- In the garden: Observe and measure garden plants (Days 1–5) - Explore books to build a word wall about the garden (Days 2–3) - Use word wall vocabulary to construct sentences (Days 2–3) - Create a story about the garden and share with the class (Days 4–5) - Storytelling with Alele Museum & Public Library staff (Days 2 & 4) - Cooking demonstrations with the CMI (Day 5)
Week 2	- In the garden: Observe and measure garden plants (Days 1–5) - Ask for a family recipe using at least one garden vegetable (Day 6) - Write the recipe in English and in Marshallese (Days 7 & 10) - Field trip to visit a local farm and explore the importance of food crops for an atoll community (Day 8) - Create a story describing what was learned at the field trip (Day 9) - Cooking demonstrations with the CMI (Day 10)
Marshallese Language Activities	- Record observation journals - Instruction on key vocabulary and sentence structures (sequence, compare/contrast, description) - Oral language and writing practice throughout lesson
English Language Activities	- Record observation journals - Read stories on gardening and plants - Respond to questions about readings and demonstrations orally or in writing

SEED Kosrae Summer Camp 2015

Goals, Summative Tasks, and Daily Activities

Theme	Edible Plants and Medicinal Plants in Kosrae
Goals	By the end of the unit, students will be able to do the following: - Observe, draw, label, and compare plant parts and functions - Identify common plant eaten and used as medicine in Kosrae - Explain the importance of soil for plant growth
Summative Tasks	Students will create the following: - Short readers related to edible and/or medicinal plants - A science fair display explaining the needs and importance of common edible and medicinal plants in Kosrae
Week 1	- In the garden: Soil sleuth experiment to discuss soil composition and the importance of healthy soil for plants (Day 1) - Compare/contrast fruits/vegetables grown in different soils (Day 2) - Field trip to farm to see how fruits/vegetables grow for business (Day 3) - Root crops and rules for cooking (Day 4) - Local medicinal plants (Day 5)
Week 2	- School library visit to work on a class bilingual reader (Day 6) - In the garden: Transplanting (Day 7) - Elders visit to share about food from the past and healthy cooking demonstrations (Day 8) - Field trips to library and museum (Day 9) - Cross-school science fair (Day 10)
Kosraean Language Activities	- Record observation journals - Instruction on key vocabulary and sentence structures (sequence, compare/contrast, description) - Oral language and writing practice throughout lesson
English Language Activities	- Record observation journals - Read stories on gardening and plants - Respond to questions about readings and demonstrations orally or in writing

Additional Resources

Learning Gardens @ PREL website: http://gardens.prel.org

"Soil Sleuth" experiment design: https://www.ars.usda.gov/southeast-area/florence-sc/coastal-plain-soil-water-and-plant-conservation-research/docs/for-kids-only/

Micronesian Ethnobotany: http://www.comfsm.fm/~dleeling/ethnobotany/text/ethnobotany.html