



Sixth Grade



NUMi
FOUNDATION
Celebrating People, Planet & Possibility

The sixth grade curriculum expands the focus from the garden out into the world. Students explore concepts of health more broadly, to include spiritual and mental health, personal health, ecosystem health, and community health. The year concludes with a capstone community health project.

By the close of the school year, students will have had an opportunity to develop both as members of a team and as leaders. They'll practice using scientific principles, including developing theories, creating experiments, and gathering data. Finally, students will engage in a long-term community health project that culminates in a presentation to the public (community).

The Numi Foundation is deeply grateful to the writers of open-source materials for their contributions and inspirations to this curriculum.

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Garden Re-Introduction

What is expected of us when we are in the garden?

1.1

STANDARDS

6.SL.1

OBJECTIVES

- I can follow the garden rules.
- I can be an effective group member.

MATERIALS

- White board, markers, and eraser
- Large sign-size copy of garden rules if applicable
- Garden scavenger hunt worksheet (enough copies for each pair to have one)
- Clipboards and pencils
- 6th grade pacing guide

Preparation:

Since this is the first visit to the garden for the school year, make sure that everything is kid-safe and that all equipment is in its proper location. You want students to see how the garden should look when they enter and when they leave. Also, if you have a sign with the garden rules on it, make sure students can't see it at the beginning of the class. Finally, make sure that you are familiar with the 6th grade garden curriculum- you need to be able to summarize its content to the students at the end of this class. Place essential question and objectives on the white board.

****Also, this would be the time to start some seedlings for WEEK 3, LESSON 1 if you do not want to buy seedlings from the store. Try starting some lettuce and greens for an easy transplant.****

*****If you are going to be using this entire curriculum in sequence, you should bury an apple in a clearly marked area of the garden. This apple will be used to study decomposition in Unit 3*****

Procedure:

- Have students gather at the entrance to the garden, and before you enter the garden remind them of the method you will use to get their attention or gather them back together in the garden (i.e. call and response, “If you can hear the sound of my voice, clap once, a bell, etc.)
- Enter the garden and take seats in the classroom area. Remind students that many of them have had multiple years in the garden, and this means they have had a good deal of exposure to the garden rules and procedures. Propose that if they talk to each other, some of that dormant knowledge might be re-invigorated. Ask students to have a “lightening round” brainstorm session with a neighbor about the garden rules.
- Have students do one more “lightening round” brainstorm with the person on the other side of them.
- Have students share out their ideas and write them on the white board.
- Share the garden rules sign, and compare their ideas to the codified garden rules. Discussion prompts: Did they come up with all of the existing rules? Did they miss any? Did they come up with ones that should be included? Why are these our rules?
- **OPTIONAL:** If a high percentage of your students have not had multiple years of garden exposure, you might want to spend more time delving more deeply into the meaning of these rules. Have students act out how to follow the rules, have them engage in small group discussion about them, practice them, etc. If most of your students have been part of the garden program for multiple years, simply reviewing them and talking about them as a class should be sufficient.
- Have students get into partner pairs, and pass out clipboards, pencils, and scavenger hunt worksheets. Explain that this activity is intended as a chance for them to get back into the rhythms of the garden, and to observe what is growing and changing. Indicate that you will also be watching and listening to ensure that everyone is following the garden rules.
- Give students approximately 20 minutes to complete the scavenger hunt. (Extension: If you have pairs who finish early, have them create addition scavenger hunt search prompts for other partner pairs.)
- Gather back in the classroom area. Have students turn in clipboards, pencils, and scavenger hunt worksheets.

- Preview what we are going to be studying in the garden this year. Write the overarching essential question on the board, introduce the main units of study, and highlight their capstone project.

Wrap up:

Have students turn to each other (and to the teacher) and welcome each other to another great year in the garden.

Assessment:

Teacher observation of conversations, partner-pair brainstorming, and scavenger hunt.

Notes/Feedback:



My Physical Health

How can I take better care of my body?

2.1

STANDARDS

CCSS: 6.SL.1, 6.W.10

Health: 5.1M

OBJECTIVES

- I can figure out how different foods fit into the food groups.
- I can try different foods and discuss my responses with others.
- I can begin to think about what it means for me to be healthy.

MATERIALS

- White board, markers, and eraser
- Chalk and What's on My Plate diagram which can be found at: <http://choosemyplate.gov/kids/downloads/ColoringSheet.pdf>
- Different foods that are not grown in the garden for What's on My Plate activity. (These can be pictures of the food, or the actual food such as rice, yogurt, milk cartons, cereal, etc.)
- Different fruits and veggies that are grown at this time of year- enough for all students to be able to taste a sample of each
- Labels for taste test samples and lots of toothpicks

- Food recordkeeping worksheets
- Garden journals, clipboards, and pencils

Preparation:

8

Wash and chop up food samples beforehand- this will save you time and headache. Create labels for each food students will be sampling- preferably on mailing labels so that they can be affixed to containers. Also, draw huge chalk outline of the What's on my Plate diagram on the blacktop.

Background Information:

The focus of this lesson is to get students to start thinking about what they put in their bodies. It is important to not be judgmental, but just to offer the information around healthy nutrition and then let students assess their own eating practices. Depending on your understanding of nutrition, you might want to spend some time doing some learning of your own! Here is a good place to begin: <http://www.choosemyplate.gov/food-groups/>

Procedure:

- Enter the garden and take seats in the classroom area. Have students read the essential question and the objectives for the day.
- Explain that we are starting a new unit of instruction and that this unit focuses on personal health. Ask students to spend a moment thinking about what this means and then have them share out. Discussion prompts: What do we think of when we hear the phrase, “personal health”? What makes us healthy? What sort of broad categories are there within personal health? **Push them toward thinking about physical health, emotional health, and spiritual health.**
- Explain that this week we will be focusing on physical health, and particularly what we eat. Ask for students to share out common foods that they eat. Ask them to think about what sorts of foods actually help our bodies to stay strong, grow, and fight off disease and infection.
- Begin What's on My Plate activity. Take students to large chalk drawing of My Plate. Explain that this drawing shows the proportional amounts of foods on their plates- i.e. how much of each type of food students should be eating at any given time. Ask students to list the categories and explain how they relate to each other (i.e. your vegetable portion should be the largest, fruits and veggies should take up half of your plate, dairy should take up the least portion of your plate, etc.) Show students the food cards, or non-garden food items, and invite them to arrange these items in the correct areas of the plate. OPTIONAL: Encourage students to pick small demonstration items from the garden and place these items on the plate as well.
- Give students about 5 minutes to work on this activity. OPTIONAL: Give students the names of other items and have them write their names with chalk in the correct area of the plate.
- Review My Plate: see if everyone is in agreement about where items need to go. Discuss the difficulty of categorizing some things such as prepared foods, candy, fats, etc.
- Do a quick food allergy check before beginning the next activity. Pass out clipboard, pencils, and garden journals. Have students set up a page in their garden journal with the following headers: Garden Taste Test: Food Name, Food Group, My Comments. (You should place an example of this format on the board.) Ask students

to use toothpicks to sample a type of fresh fruit or vegetable, write a review, and then move on to the next sample. At the end, they should have tried 5-8 foods given your time constraints and written one review for each food. OPTIONAL: You can include foods from other food groups if you have the time- cheese, nuts, grains, etc.- try to keep these items as whole food oriented as possible.)

- Introduce food record keeping worksheets: Pass them out and ask students to keep track of their food consumption for the rest of the week. Explain that they will write down the date, what and how much they ate, and what food group each food falls into.

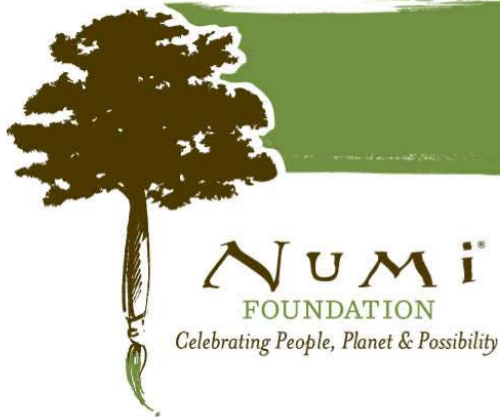
Wrap up:

Make sure items from all activities are cleaned up. Gather together and have students say one type of healthy food they are going to try this week.

Assessment:

Teacher observation of My Plate activity and taste testing.

Notes/Feedback:



My Physical Health II

How can I take better care of my body?

2.2

STANDARDS

CCSS: 6.SL.1, 6.W.10, 6.W.4

Health: 5.1M

Arts: VA2.4

OBJECTIVES

- I can record my meals every day.
- I can imagine my elders and ancestors and what they might have eaten.
- I can write a letter with a “photo” from an imagined ancestor.

MATERIALS

- White board, markers, and eraser
- Garden journals, clipboards, and pencils
- Markers, crayons, and other assorted drawing supplies
- Student meal recordkeeping worksheets
- Mats, towels, or sheets for guided meditation

Preparation:

Decide how you want to lead the guided meditation- possibly create a script for yourself if you feel like you are not especially skilled at extemporaneous speaking.

Background Information:

With this lesson, we want to inspire student curiosity about elder food ways, to encourage them to question why food looks the way it does today, and to realize we didn't always feed ourselves in this manner. This lesson is meant to inspire respect and reverence for the wisdom of our collective ancestors.

Procedure:

- Enter the garden and take seats in the classroom area. Have students read the essential question and the objectives for the day.
- Have students share out some “a-ha” moments from their meal record-keeping. Discussion questions: Do you notice any patterns? How did you feel after eating certain things? Did you have well balanced meals? (Have them think back to the My Plate exercise.) Are there other foods you would like to eat more of, or foods that you would like to eat less of? Did you eat whole foods? Did you eat processed foods? What is the difference in these two types of foods?
- Have students put away their journals, and get comfortable lying on the ground. If students want, they can use towels, mats, or blankets underneath them. Ask them to prepare themselves to go on a guided meditation- this means that the teacher will be helping to breathe and visualize different things.
- Do guided meditation: prepare your own version of this. Generally it is good to do some sort of breath work at the beginning so that students can calm down their mind and body. Some sort of counted breath or sending of the breath to different areas of the body to relax is often useful. Then ask them to picture a special family meal they had recently. Imagine the table, the food, who cooked the food and where the food came from. Feel emotions, smell smells, and taste tastes. Now take them back to the next generation, and imagine the same thing for their mom/dad/aunt or uncle. Then go back to their grandma or grandpa. Next go back to their ancestors during the 1800's- what did a meal look like then? Then go back to ancient times (Africa, Asia, Mesoamerica) when we were living in small villages- what did a meal look like then? And then finally, what about before we lived permanently in one place? What did a meal look like when we were hunters and gatherers? Imagine the food ways that extend down all of these generations to you today. Set aside 10-15 minutes for this meditation.
- Give students a little bit of time to decompress with their classmates about this experience because it can be exciting, unnerving, and/or uncomfortable for some of them. ****Some students might not be able to imagine their ancestor's history or might be uncomfortable doing so.****
- Have students create a letter and a “photo” of an ancestral or elder meal that describes what foods they might have eaten and what advice they might give about how to eat well. These letters and photos will be created in the garden journals.

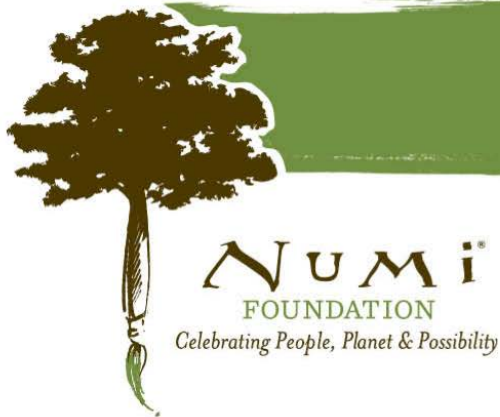
Wrap up:

Make sure items from all activities are cleaned up. Gather together and encourage students to think about how they get the food they eat and the impact this food has on them and the planet. Are there food ways that are healthier than others? Encourage students to continue keeping track of what they eat.

Assessment:

Ancestral letter and “photo”

Notes/Feedback:



My Mental Health I

What does mindfulness look like?

3.1

STANDARDS

CCSS: 6.SL.1, 6.W.10, 6.W.4

Health: 7.2M, 6.1M, 1.4M, 1.3M

OBJECTIVES

- I can be an effective group member.
- I can talk with others about health topics.
- I can transplant seedlings.

MATERIALS

- White board, markers, and eraser
- Seedlings
- Garden tools- trowels, gloves, watering cans, plant labels and markers/pencils
- Large vase with water, colored sand in bags/containers, a stirring stick

Preparation:

Place essential question, objectives, and triad discussion questions on the board.

Triad Discussion Questions:

- What sorts of things make your mind feel stressed, busy, scattered, and unfocused (like when the sands were whirling around in the vase)?
- What sorts of activities help you feel mindful (focused, calm, purposeful)?

- What sorts of places help you feel mindful?
- Do you think being able to be mindful is a useful skill? Why or why not?
- What other sorts of observations would you like to share around the colored sands reflection or your own ability to be mindful?

Purchase seedlings (or use the ones you started at the beginning of the school year.)
Decide where students will be planting seedlings.

Background Information:

Make sure that you are ready to teach students how to plant seedlings. Give some thought ahead of time to how you want the plants spaced out in the garden beds. Also, this lesson is going to ask students to have some fairly “deep” abstract conversations around what it means to be mindful. This might be challenging to some students. Encourage them to keep trying and give as many concrete examples of mindfulness as possible.

Procedure:

- Enter the garden and take seats in the classroom area. Have students read the essential question and the objectives for the day.
- Making the Connection: Remind students that we just spent a week talking about physical health. This week we will be talking about mental health- ability to focus, be resilient, calm, etc. Is there a connection between taking care of our bodies (eating well, exercising, etc) and the health of our minds? If so, what?
- Introduce the concept of mindfulness. What does it mean to be mindful? To be fully focused? To have a quiet mind? What does it feel like to be scattered, stressed, or to have a “monkey mind?”
- Colored Sands Reflection Activity: Explain to students that sometimes it is difficult to understand abstract concepts such as mindfulness, so we are going to do a little activity to help them visualize this concept. Have each student choose a small handful of colored sand that represents them. (You can let them spend a few moments thinking and talking about what different colors symbolize to them.) Then have them pour their handful of sand into the large vase full of water. Tell them that this vase represents our mind. As we think, analyze, stress, multi-task, etc., everything gets unsettled, turbulent, and messy. Stir the water and sand in the vase. Let students take turns stirring. Ask questions such as: What do you see happening? Does your brain ever feel like this to you? Does this look like a mindful mind? How do you think we can get the sands and water to represent mindfulness? Take the spoon out of the vase. Ask students to observe what is happening. What do they think will happen if we just let it be?
- Set vase in a safe place and establish the rule that it will be left alone until the next class session.
- Give students about 10 minutes to engage in structured conversation about mental health and mindfulness. Direct their attention to the questions on the board, and explain that in groups of three, they need to discuss these topics. Share out responses as a whole class.

- Demonstrate how to mindfully transplant seedlings. Point out how the body and mind are acting in unison, and the whole being is focused on giving this baby plant a new and better home. Ask students what they can do to be mindful in their planting practice. Should they do this quickly or slowly? Should they make a plan ahead of time? Should they be talking or silent? What should their senses be doing?
- Give students about 15 minutes to transplant plants.

Wrap up:

Make sure items from all activities are cleaned up. Gather together and ask them to pay attention to their own levels of mindfulness throughout the week.

Assessment:

Teacher observation of triad discussions and seedlings transplant.

Notes/Feedback:



My Mental Health II

What does mindfulness look like?

3.2

STANDARDS

CCSS: 6.SL.1, 6.W.3, 6.RP.1

Health: 7.2M, 1.3M, 1.4M

OBJECTIVES

- I can be an effective group member.
- I can work with others to make and enjoy tea.
- I can apply math to tea making.
- I can create a poem that will help me to be mindful.

MATERIALS

- White board, markers, and eraser
- Tea making supplies: dried herbs, bowls, measuring spoons and cups, tea bags, strainers, basic tea recipes
- Mindful nature poem outlines
- Garden journals, pencils, clipboards

Preparation:

Prepare for tea making. Assemble your bulk herbs, multiple sets of measuring spoons and cups, and small mixing bowls. Assume that this will be a team building activity and that you need to have one small mixing bowl, 1 recipe, 1 steeping (tea) pot, 1 strainer, and one set of measuring spoons/cups for each team. Decide how you want to heat water- do you need to use a camp stove or can you run an extension cord and heat water in an electric teapot/coffee maker? Plan how to ensure student safety around hot water and how to avoid having all of the bulk herbs end up on the ground. Also, make copies of the poem outlines so that each student can have one.

Background Information:

Making tea is an inherently mindful activity. Both the process of mixing the herbs which engages our senses and the calm moments as we sip the hot, herbal blend bring relaxation and focus. Many cultures have tea making ceremonies to venerate this process. Sharing this with the students is an important component of mindfulness education because it forces us to slow down and engage the senses in the here and now. Also, it teaches students about another way that plants help nurture and build our health.

Procedure:

- Enter the garden and take seats in the classroom area. Have students read the essential question and the objectives for the day.
- Making the Connection: Ask students to think about the following questions. After a minute of reflection, do a lightening round check-in with your neighbor. Why have we decided that the garden is a good place to learn about our own health? How does nature connect to our own well-being? How does being in nature support mindfulness? How are you doing at being mindful this week?
- Spend a few moments letting students share out their thoughts about nature, health, and mindfulness.
- Ratio's, Proportions and Tea-Making: Ask if anyone drinks tea or knows of any friends or family who drink tea. Does anyone have any favorite tea flavors? What are teas made from? (Push for plants, roots, seeds, flowers, herbs, etc.) Explain that today we are going to make some mindfulness tea, and that the acts of making and drinking tea can help to focus and quiet the mind. As part of our tea making, we are going to do a bit of math- proportions! How do proportions work? (When things are in proportion, their relative sizes are the same.) Give an example of doubling or tripling the amounts in a recipe. Explain that we are going to be working with tea recipes, and making sure that we keep the proportions even.
- Model how to make tea. Give students 10 minutes to make tea blends and let steep in hot water.
- As students finish making tea, have them gather back in the classroom area to begin the mindful nature poems.

- Explain to students that they are going to create a nature poem that will help to focus and calm their minds. Show students the structure and an example to get them thinking about what they might want their poem to be like. Emphasize that this poem is to be used with deep breathing and visualization, so as you read it aloud, you visualize yourself embodying all of the best aspects of nature.
- Give students the rest of the time to work on writing their poems in their garden journals and sharing their poems. As they are working, invite them over to the tea area in groups to get samples they can sip while they are working on their poems.

Wrap up:

Make sure items from all activities are cleaned up. Gather together and invite them to try using their mindful poetry or any other useful strategies to work on increasing their mindfulness this week.

Assessment:

Teacher observations of team tea making activity and evaluation of student poems.

Notes/Feedback:



My Spirit Health I

How can I take care of my spirit?

4.1

STANDARDS

CCSS: 6.SL.1, 6.W.7, 6.W.4

Health: 7.2M, 1.4M

Arts: VA2.4

OBJECTIVES

- I can know how I feel.
- I can be aware of what I need to feel good.
- I can analyze survey results.

MATERIALS

- White board, markers, and eraser
- Spirit surveys, clipboards, pencils
- Large bulletin board paper and tape
- Spirit seed pack instructions and template
- Sample seed packages (both for actual seeds and one demonstration spirit seed package that you have created beforehand)
- Seeds
- Markers, scissors and glue sticks

Preparation:

Prepare the classroom space and yourself to host a discussion about emotions and spirit- this can be a heavy topic for some folks. Assemble art supplies in an area where

they are accessible and organized. Purchase a low water wildflower seed mix. Create your own spirit seed package that you are willing to share with the students.

Background Information:

Conversations about the spirit or things of a spiritual nature are often shunned in classroom settings. As part of a health curriculum, this component is linked to, and just as important as physical health and mental health. It can be difficult to define, and even harder to nurture, but it is a worthwhile pursuit. Aim to raise lots of questions, and help students really think through what their spirit is and how they can take care of it.

Procedure:

- Enter the garden and take seats in the classroom area. Have students read the essential question and the objectives for the day.
- Creating a safe space: Explain that today we are going to talk about some topics that might be very personal or emotional for some students. Review the rules and ask if there are other agreements we need to make or considerations we need to hold in our hearts and heads.
- Spirit Surveys: Ask students to anonymously complete a spirit survey. ****Make sure that everyone understands what “anonymous” means.** These surveys are meant to give us an overall picture of our spirit health. Pass out surveys, clipboards, and pencils. Give students 5 minutes to complete and turn in surveys.
- Shuffle surveys and pass them back out so that everyone has someone else’s. Use the large paper and tape to record a summary (using tallies) of people’s responses to the questions. For example, if the question was, “Rate on a scale of 1-10 how you are feeling today with one being very low (tired, sad, frustrated, etc.) and 10 being great (really happy, well centered, calm, etc.),” you could tally people’s responses.
- Decide how many of the questions you want to analyze, and complete this activity with the students. Spend some time discussing the aggregated data, and use it to spawn a conversation about how we take care of spirit. Discussion prompts: How do you know when you are feeling good? What sorts of activities can you engage in to move yourself from feeling sad to happy, mad to calm, frustrated to satisfied? If veggies and fruits feed your body, what feeds your spirit?
- Prepare for spirit seed package activity. Share sample seed package activities with students. Show them how the seed packets explain how to take care of the seeds so that healthy plants will grow. These can be called the care instructions or guidelines because they explain what the plants need in terms of soil, water, sun, nutrients, etc. Explain that they will be creating seed packets that contain their spirit seeds. Discussion prompts: So, if you wanted to grow a strong spirit, what sort of care instructions would you include? What needs does your spirit have? What should be avoided?
- Give students time to create their seed packets. They need to write instructions, create drawings, cut out and glue packages if they have time.
- ****Most likely the seeds will need to be put in the packages at a later date so that the glue has time to dry.****

Wrap up:

Make sure items from all activities are cleaned up. Gather students into a circle and have them pair share one thing they are going to do this week to take care of their spirits.

Assessment:

Review spirit seed packs

Notes/Feedback:



My Spirit Health II

How can I take care of my spirit?

4.2

STANDARDS

CCSS: 6.SL.1, 6.RL.1, 6.RI.2

Health: 7.2M, 1.4M

Arts: VA2.4

OBJECTIVES

- I can respond in writing to a story.
- I can respond analytically to my environment.
- I can feel my spirit respond to the beauty of nature.
- I can represent my spirit abstractly.

MATERIALS

- Clipboards, garden journals, pencils
- Native American story
- Permission slips
- Lunches and snacks
- Water
- First aid kits
- Volunteers

Preparation:

This lesson involves a field trip to a place full of natural beauty, as well as human-maintained gardens. Green Gulch Zen Farm/Muir Beach is an excellent field trip

destination. Students can relax and play on the beach, and take a tour of a working farm. Obviously, arrangements for this trip would need to be made well in advance, but the possibilities for learning about the connections between personal health and nature are incredible. Students can see healthy food being raised in awesomely fertile soil, and their spirits and minds can enjoy the wind, waves, and sand of the beach. Before leaving the classroom, students should set-up their journals for observations and reflections about their field trip experience. To do this, place the following prompts on the board:

1. What sorts of food does the Green Gulch Farm grow?
2. What parts of Green Gulch Farm made your stomach hungry?
3. What parts of our field trip made your spirit sing?
4. How might a place like Muir Beach and Green Gulch Farm improve your health?
5. Draw pictures of some of the plants and animals you saw today.

Background Information:

To learn more about the Green Gulch Farm and Zen Center, visit this link:

<http://www.sfzc.org/ggf/>

Procedure:

- Enter the garden and take seats in the classroom area. Have students read the essential question and the objectives for the day.
- Review classroom rules and explain field trip procedures.
- Have students prepare their garden journals for note-taking, by writing the following prompts.
- Drive to Muir Beach.
- Take a tour of the Green Gulch Farm.
- Share snack and read Native American story aloud. Ask students to respond to this story in writing. What do they think it means? What wolf do they feed frequently? What can you do to help the good wolf grow stronger?
- Walk out to Muir Beach, set ground rules and give students time to play on the beach.
- Share lunch.
- Ask students to create a spirit still life using materials they find on the beach. Discuss what a still life is, and how to use concrete objects to symbolize abstract concepts. Ask them to assemble their compositions in a compact area (no more than 2ft by 2ft) and then ask them to write their name in the sand in front of their work of art. Give students 20 minutes to create spirit still life's. Then do a gallery walk to see everyone's compositions. Close this activity by talking about what will happen to their pieces of art over time (wind, water, people, birds, etc.)

Wrap up:

Do a trash and recycling pick up on the beach. Take 15 minutes and complete their reflections for the day. Pack up, gather in a circle, and have each person express gratitude for one thing they did today.

Assessment:

Teacher observations and reading of garden journals.

Notes/Feedback:



ASSESSMENT: Personal Health

What sorts of behaviors and choices will improve my health?

5.1

STANDARDS

CCSS: 6.SL.1, 6.W.4

Health: 5.1M, 6.1M, 7.1M

OBJECTIVES

- I can summarize what we have learned in this unit.
- I can create a plan to improve my health over the course of this school year.

MATERIALS

- White board, eraser, markers
- Clipboards, garden journals, pencils
- Health pledge template and model health pledge
- Colorful page tabs (for students to use in their garden journals to mark the page of their personal health pledge)

Preparation:

Create some sort of graphic organizer for the white board that has spaces for physical, mental, and spirit health. Write essential question and objectives on the white board as well.

Procedure:

- Enter the garden and take seats in the classroom area. Have students read the essential question and the objectives for the day.
- Summarize and Review: Ask students to copy the graphic organizer from the board into their journals, and then give them about 5 minutes to reflect and take notes on what they have learned. Next, have them share their ideas with a partner and add to their personal graphic organizers if they come up with anything new. Finally, as a group, fill in the graphic organizer on the board with all of the concepts we have covered so far in this unit. Discussion Prompts: How can we take care of ourselves physically? What sorts of mindful practices can we engage in? How do we feed our spirit? What activities have we done? What are the connections between these three different elements? How can nature (gardens, forest, beaches, and farms) help us to be healthier?
- Introduce the idea of a pledge. Discussion prompts: If you make a pledge to someone what does that mean? Can you make a pledge to yourself? Why might you want to do something like that?
- Explain that they are going to be making their own personal health pledges as the final project for this unit. This means that they are going to need to promise to take steps to improve their physical, mental, and spirit health over the course of this school year. For each of the three areas of personal health, they need to create 2-3 goals. Share a model health pledge with them so that they can understand the format and the intention. Discuss what an achievable goal might look like (I will increase my vegetable portion at lunch and dinner vs. I will never eat candy again.)
- Give students the rest of class time to create rough drafts of these pledges in their garden journals.

Wrap up:

Gather in a circle and ask students to visualize a healthier version of themselves. What are they eating? What sorts of physical activities are they engaged in? What are they doing to take care of their mind and their spirit?

Summative Assessment:

Teacher observations and reading of garden journals.

Notes/Feedback:



ASSESSMENT CONTINUED

What sorts of behaviors and choices will improve my health?

5.2

STANDARDS

CCSS: 6.SL.1, 6.W.4

Health: 5.1M, 6.1M, 7.1M

Arts: VA2.4

OBJECTIVES

- I can create a plan to improve my health over the course of this school year.
- I can create a drawing that represents a healthy me.

MATERIALS

- White board, eraser, markers
- Clipboards, garden journals, pencils
- Health pledge template copies (one for each student final draft)
- Body outline for Healthy Me drawings

Preparation:

- Put the graphic organizer for the previous lesson up on the white board, in addition to the essential question and the objectives.

Procedure:

- Enter the garden and take seats in the classroom area. Have students read the essential question and the objectives for the day.
- Making Connections: Many adults are interested in the topics we have been learning about in this unit. Some adults even decide to pursue careers in the fields of physical, mental, and spiritual health. Can we think of some jobs that fit within these categories? (chef, nutritionist, coach, physical therapist, personal trainer, yoga teacher, masseuse, psychologist, life coach, priest, imam, pastor, monk, artist, teacher, etc.)
- Give directions for Healthy Me drawings. Explain that students are to begin on these drawings once they are finished with their final draft of their personal health pledges. The final draft of the health pledges need to be completed on the template form and need to be signed both by themselves and their chosen coach. The Healthy Me drawings need to symbolize their vision of personal health.
- Give students 30-35 minutes to finish up pledges and drawings.

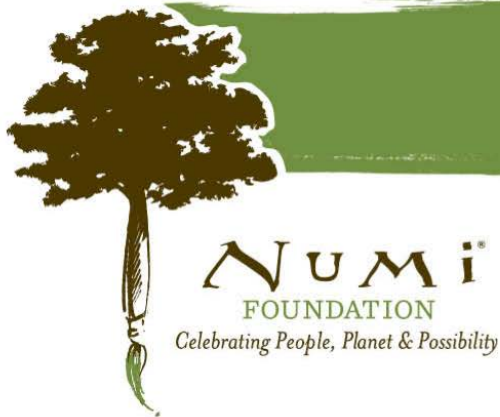
Wrap up:

Have students attach both their drawings and their pledges to their clipboard and then leave both on their seat. Do a gallery walk so that everyone can see each other's drawings and pledges.

Summative Assessment:

Student pledges and artwork

Notes/Feedback:



Plant Survival I

What does a plant need to survive?

6.1

STANDARDS

NGSS: MS-LS1-5

CCSS: 6.SL.1, 6.W.1

OBJECTIVES

- I can create a valid, replicable experiment that will answer my question.
- I can be an effective group member.

MATERIALS

- White board, markers, eraser
- Garden journals, clipboards, pencils
- Experiment supplies (soil, pots, plants, boxes, watering cans)
- Bulletin board paper with lab write-up template

Preparation:

In this lesson, students will start planning an experiment to test the question of what a plant needs to survive. In the next lesson, students will actually begin conducting the experiment, so it would make sense to start gathering likely supplies before that class.

Consider that students will try to test variables such as air, water, soil, and sunlight and plan accordingly. Write essential question and objectives on the white board. Also, write down a few key vocabulary words: experiment, procedure, supplies/materials, variables, controls, hypothesis, etc. Create a lab write-up template on a large piece of paper.

****If you are using this entire curriculum in sequence, you should bury a second apple in a well-marked area of the garden, near the apple you buried at the beginning of Unit 1. Both of these apples will be used in Unit 3 when students study decomposition. Make sure you put flags in the ground, or mark the spot exactly so that you don't lose your apples!****

Background Information:

To prepare yourself for this unit, you will want to make sure that you are familiar with the scientific process, specifically how to set up an experiment. Also, you will want to have a strong grasp on plant photosynthesis, respiration, and reproduction.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Making Connections: Explain that we are starting a new unit of study, and the overarching essential question is, “How do plant and human health needs compare?” Remind them of the unit we just completed which resulted in personal health pledges and a better understanding of their own personal health. Now we are going to study what plants need to be healthy and survive.**
- **“Lightening Round” brainstorm with a neighbor: What do you think plants need to survive?**
- **Share out results of conversations, and then ask them how they would prove that a plant needs something to survive and be healthy? (Push them toward the idea that if something is truly needed for survival, if you remove that variable, the test subject should suffer, perish, etc.)**
- **Explain that we are going to conduct an experiment to test for each of the following variables: water, sunlight, air (CO₂ specifically), soil (micronutrients.) Have students review the vocabulary on the board, and either give definitions for the words or use the vocabulary words in a sentence.**
- **Divide students into groups with each group focusing on one variable. Explain that they need to create an experiment that tests whether or not that variable is necessary for plant survival. Have students copy the lab write-up template into their journals. ***Optional: If you have a couple of kids who want to test another variable that is not listed here, but they make a good argument and have a solid methodology, allow them to try it out. Also, you might want to have a control group that grows a plant that uses soil, water, sun, and air.**

- Let students plan their experiments. Emphasize that they need to complete the first portion of their lab write-up template so that you can help them gather all of their needed supplies.
- Check in with each group during this work time to make sure that they are creating solid experiments. Make sure that they understand the importance of isolating variables and ensuring that other factors don't impact their results. (I.e. if you are testing the importance of sunlight on plant growth, not only do you need to remove sunlight as much as possible, you need to make sure that your plant is still getting air, water, and micronutrients.)

Wrap up:

Gather together in the classroom area, and ask for students to share out obstacles and questions. Hopefully one of the questions that will emerge is how to make sure that there is continuity between different experiments- how do we make sure that the plants that are getting water, get the same amount?

Assessment:

Teacher conversation with groups during experiment planning phase; review of lab write-up

Notes/Feedback:



Plant Survival II

What does a plant need to survive?

6.2

STANDARDS

NGSS: MS-LS1-5

CCSS: 6.SL.1, 6.W.1

OBJECTIVES

- I can create a valid, replicable experiment that will answer my question.
- I can be an effective group member.

MATERIALS

- White board, markers, eraser
- Garden journals, clipboards, pencils
- Experiment supplies (soil, pots, plants, boxes, watering cans)
- Bulletin board paper with lab write-up template

Preparation:

In this lesson, students will actually begin conducting the experiment, so make sure you have everything they need. Write essential question and objectives on the white board

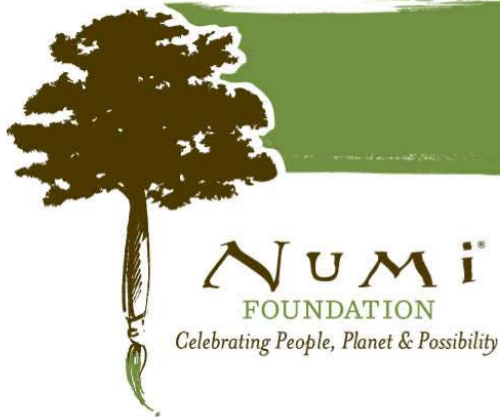
Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Pass out clipboards, pencils, and garden journals and give students time to view their lab write-ups. Ask them to pay special attention to the materials/supplies and procedures sections, and to update these areas as needed.
- **Group Discussion:** Take some time to ensure that students have planned solid, workable experiments. Make sure that they understand the importance of isolating variables and ensuring that other factors don't impact their results. (I.e. if you are testing the importance of sunlight on plant growth, not only do you need to remove sunlight as much as possible, you need to make sure that your plant is still getting air, water, and micronutrients.) Clarify how much water all of the groups (except the group testing water) are going to give their plants. Also touch on the fact that everyone will start with the same plant and the same soil (except for the group testing soil.)
- **Experiment Set-Up:** Give students time to set up their experiment and to continue working on their lab write-up, being sure to include any questions or concerns they might have.

Wrap up:

Gather together in the classroom area, and ask for students to share out concerns and questions. Establish a maintenance routine for the plants according to experiment protocols (frequency of water, etc.)

Notes/Feedback:



Flourishing Plants I

What does a plant need to thrive?

7.1

STANDARDS

NGSS: MS-LS1-5

CCSS: 6.SL.1, 6.W.1, 6.L.6

Health 1.4M

OBJECTIVES

- I can create a valid, replicable experiment that will answer my question.
- I can discuss new concepts with a partner.
- I can gather data by observing natural phenomena.

MATERIALS

- White board, markers, eraser
- Garden journals, clipboards, pencils
- Small flags, signs or other means of marking healthy plant communities
- Structured observation template on large paper

Preparation:

Before class, mark thriving plant communities with a flag. If possible, mark areas of natives, vegetables, trees, and shrubs both within the garden and within the larger school grounds. Write essential question and objectives on the board. Create structured observation template on large paper, and include the following: Is this area a thriving plant community? Why or why not? If the plants are thriving, why is this the case?

Background Information:

This lesson asks students to begin thinking about the gradations of health- what does it mean to be surviving vs. flourishing? We will examine this question both within personal and plant contexts. We all have basic requirements for survival, but what is needed to live a vibrant, meaningful life? Can we imagine what plants might need to thrive?

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain that the experiment we are conducting looks at what plants need to survive- the most basic level of health. Give students time to conduct their observations and record their findings in their garden journals.**
- **Share out findings and questions about the plant experiments.**
- **Making the Connections: In small groups, ask students to think about the difference between thriving and surviving? How are they different? What moves you from one to the other? Is it the same for everyone? Does one feel better than the other? What about for plants? What do you think they might need to thrive? What does thriving look like for plants? What sorts of experiments could we set up to test this question?**
- **Structured Observations: Explain that you have marked some observation areas in the garden (and possibly beyond.) These marked spots are all areas where plants are growing. Students are to walk around to these marked areas and observe what is going on. They need to determine if the plants are thriving, and they need to explain how they reached their determination. Also, they need to develop a hypothesis as to why the plants are thriving (or not.)**
- **Give students time to wander around the garden and school yard, making their observations and recording information in their journals.**

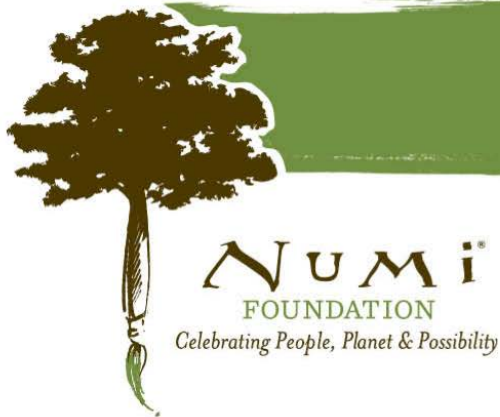
Wrap up:

Gather together in the classroom area, and ask students to share out some of their observations.

Assessment:

Teacher observations and review of garden journals

Notes/Feedback:



Flourishing Plants II

What does a plant need to thrive?

7.2

STANDARDS

NGSS: MS-LS1-5

CCSS: 6.RI.7

Health: 1.4M

OBJECTIVES

- I can gather data by observing natural phenomena.
- I can create a plant community that helps individual plants to thrive.

MATERIALS

- White board, markers, eraser
- Seedball Directions Worksheet (copies for each student)
- Seedball materials: seeds, clay, potting soil, water, seeds, tubs for mixing, cups for seed selection, cardboard box for drying

Preparation:

Make sure you have different sorts of seeds for the seedballs. Try to get seeds of plants that are going to provide different things for the overall plant community such as shade, pollinators, nitrogen fixing, etc. Write the essential question and the objective on the board.

Background Information:

This lesson looks at how plants can actually help each other to thrive. Some plants like to grow in the shade of other plants, some plants attract beneficial insects, and some discourage garden pests. Some plants make micronutrients more available to others,

while some plant roots help break apart the soil for other plants. Start looking for these beneficial relationships between plants and encourage your students to do so also!

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Have students review their individual health pledges with their coach, and ask them to report on their progress, as well as to reflect on whether or not their goals are helping them to thrive.**
- **Explain that in the last class, we did some garden observations of different plants. They were asked to determine whether plants were thriving or not, and why. This might have been a little difficult because they didn't have a lot of background information. We didn't spend a lot of time talking about the how's and why's of this concept- so maybe it was hard to assess whether or not the plants were really healthy. Share that we did this activity because sometimes it is useful to do observations and develop our own ideas on things before we are exposed to lots of other data. Today, we get more information!**
- **Making Connections: Introduce the Three Sisters Guild and if you have the remnants of this plant community in your garden, point it out to them. Ask students to summarize how the plants help each other out in this plant community. Ask students to think of other plant communities that wind up helping individual plants survive. ****It is important to highlight that the connections between the plants improve individual plant health.******
- Explain that their task today is to create a thriving plant community by creating seedballs! We are going to try and build up some native plant communities by putting seeds of different plants into a ball of clay/soil, and then putting these in places where they will get the winter rains. Pass out seedball directions and have students spend time reading over why seedballs work and how we construct them.
- Encourage students to be thoughtful in their seed selection- choose plant seeds that will ultimately benefit the whole plant community.
- Seedball construction time!

Wrap up:

Clean up hands and supplies. Gather together in the classroom area, and ask students to share some of their reasoning as to the seeds that went into their seedball. How will their combination of seeds help to create a thriving plant community? Given the ways in which plants can help each other, what are some of the items plants need to thrive? (right amount of shade, soft soil, micronutrients, mulch, fungal hyphae, etc.)

Assessment:

Teacher observations of seedball construction and related conversations

Notes/Feedback:



Photosynthesis

How does the process of photosynthesis provide energy for plant growth?

8.1

STANDARDS

NGSS: MS-LS1-6

CCSS: 6.SL.1, 6.W.1

Arts: VA2.5

OBJECTIVES

- I can create a valid replicable experiment that will answer my question.
- I can use our experiment results to make sense of the phenomenon of photosynthesis.
- I can appreciate the power of the sun.

MATERIALS

- White board, markers, eraser
- Plant experiments from earlier lessons
- Clipboards, garden journals, and pencils
- Lab write-up template on large paper
- Photosynthesis equation on large paper
- Solar printing paper, cardboard pieces of the same size, dress-making pins, buckets with water

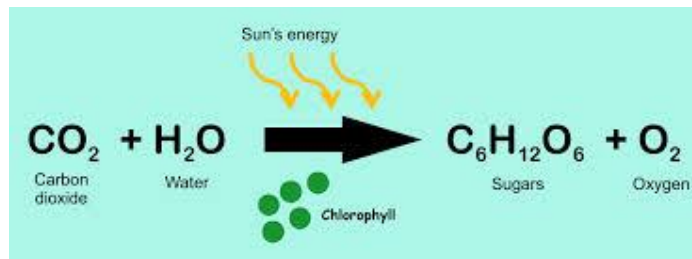
Preparation:

Create an example of solar printing using photo paper (which can be purchased from art supply stores or ordered online.) Set up solar printing area with pins,

cardboard, tubs with water, and solar paper (hidden from the sun until right before you need to use it.) Write essential question and objectives on the board.

Background Information:

There are many variants on the equation for photosynthesis, some more complex than others. Feel free to use a different one if it suits your purposes. The important point is that students begin to make the connection between the results of their experiment and the process of photosynthesis. Also, working with photo printing paper can be a little tricky, so make sure students have gathered 2-3 leaves and know the procedures before you give them the paper!



Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain to students that today we are going to finish up our experiments. We have talked about what plants need to survive, and we have also ventured into some conversations and observations around what helps plants to thrive. Let's establish what plants need to survive based on the data from our experiments and then we can look at why these things are needed.**
- **Experiment Review and Final Write-up: Put the lab write-up template on the board, in case some students haven't finished copying it into their journals. Students make final observations, reach a conclusion, and then write down their results in their garden journals (in the lab write up template they created the week before.)**
- **Analysis: Once everyone is done, have groups share out their results. Discuss the findings. Possible discussion prompts: Do you feel like these results are accurate? What might be some flaws in our experiment design? How could we design experiments that might be more accurate? What conclusions can we draw about what plants need to survive?**

- Put the equation for photosynthesis on the board. Ask students to chat with a neighbor about it. Possible discussion questions: Do you recognize anything in this equation? What do you know about equations and the opposite sides of the equal sign? How does this equation connect to our experiments?
- Emphasize the importance of the sun as the catalyst in the equation- the sun is what powers this process and ultimately allows the plant to make sugars (food) for itself.
- Prepare for solar printing. Have students each gather 2-3 small to medium sized leaves from the garden. Once students have gathered their leaves, ask what role leaves play in photosynthesis (gather light, O₂/CO₂ exchange.) Explain that we are going to create some artwork that captures the image of the leaves using the power of the sun. How fitting! Demonstrate the solar printing process, and then allow students to print their leaves.

Wrap up:

Clean up hands and supplies. Gather together in the classroom area, and ask students to spend some time appreciating the power of the sun this week. Prompt them to think about how crucial sunlight is to plants and therefore to us.

Assessment:

Assessment of lab write-ups and observation of in-class discussion.

Notes/Feedback:



Photosynthesis

How does the process of photosynthesis provide energy for plant growth?

8.2

STANDARDS

NGSS: MS-LS1-6, MS-LS1-1, MS-LS1-2

Arts: VA2.4

OBJECTIVES

- I can create a microscope slide of leaf stomata.
- I can draw and label plant leaf cells.

MATERIALS

- White board, markers, eraser
- Clipboards, garden journals, and pencils
- Photosynthesis equation on large paper
- Microscopes, blank slides, slide covers, tweezers, clear nail polish
- Copies of magnified and labeled leaf drawing
- White paper, newsprint, paint, rags, paper plates, brushes, brayers (optional)
- Garden leaves (students can pick these or you can harvest a bunch from other places before class)

Preparation:

Create an example slide and an example of leaf printing. Write the essential question and the objectives on the board. Set up both slide creation area and art area. It also might be helpful to get a volunteer to help with the lesson today as there are lots of hands-on activities happening.

Background Information:

This lesson looks a little more closely at how plant leaves capture sunlight and how they take in CO₂ and O₂. The slide making exercise and the drawing allows students to get up close and personal with stomata. Peeling off the leaf's cuticle and essentially printing "the stomata" can be a little dicey- it really comes down to how well the students applied and peeled the nail polish. Practice a few times on your own to get the hang of it. With the leaf printing, have students do one printing that just uses the chlorophyll in the leaf. Really juicy leaves like brassicas or nasturtiums work well- place the leaf on white paper and fold the paper to cover it, and then roll the brayer over it a bunch of times.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain to students that today we are going to examine the crucial role plant leaves play in the process of photosynthesis.**
- **Place photosynthesis equation on the board and give students a couple of minutes to review it, discuss it, and make connections to plant health and survival. Have students share out their thoughts.**
- **Introduce students to the drawing of a leaf. Point out the different structures and explain their purpose. Explain while students are setting up their leaf slides, they will need to make a very detailed leaf drawing, making sure to label all of the parts.**
- **Walk students through the two different activities they will be doing today.**
 - a. **Show them how to create slides of the leaf stomata. They need to pick a smallish leaf, and then carefully paint clear nail polish on part of the underside. As they wait for it to dry, they will complete their leaf drawings. Once the nail polish is dried, students will carefully try to peel it off in as large a piece as possible. Students will then get a blank slide and place the leaf peel in the center- this is called a dry mount. Slide covers are optional and may not stay in place well without some kind of solvent. Show students how to use the microscopes or viewers to look at their slide. Students will**

work in groups 3-4 to create 1 slide. Emphasize safety- slides and slide covers can break easily and microscopes are delicate pieces of equipment.

- b. Also show them how to do leaf printing starting with just the simple chlorophyll prints. Then show them how to apply paint to the leaves (using brush or brayer) and then press the leaf onto white paper, painted side down (once again just using the brayer or the force of their hand.) Have them experiment with different types of leaves.**
- Divide the class into two parts and let them get to work. Closely monitor activities at both stations. Keep an eye on the time, and make sure to give groups time to clean up before they switch stations.**

Wrap up:

Clean up hands and supplies. Gather together in the classroom area, and ask students what they think plants do with the glucose (sugars) they make during photosynthesis. (Burn them for food, store them, use them to build cellulose.)

Assessment:

Assessment of garden journals and plant cell drawings.

Notes/Feedback:



Plant Reproduction I

What sorts of adaptations have helped plants to reproduce?

9.1

STANDARDS

9.1

NGSS: MS-LS1-4

CCSS: 6.SL.1, 6.RI.7

OBJECTIVES

- I can use informational texts to build background knowledge.
- I can design innovative solutions to real life problems.
- I can be an effective group member.

MATERIALS

- White board, markers, eraser
- Clipboards, garden journals, and pencils
- Large seeds like fava beans (enough for every group to have one)
- Adaptation props- odds and ends such as paperclips, toothpicks, glue sticks, pipe-cleaners, Velcro, paper, balloons, etc- that students can use to adapt seeds.
- Seed adaptation handouts

Preparation:

Make sure you have plenty of adaptation supplies in your box so that students have a wide range of materials when trying to adapt their seeds to overcome different obstacles. Write the essential question and the objectives on the board.

Background Information:

The adaptive technology of seeds is a fascinating field. From burrs to slingshots, plants have developed some pretty innovative means to give their offspring the best chance at survival. This brings us back to overall unit focus- plant health. Just how does preparing for future generations fit into the business of surviving and thriving? Food for thought!

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain to students that today are going to continue to study plant survival and health. In particular, we will focus on how plants try to ensure the health and survival of future generations- through seed adaptation. Write the word, “adaptation” on the board, and invite students to define it and give examples.**
- **Pass out Seed Adaptation handout and have students read silently. Discussion Prompts: Why have plants evolved different types of seeds? Why is it advantageous to spread your seeds far away rather than right next to you? What are some methods that plants use to spread their seeds?**
- **Seed Adaptation Challenge: Explain to students that they are going to have to take a regular fava bean seed and adapt it to use some natural means of dispersal. Give each group a natural means of dispersal (water-must float for at least 1 minute, wind- must glide at least 6 feet away, animal- must stick to a person/animal for at least 8 strides, animal- must attract an animal, propellant- must shoot at least 3 feet away.) Have each group write down their assignment (their means of dispersal) and then show them the box of parts they can use.**
- **Give groups time to work on their seed adaptations. Circulate to make sure that everyone understands the assignment. Groups need to discuss, draw up plans and create. If they have a plan that is not supported by the materials in the box, but is still feasible (without rockets or huge cash expenditures), let them draw up detailed plans. Explain that they will not be able to compete with in the testing portion of this assignment however.**

- **Clean up and allow groups to demonstrate and explain their inventions. Discuss the merits and drawbacks of different proposed adaptations.**

Wrap up:

Clean up hands and supplies. Gather together in the classroom area, and ask students to contemplate how long this sort of adaptation takes in nature. Does this happen in one generation or does this take hundreds and thousands of years? **Making Connections:** Does adaptation seem like a useful tool in promoting species survival and health? Does the ability to adapt, grow, and, change affect our individual ability to be healthy and thrive?

Assessment:

Teacher observations

Notes/Feedback:



Plant Reproduction II

What sorts of adaptations have helped plants to reproduce?

9.2

STANDARDS

NGSS: MS-LS1-4

CCSS: 6.SL.1

Arts: VA2.4

OBJECTIVES

- I can demonstrate my understanding of plant adaptations by drawing pollinator specific flowers.

MATERIALS

- White board, markers, eraser
- Clipboards and pencils
- Pollinator drawings and descriptions
- Drawing paper and coloring supplies (crayons, markers, colored pencils)
- As assortment of flowers (to supplement whatever you might have in the garden) for students to make mini bouquets, string or twine, and scissors

Preparation:

Pick flowers from around your neighborhood, backyard, or a local park. Make copies of pollinator drawings and descriptions- enough so that each student can have one. Put essential question and objectives on the board.

Background Information:

Flowers have co-evolved over many years along with their pollinators, so it is no surprise that they are made to order! From their color and shape, to their smell and taste- they are designed to lure in the help they need. This lesson is designed to help students celebrate the diversity of flower design and appreciate nature's adaptive abilities once again.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain to students that today are going to continue to study plant survival and health. In particular, we will focus on how plants try to ensure the health and survival of future generations- through flower adaptation. Just like seeds, flowers are designed with a particular purpose in mind- pollination.**
- **Prompt students to think about pollination. Discussion prompts: How does pollination happen? What is the goal of pollination? Who helps plants get pollinated?**
- **Introduce the cast of pollinators- have students read the species names on the different cards aloud and share the pictures. Point out that pollinators all have different needs.**
- **Flower Art Design Challenge: Students are going to randomly (and SECRETLY) be assigned different pollinators, and they need to design a flower that will attract that pollinator and facilitate pollination. Give some sort of silly example or model such as a pollinator that couldn't fly, but could only roll. What sort of flower/plant would you need to design to accommodate this sort of pollinator?**
- **Give students time to create their designs.**
- **As students finish, give them time to create mini-bouquets. Push them to include a diverse array of flowers in their bouquet and to appreciate the smell and look (and to imagine what sorts of pollinators these flowers attract.)**

Wrap up:

Clean up supplies. Gather together in the classroom area, and ask students to share their flower drawings and explain their designs. Have the other students guess which pollinator they had been assigned. Ask students if all plants are pollinated by insects? (No, about 10% of plants are wind pollinated, including many grasses, and pines.)

Assessment:

Flower art designs

Notes/Feedback:



ASSESSMENT: Health of Plants and People

How do plant and human health needs compare?

10.1

STANDARDS

NGSS: MS-ETS1-4

CCSS: 6.SL.1, 6.W.2, 6.W.10

OBJECTIVES

- I can reflect on my own health.
- I can talk with others about what we have learned so far.
- I can compare the health needs of plants and humans.
- I can plan an experiment.

MATERIALS

- White board, markers, eraser
- Clipboards, garden journals, and pencils
- Venn Diagram worksheets (one for each student)

Preparation:

Put essential question and objectives on the board.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Give students time to reflect on their personal health pledges and reflect in writing on their progress. Debrief quickly if students wish to share their progress with their classmates.
- Summarize: Tell students that it is time for us to end this unit on plant health, and so we want to try to summarize what we have talked about and done so far so that we are ready to make sense of it all. On the board, write the headings, “Human Health” and “Plant Health.” Allow students to flip through their journals to review what we have covered in the last two units. Also, let them chat with each other and draw/make lists of ideas. Share out and place their responses on the board.
- Introduce the graphic organizer known as a Venn Diagram. Have students explain to each other how it works and where you place information on it. Explain that you want students to use this tool to organize their thoughts as they compare plant and human health needs. Encourage them to think about surviving vs. thriving, adaptation, and many of the other concepts we have covered.
- Give students time to finish their diagrams. If student finish early, have them write out an experiment plan to determine what plants need to thrive (example- how could you test if plants are made healthier by earthworms, compost, classical music, vitamin water, etc.?)

Wrap up:

Gather students in the classroom area and help them to Make Connections: There are lots of neat connections between human and plant health, and during our next class we will explore some of them. If all of these experiments, research, and questions about plant health, structures, and adaptation has interested you, what sorts of careers might speak to you? (Farmer, botanist, scientist, herbalist, chemist, doctor, the field of biotechnology, etc.)

Summative Assessment:

Venn Diagrams- look for both content and arrangement

Notes/Feedback:



The Health of Plants and People

In what ways does the health of plants and people connect?

10.2

STANDARDS

CCSS: 6.SL.1

OBJECTIVES

- I can calm my mind, body, and spirit through meditation.
- I can talk with my peers about important health concepts.
- I can use plants to improve my health.

MATERIALS

- White board, markers, eraser
- Large body outline on white paper, and markers
- Eating a rainbow cue cards
- Nice smelling flowers (enough for every student to have one)
- Supplies to make a “rainbow” salad- lettuce, greens, radishes, carrots (from the garden or a store), colanders and buckets for washing produce, soap, water, and buckets for washing hands, large salad bowls, kid-friendly knives and cutting boards, oil, vinegar, salt and pepper, plates and forks
- OPTIONAL: Herbal medicine making supplies (items to make tea, cough syrup, poultice, vegetable glycerine tincture, etc.)

Preparation:

Put essential question and objectives on the board. Set up “cooking” area with supplies. Determine how you are going to divide up the salad-dividing tasks

amongst your students because everyone will want a task. You can have the harvesters, salad washers, the driers, and the leaf tearers. You can have the carrot graters, the radish choppers, and the preparers of any other veggies. Other students can make the dressing, someone can mix the whole salad, and someone else can divide it onto plates. The herbal medicine making portion is entirely optional, but it would be useful for the students to understand that beyond just eating plants for health, many of our modern drugs (e.g., aspirin, Morphium, Tamoxifen, Vincristin, etc.) were originally derived from botanical material. Also, many cultures around the world (and in our country) still use traditional herbal medicine to deal with all sorts of health issues (physical, mental, and spiritual.) It can also be fun to introduce them to spearmint, lavender, and chamomile and their various health benefits.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain that we are going to start off today by doing a little something that is good for the health of our mind, body, and spirit- meditation. We are going to take some time to lay down, close, our eyes, slow and deepen our breath, and visualize our connections with plants. Give every student a flower and instruct them to get comfortable (sitting up or laying down) and relaxed. Have them close their eyes and ask them to listen to the sound of your voice. Meditation script (feel free to alter): Close your eyes and listen to the sound of your breath as it moves in and out of your body. Is it quick or slow? Deep or shallow? Does it fill your whole body? Take your flower up to your nose and as you breathe in, appreciate its fragrance. Imagine the plant this flower grew on and picture yourself sitting next to this plant. As you breathe in, imagine the plant sending clean, clear oxygen to you- visualize it as this blue wave that enters your body and sweeps it clean. As you breathe out, see the carbon dioxide you are sending to the plant as a green wave that enters the leaves and refreshes the plant. As you keep breathing, visualize this green and blue circle of connection between you and your plant. Keep breathing slowly and deeply, feeling cleaner and clearer with each breath. (Give students 1-2 minutes to focus on breathing.) Now, start to notice your breath again and the smell of your flower. Wiggle your fingers and your toes. Blink open your eyes and sit up. Find a smile growing on your face and share it with your neighbor.**
- **Making Connections: Give students time to reflect on the essential question. Ask them to chat with their neighbor to try and come up**

with connections between human and plant health. Discussion prompts: In what ways can plants improve our physical, mental, and spirit health? In what ways can humans improve plant health? If plants are unhealthy, does it follow that we might be too?

- **Eating a Rainbow Activity:** Explain that by eating certain kinds of plants we can actually improve our physical health. Discussion prompt: What do you think it means to eat a rainbow? Pass out cue cards, and ask kids (in groups of 3-4) to wander the garden and find plants that fit their assigned color. Also ask them to brainstorm foods that also match this color. (Make sure they understand things that are artificially colored like skittles, do NOT have the same health benefits, and can actually be harmful to your health.) After letting kids wander and collect information for about 8-10 minutes, gather back into the classroom area. Have each group share their color, the plants that are that color, and the health benefits of those plants. Have them color in the parts of the body that benefitted by these plants with the appropriate color. Take turns until everyone has shared and the body is full of colorful drawings.
- **Making rainbow salad:** Make sure all students wash their hands with soap in running water. Divide the tasks amongst the kids and make sure that everyone knows how to handle food and cooking tools safely. Spend time going over how to wash food and how to use knives. Monitor knife station closely.
- **Enjoy shared salad! ***Optional:** As students are eating the salad, you can share herbal information with them or you can do a demonstration.

Wrap up:

Clean up and give thanks for the meal and what we have learned.

Assessment:

Teacher observations

Notes/Feedback:



Sensory Exploration of Soil I

What can my senses tell me about soil?

11.1

STANDARDS

CCSS: 6.SL.1, 6.W.7

OBJECTIVES

- I can use my senses to explore the content and health of soil.
- I can be an effective group member.

MATERIALS

- White board, markers, eraser
- Clipboards, journals, pencils
- 1 teaspoon
- Amazing soil facts sheet (for your reference)
- Soil samples- at least 5 different ones so that you can have small enough groups

Preparation:

Put essential questions for the lesson and the unit, as well as the objectives on the board. Gather soil samples ahead of time. You can use garden soil, and potting soil, but it is also good to try and grab other types of soil too, such as a really sandy soil, riparian soil, a clay soil, an un-amended soil, etc.- so that students can really begin to appreciate the differences between soils. Also, watch this video to see how to do a simple soil texture test: <http://www.youtube.com/watch?v=GWZwbVJCNec>

Bury your third apple in the ground near the two you buried during Unit 1 and 2. These apples will be used for the decomposition lessons later on in this unit.

Background Information:

Soil science is an incredibly rich field that can really hold student interest. If you feel a little shaky on some of the topics covered in this unit, do a little research. There is all sorts of great information out there about soil structure and texture as well as the soil food web. The study of soil presents us with a lovely and very accessible opportunity to begin our exploration of ecosystems.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain that we are starting a new unit today. Thus far we have studied our own personal health, and the health of plants. Now, we are going to study soil health. Have them read over the unit essential question. So, rather than just looking at the health of one unit (person or plant) we are going to be looking at the health of a whole system, and how the parts of that system can influence its overall health.**
- **Building curiosity: Invite students to have a “lightening round” conversation with a neighbor about the following topics- What makes soil healthy or not healthy? How can you tell if soil is healthy? What signs might you look for? Have students share out some of their ideas. Suggest that we often do not appreciate just how incredible the substance is beneath our feet- we talk about things as being dirty or soiled- these words have negative connotations. Hold out a teaspoon and ask them if we were to fill this with soil- what would actually be in the teaspoon? It is brimming with life. Write the statistics about soil biota on the board, one piece at a time, stopping to explain as needed.**
- Have students set up their journals so that they can conduct soil observations. They should set up a chart that has the headings: Sounds like...../Feels like...../Smells like..../Looks like..../Ribbon (Y/N)?
- Demonstrate how to use senses to study soil samples. Model how to smell it, feel it, rub it in hands, hear it, and look at it. Discuss descriptive words they might want to use: brown, moist, sandy, clayey, big pieces, small pieces, rough, smooth, etc. Finally show them how to carefully wet a small portion of the soil in their hand and then try to form an unbreakable “ribbon.” Explain that this test can be used to determine if soil has clay in it.
- Break students into groups, and let them begin their soil testing and circulate to answer questions and redirect as needed.

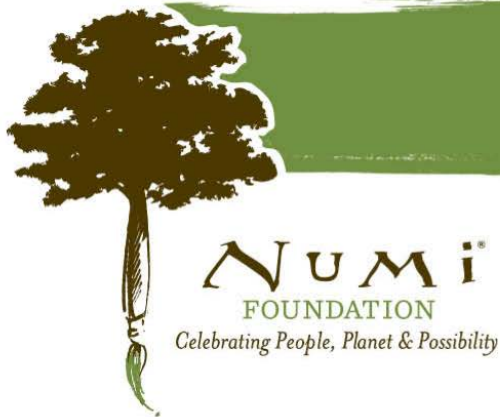
Wrap up:

Clean hands and gather back into the classroom area. Ask student to share what they learned through their close observation of soil.

Assessment:

Student notes on soil

Notes/Feedback:



Sensory Exploration of Soil II

What can my senses tell me about (clay) soil?

11.2

STANDARDS

Arts: VA2.5

OBJECTIVES

- I can create a work of art that demonstrates my understanding of soil organisms.

MATERIALS

- White board, markers, eraser
- Images of soil profile and soil organisms (for your own reference and to share with students)
- Air dry clay, rolling pens, rulers with good edges, flat plastic, wood, or cookie sheets for clay to sit on
- Pins, sticks, and other implements for marking the clay

Preparation:

Put essential question and objectives on the board. Gather art supplies and make sure you have enough clay for everyone and enough cookies sheet, plastic, etc. for everyone. Clay tools can be shared. Assume that everyone will be making tiles that measure 6inx6in. If you have time, make a clay tile yourself ahead of time, so that you have a model and you can troubleshoot in advance.

In preparation for lesson 10 of this unit, you might want to look at getting some compost delivered to your garden site.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Draw soil profile on the board and talk about each section as you go. Discussion prompts: What do you think might be in this section (or horizon as soil scientists like to call it)? What do you notice about the size of rocks as you move toward the center of the earth? Where do you think most of the soil life lives?
- Share pictures of organisms that live in the soil. Discussion prompts: What do you see and what don't you see? (Insects, small mammals, reptiles, but no birds, large mammals.) What sorts of anatomical structures do you notice? (Legs, no legs, antennae, eyes, etc.) Discuss relative sizes of these organisms- from quite visible with the naked eye to invisible unless you have an electron microscope.
- Introduce art project. We are going to use clay (which is actually a soil type or texture) to make small tiles. We will roll out the clay on cardboard, and then we will measure and cut it so that it is the right size. On these tiles we are going to draw soil profiles. Create an example on the board. Show how to create the different horizons, and then talk about how to use different tools to draw the soil organisms. Explain that given the complexity of some of these creatures, students might want to simplify them or create symbols for them.
- Review rules with students and show them where supplies are and let them get started.

Wrap up:

Clean up and gather together in the classroom area. Ask students to name one organism they placed in their piece of artwork. Explain that the next time we meet they will be studying living soil organisms.

Assessment:

Student made clay tiles that represent soil cross-section

Notes/Feedback:



Soil Biota I

What organisms (micro and macro) live in our soil?

12.1

STANDARDS

CCSS: 6.SP.1, 6.SP.2, 6.SP.4

NGSS: MS-LS2-1

OBJECTIVES

- I can use my observational skills to gather data
- I can use math to make meaning of data.

MATERIALS

- White board, markers, eraser
- Clipboards, garden journals, and pencils
- Clearly marked square foot plots of garden (or other natural) area where students can dig
- Buckets, trowels, measuring sticks
- Chart example (to copy onto the board)
- Poster paper and markers (one set for each group plus one sheet extra for whole class exercise)

Background Information:

Students are going to combine observation with math to develop a deeper understanding of what is going on under their feet. This lesson has them tallying what sorts of organisms they find as they carefully remove each layer of soil. Then, once they have dug a deep enough hole, they will create dot plots to document what they have discovered.

Preparation:

Put essential question and objectives on the board. Set up digging areas and set out digging tools. Create example of a dot plot.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Square Foot Soil Observations:** Explain that today we are going to be conducting research into the soil biota in our very own school yard. First, we are going to set up our system for recording information.
- **Have students set up chart in their journals so that it looks like the one you place on the board. Explain how to use it to record data.**
- **Show students how carefully excavate the soil layers. Explain that they will follow the process of carefully observing, removing an inch or two of soil and observing again, etc. explain that they are looking for evidence of soil and plant life as well as changes in soil appearance.**
- **Let students get to work on their square foot soil observations. Give them only about 20 minutes and keep them moving through the different layers.**
- **Have students clean up and refill their holes. Give them a couple of minutes to update their notes. Then show them how to create a dot plot that shows types and quantities of soil organisms they found.**
- **Give students time to create a dot plot. Once students have finished have them share their findings with the whole class. Post dot plots around the classroom area.**
- **Calculating averages:** Explain that we are now going to do a little activity that is going to allow us to calculate the average number of soil organisms in our garden soil. Lightning round share: Ask students to talk with their neighbor about how to calculate the mean of a set of numbers (one method of finding the average.) Review how to do this. Assign each group one type of soil organism to calculate the mean for based on the dot plots of each group. So, one group will go around to

each dot plot, get each group's numbers for worms, and then find the mean. Another will follow the same process for ants, etc., etc.

- Once all groups have calculated their average, they will add them onto a group bar graph of soil organisms. Discussion prompts: What do you notice about the organisms in our garden soil? (Largest population, smallest population, etc.) Why did you think these numbers look like this? Are these numbers accurate or was there a problem with our sampling technique? How does our collaborative graph connect or relate to the dot plots made by the groups?

Wrap up:

Have students clean up and gather in the classroom area. Making Connections: How do you think soil organism populations relate to overall soil health?

Assessment:

Student observations, notes, and statistics

Notes/Feedback:



Soil Biota II

What organisms (micro and macro) live in our soil?

12.2

STANDARDS

CCSS: 6.W.3

NGSS: MS-LS2-1

Arts: VA2.1

OBJECTIVES

- I can write about what I observe in the natural world.
- I can use art to express what I know about soil organisms.

MATERIALS

- White board, markers, eraser
- Clipboards, garden journals, pencils
- Most Wanted Poster templates (one for each student)
- Markers, crayons, etc.
- Soil organism profiles (from week 11 Powerpoint presentation)
- Insect id books

Preparation:

Put essential question and objectives on the board. Set out art supplies.

Background Information:

The last couple of lessons gave students an overview of soil biota- what sort of life is found in the soil and where it is located. This lesson provides a bit more depth. Students do a bit of research on one particular type of soil dwelling organism, pull

out the salient details and then present this information to the group. You can create your own profile cards from the PowerPoint presentation for students to use, or you can use some additional class time to allow them to do research on the internet or in books.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Give students a brief period to do some reflective writing in their journals about the life beneath their feet. Invite them to take off shoes and socks, or lay on the ground if the climate is agreeable. Tell them that they need to imagine all of what is happening below them. What does it look like? What sorts of organisms are there? What are they doing? They can write a letter, a poem, or a regular journal entry depending on their mood.**
- **Making Connections: Gather back together and explain that today we are going to a deeper study of a few soil organisms. Before we begin though, ask students to reflect on the following question: What characteristics does healthy soil have? (Push them to think about how we define healthy soil. What makes soil healthy? The amount of life it sustains? The number of plants growing in it?) Ask them to think about one thing they would look for to determine whether or not soil was healthy. Have them do an amoeba share: Find someone and say your one word answer at the same time. If you have the same word (or same general idea) link arms and move together. Find another person and repeat the process. We will do this for one minute. Have folks share out their words/ideas. Write a few key ones on the board: water, air, organic matter, humus, plants, FBI, etc. Repeat the question from an earlier lesson- I wonder how soil organisms relate to soil health?**
- **Pass out soil organism profile cards and let students look over them briefly. Ask them to pay attention to drawings, subtitles, etc. Discussion prompts: What sort of information do they expect to learn from these cards?**
- **Pass out Most Wanted templates. Have students look over what they will need to fill in. Explain that they will need to choose one organism, read its profile, and then create its wanted poster.**

- **Pick up profiles. Pass them out randomly and allow students to trade if they want. Give students time to work. Make Insect Id guides available as well.**
- **Gather profiles back up and have students clean up their materials. Have students share-out their artwork and writing.**

Wrap up:

Come together in a circle and appreciate the inventiveness of the different posters. Share that during our next two classes we will figure out the connection between these organisms and soil health.

Assessment:

Most Wanted Posters

Notes/Feedback:



Decomposition I

What role does decomposition play in the creation of soil?

13.1

STANDARDS

CCSS: 6.SL.1, 6.W.4

NGSS: MS-LS2-3, MS-LS2-2

OBJECTIVES

- I can write a meaningful response to something I have read.
- As part of a group, I can put the events of decomposition in order.

MATERIALS

- White board, markers, eraser
- Copies from Gaia's Garden, pages 73-76
- Decomposition flowchart templates (one for each students)
- Clipboards, garden journals, and pencils
- A leaf and a small amount of garden or forest humus

Preparation:

Put essential question and objectives on the board. Make copies of reading selection and templates.

Background Information:

Decomposition is actually a very complex process. Don't worry if kids disagree about how to order things or wind up a bit confused. While there is a general trajectory toward a stable, humus-y substance, this process is not entirely linear, and so will not fit neatly in uni-directional flowchart. That's okay. If students notice that the process is more idiosyncratic than that, celebrate their discovery, and ask how they can build that element into their sequence.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- Pass out reading on decomposition. Take turns reading aloud as a class. Give students time to re-read, process, and journal about what they have read.
- Once students have finished reading and writing. Pass around a leaf and ask them to consider the following, "You hold in your hand a lovely red sycamore leaf. It has a protective exterior, a stem and a number of veins running through it. It grew on a tree, and when it was alive it had the stomata and chlorophyll that we learned about in the last unit. But now it has died and fallen to the ground." Take the leaf back, pass around a small bowl or handful of good soil. Say, "You hold in your hand supremely healthy soil. It smells rich and earthy. It is dark and fluffy and just a bit moist. There is space for air and water. There is lots of organic matter- some that is still decomposing and some that is stable humus. There are also bacteria, fungi, a worm or two, maybe a beetle, and various other insects." Take the soil back and hold up both the leaf and the soil. Ask, "How do we get from an leaf to rich, healthy soil?" (Encourage students to look back at the reading of they need to.)
- **Summarize:** Have students talk through the process as a group. It should include primary, secondary and tertiary decomposers. This doesn't need to be a super in-depth conversation, but it does need to help the students understand how to sequence this process, and how to focus on the organisms that are doing the work.
- Pass out flowcharts and have students work in pairs to complete them using their reading as a reference as needed.

Wrap up:

Have students gather back in the classroom area and share how they developed their sequences. Ask what worked and what didn't for them in terms of this step-by-step, linear sequence? Did they make any modifications?

Assessment:

Decomposition sequences

Notes/Feedback:



Decomposition II

What role does decomposition play in the creation of soil?

13.2

STANDARDS

Arts: VA2.1, VA2.3

OBJECTIVES

- I can put the events of decomposition in order.
- I can create accurate drawings of the different stages of decomposition.

MATERIALS

- White board, markers, eraser
- Decomposition composition cartoon strips (one for each student)
- Clipboards, garden journals, and pencils
- A new apple, three apples in various stages of decomposition, and rich, healthy humus-y garden soil.
- Magnifying glasses

Preparation:

Put essential question and objectives on the board. Set up decomposition samples.

Background Information:

Part of the reason this lesson includes an art component is because the students need to slow down and really pay attention to changes (both subtle and overt) to the decomposing apple. Having them draw these changes is one way of engaging them in close observation. To help them draw as realistically as possible, you might want to add a bit of basic drawing instruction as well. Giving them some details about sketching in general shapes and contours and then adding value, will help them to create accurate depictions.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Making Connections:** We have been learning a lot lately about soil, soil organisms, soil health, and decomposition. We have learned new terms, read some interesting texts, and conducted research. Encourage students to realize that what we are also talking about is a life and death cycle. It is about the death of some things feeding the life and health of others. Could we have life without death? Consider this in terms of soil health, the food you eat, and life cycles in general. Give students some time to ponder this question and journal about it, understanding that this could be an emotional topic for some students.
- **Group share-out:** If there is anyone who wants to share some portion of their reflections with the group, allow them to do so.
- **Optional:** Conduct brief review of drawing skills- focusing on observation, contour, value, and perspective.
- **Show students the apples in various stages of decomposition.** Let them use magnifying glasses to study them closely and let them talk about what they see (and possibly smell.)
- **Pass out cartoon strips and let them draw what each stage of decomposition looks like starting with the bright, new apple and finishing with the decomposed organic matter.**

Wrap up:

Clean up and gather in the classroom area. Do a gallery walk of students' drawings, and take note of the details included in their illustrations.

Assessment:

Decomposition drawings

Notes/Feedback:



ASSESSMENT: Healthy Soil

How do different organisms work together to build healthy soil?

14.1

STANDARDS

CCSS: 6.SL.1, 6.W.7

NGSS: MS-LS-1

OBJECTIVES

- I can be an effective group member.
- I can judge the health of soil based on a number of characteristics.

MATERIALS

- White board, markers, eraser
- Soil samples similar to what was used in lesson 1 of this unit
- Magnifying glasses
- Mind map template for white board
- Soil judging sheets
-

Preparation:

Put essential question and objectives on the board. Set up soil samples as stations.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Explain that today we are going to demonstrate what we have learned in this unit by determining the health of different soil samples.
- Summarize: Group mind-mapping exercise- We have covered a lot of ground in this unit and before we try to use it to analyze soil samples, let's review the content and get it organized and accessible in our brains. Put up mind map and have students copy it into their journals. Explain that students can work on their own AND if they want to they can come up one at a time and add to the large map on the board. Remind students as needed that this should be a quiet reflection activity. At the end, ask if there are any questions.
- Soil judging preparation: Explain process to students. They are going to work on this project in groups of 3-4; they will travel to a station and record their observations and conclusions before they move to the next station. Discussion prompts: What are some key elements you might look for in healthy soil? What information could be gained by touching it, smelling it, and looking closely at it?
- Pass out soil judging forms and let students get to work.

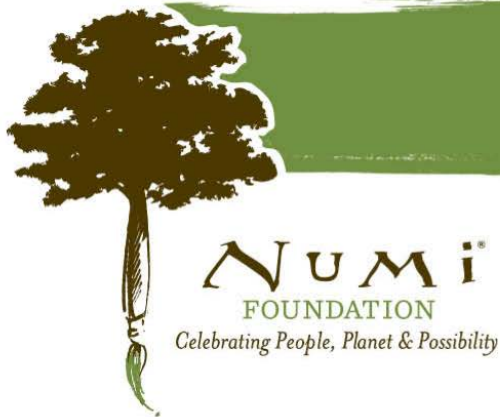
Wrap up:

Clean up and give students time to share out their results and ask questions of each other.

Summative Assessment:

Mind maps and soil judging sheets

Notes/Feedback:



ASSESSMENT CONTINUED

How do different organisms work together to build healthy soil?

14.2

STANDARDS

CCSS: 6.SL.1

NGSS: MS-LS-1

OBJECTIVES

- I can create healthier soil by digging in compost.
- I can explain the connections between decomposition, compost, soil organisms, and healthy soil.

MATERIALS

- White board, markers, eraser
- Garden beds that are ready to have compost dug into them.
- Trowels, shovels, gloves, and buckets
- compost

Preparation:

Have compost delivered or purchase bags of it from a local nursery. In terms of quantity, it depends on how many beds you are going to be amending. Keep in mind

though that everyone in your class will be engaged with this activity, so you need to have enough for everyone to use. Also, make sure you have a couple different beds that are ready to be prepared for new plantings. If they still have old plants in them, great! Students can remove those plants or chop and drop them depending on how you wish to proceed.

Background Information:

Preparing garden beds for spring planting is a deeply satisfying activity. If there are weeds in the beds, they need to be carefully pulled so that they don't spread their seed or leave roots behind. If there are crop plants left, consider chopping them and dropping them to add organic matter to the soil. This is quite literally what it sounds like- you cut them off at the soil surface and chop up their aerial portions. Next, you liberally add compost in an even layer (anywhere from 2-6 inches given how much space you have.) Finally, you mix it in. This involves turning the soil over onto itself, mixing in the compost, breaking up clods, and smoothing it flat again.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Making Connections:** Let students know if they enjoyed what we learned about in this unit, they might be interested in the following careers: soil scientist, geologist, ecologist, biologist, chemist, park ranger, etc.
- **Explain that today we are going to put into practice what we have learned in this unit. Discussion prompts: How can you identify healthy soil? What might you want to add to soil to make it healthier? (insects, fungi, bacteria, organic matter)**
- **Introduce compost- have students investigate it with their sense. Discussion prompts: What does it smell, touch, look like? What do you think goes into compost?**
- **Today we are going to add compost (organic matter) to our garden soil to improve its health. Compost helps soil retain water, creates pore space for air, regulates temperature, improves soil structure, and provides nutrients for plants.**
- **Demonstrate how to amend soil with compost, and remind students about how to use tools safely.**
- **Let students get to work!**

Wrap up:

Clean up and gather back in the classroom area. Congratulate them on using their knowledge to improve the health of the garden soil. Suggest that it is a noble pursuit to use ones talents and wisdom to improve the world around them. Let them know that at the end of this year they will have a culminating project that will allow them to do just that. Preview the next unit by saying that thus far we have studied personal health, plant health, and soil health. In the next unit, we will study the health of even larger ecosystems!

Summative Assessment:

Teacher observations

Notes/Feedback:



Connections I

What sorts of connections might you see in a healthy ecosystem?

15.1

STANDARDS

CCSS: 6.SL.1, 6.W.10

NGSS: MS-LS2-1, MS-LS2-2

OBJECTIVES

- I can demonstrate how different elements in an ecosystem are connected to each other.
- I can evaluate the importance of ecological connections.

MATERIALS

- White board, markers, eraser
- Clipboards, journals, pencils
- Large amount of nylon rope or yarn (for web exercise), scissors
- Peel off labels for ecosystem web activity
- Laminated vocabulary cards

Preparation:

Put essential questions for the lesson and the unit, as well as the objectives on the board. Create laminated vocabulary cards. These cards will be used in a matching game to build background vocabulary before students begin the lesson. There should be three types of cards: terms, definitions, and examples. These cards are passed out randomly and students have to create triads each with 1 term, 1 definition, and 2-3 examples.

Background Information:

This unit further strengthens student understanding of health within the context of ecosystems. The lessons in this unit are crucial to developing student awareness of the components of a healthy system (whether that be a natural ecosystem or a human community.) Key ideas from this unit will inform how students analyze the health of their own school community. For the vocabulary building exercise scheduled for this lesson, you will want to decide on which terms you want to focus on. Some suggestions are: ecosystem, producer, composer, decomposer, omnivore, herbivore, carnivore, etc.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Making Connections:** Explain that we are starting a new unit today. Thus far we have studied our own personal health, the health of plants, and the health of soil. Now, we are going to study healthy ecosystems. Have them read over the unit essential question: “What does a healthy ecosystem look like?” Just like with our soil unit we are going to be looking at the health of a whole system, and how the parts of that system can influence its overall health. But rather than focusing in on one type of ecosystem, we are going to be looking at ecosystem patterns overall.
- **Prepare students to play vocabulary matching game.** Explain that we are taking the time to do this to make sure that we can all use the same sort of language to talk about what we are learning. This is a matching game- the goal is to create a complete triad with one definition, one vocabulary terms, and 2-3 examples. Once you find your triad, sit down. Once everyone is seated, or I call time, we will review and the possibly play the game one more time.
- **Explain that one of the important patterns or components we often see in healthy ecosystems are the connections between the different living and non-living elements. (Get out labels and a marker.)** Ask students to think about what they might see if they were taking a walk through the East Bay Hills. What would be the different elements of this eco-system? (As student say things, write them down, but do so selectively. You want to get a mix of living and non-living things such as worm, hawk, coyote, oak tree, grasses, creek, soil, rocks, snake, mouse, mushrooms, etc.) Ask for 10 volunteers, and let students know that we will do a second round of this game later during class. Have the 10 volunteers form a circle and give each of them one label.

Have them affix this label to their shirt. Have the rest of the class make a larger circle surrounding them- let them know that they can make suggestions and give support to the inner circle. Tell students that the way this activity works is that we start the rope/yarn off with one element. That person finds another element they have a connection with, they say the connection, and while holding onto one end of the yarn, they carefully throw the ball of yarn to that person. An example would be, "I am the hawk and I have a nest in the oak tree." We keep going with this "connection building" until we run out of connections or time!

- Have students do this activity until there is a thick web connecting each element to many other elements. Ask students to hold tightly onto their strings (connections.) Invite students to take a moment and just appreciate all of the different sorts of connections this ecosystem has. Walk behind one of the students in the circle and ask the rest of the class, "Let's say something happens with our hawk population- maybe they are moving into other area, maybe some are sick. Will that have an impact on the other elements?" (Yes, because they are connected. They have some sort of relationship.) Then, gently move the "hawk's" hands so that the yarn moves. There should be a ripple effect in the circle. Ask students if they think a healthy ecosystem has lots of connections or few connections. Have them explain their reasoning.
- Next, ask students to think about what will happen if say the water supply is poisoned or the trees are cut down. Have them give their responses. Then, cut all of the yarn coming from the water or tree person. What happens to the connections and the ecosystem?
- Clean up activity and create space for any lingering questions or concerns. This might prove to be an emotional activity for those students who are really connected to the environment because it highlights the implications of deforestation, water contamination, or other man-made impacts.
- Have students get out clipboards, journals, and pencils. Explain that you want them to observe the ecosystem of their garden. They can do a typical journal entry, but in addition, they need to make a list of all living and non-living elements that live or wander through the garden. (Suggest that they can write down elements that they have seen in the past or that they find evidence of- bird poop, a cat they once saw, etc.)
- Have students gather back together and share out their elements. Write them down on the white board as they say them

- **Prepare for one last web activity. This time students will be modeling the connections in their garden ecosystem. Use the model from above. (Make sure that you have someone be a student/human element in this ecosystem.)**

Wrap up:

Gather students into classroom area. Ask students to continue to see ecosystems in this way- a collection of connections or relationships between different living and nonliving elements. Have them go through the rest of their week with “ecosystem vision.”

Assessment:

Teacher observation

Notes/Feedback:



Connections II

What sorts of connections might you see in a healthy ecosystem?

15.2

STANDARDS

NGSS: MS-LS2-1, MS-LS2-2

Arts: VA2.5

OBJECTIVES

- I can reflect on ecological webs, connections, and relationships while weaving a piece of garden art.

MATERIALS

- White board, markers, eraser
- Small forked tree branches (enough for each student to have one)
- Weaving supplies (multiple pairs of scissors, yarn, rawhide, grasses, feathers, seedpods, moss, raffia, grapevines, try to find as many natural materials as possible)
- An example of a twig weaving (for an excellent example, look at Nature Crafts for Kids by Gwen Diehn and Terry Krautwurst- a copy of the relevant page is included)

Preparation:

Put essential question for the lesson and the objectives on the board. Set out art supplies and a twig weaving example.

Background Information:

This lesson gives students a chance to try their hand at weaving. This art project will give them a chance to feel what it is like to build lots of connections into something. As they construct the warp and weft, they will realize that each element is in some way connected to every other element in their weaving.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Show students the example. Point out the branches of the twig. Show them the first step which is using one material (most likely yarn) to make the foundation or the warp. Then show how you weave the other materials through with an up and down or over and under motion. Have them notice that the materials have different textures and thicknesses, and that some are flexible and others or not. Ask for questions and then let students get to work. **Optional- let students know if they want to take their art work to the next level, they can create a weaving that represents or symbolizes a particular ecosystem. Let them think about what this might mean or look like.**
- **Making Connections: As students work on their garden art, encourage them to talk about what they are doing is related to what we talked about in the last lesson. Are we making webs of connections? Could this symbolically be an ecosystem?**

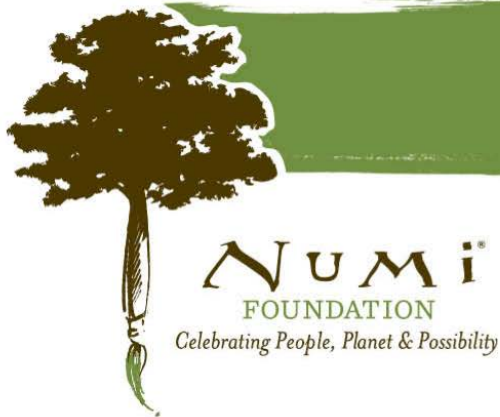
Wrap up:

Clean up and gather students back in the classroom area. Have students share their weavings. Find someplace to display these- possibly on the garden fence or in the school.

Assessment:

Teacher observation

Notes/Feedback:



Diversity I

How does a lack of diversity affect an ecosystem?

16.1

STANDARDS

NGSS: MS-LS2-4

CCSS: 6.SL.1, 6.W.10, 6.L.6

OBJECTIVES

- I can use ecological terms in the proper context.
- I can understand the importance of ecological diversity.

MATERIALS

- White board, markers, eraser
- Clipboards, journals, pencils,
- Vocabulary cards with term on one side and definition on the other
- Monoculture simulation index cards
- Large paper, markers

Preparation:

Put the essential question for the lesson and the objectives on the board. Decide upon vocabulary words for today's lesson. Some suggestions are: monoculture, diversity, population, habitat, species, etc. Also, create monoculture simulation cards. Choose one type of tree, say an Elm tree, and create a class set of index cards with this name on the back of each. Then choose a variety of plants and trees that would happen in similar habitat, and create a class set of index cards with these names written on the back (i.e. Coyote Bush, Manzanita, Lupine, Black Oak, Toyon,

Elderberry, Deer Grass.) Make sure you have at least ten different species, and at least 2 cards of each species.

Background Information:

This lesson introduces students to the concept of bio-diversity. As one of the central components of healthy ecosystems, the importance of bio-diversity cannot be overstated. The opposite of bio-diversity is a monoculture- this is where you have one species to the exclusion of all else. Examples of common monocultures are golf courses, lawns, and much of modern day large scale agriculture. These homogenous landscapes fly in the face of natural design, and as a result require huge inputs of pesticides and herbicides to maintain. The simulation in this lesson gives students a graphic example of why bio-diversity is so important.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain to students that today we will be continuing our study of healthy eco-systems by working with the concept of diversity, specifically bio-diversity. Before we begin the simulation and the observation portion of this lesson, we need to build some background vocabulary.**
- **Divide the class up into groups of 3-5. Have each group pull a vocabulary term from the hat. Explain that they are responsible for teaching the rest of the class their term through a skit, a rap, or a drawing. Tell students that they need to be focused- they have 5 minutes to prep, and two to present.**
- **Have students present their vocabulary terms to their classmates.**
- **Monoculture simulation: have students sit in a circle with their pencils. Tell them that you are going to hand each one of them a card and they need to keep in face down. When you call time, they are going to stand up and WALK around. When they meet up with another student they are going to do a secret share of their cards (i.e. quietly look to see what the other person has.) If they both have the same species, they will write the other person's name on the back of their card. They need to do this until they have five names and then they will sit back down. Do NOT show your card to the whole class, and do NOT talk. This is supposed to be secretive!**
- **Once everyone is reseated, tell students the following story, "Once upon a time, a landscaper decided to fill a park area with American Elm trees. He liked these trees because of their beautiful leaves and he**

thought that they would eventually make nice shade once they were full grown. So, he planted the small saplings and over the years they grew up to become large, lovely trees. After one really rainy winter, one of the trees started to look really bad- some of the leaves started to turn brown and curl up. Pretty soon, the whole tree looked like it was dying. This tree had gotten Dutch Elm Disease, a fungal infection.”

- At this point in the story, have all of the students stand up in a circle. Walk over to one of the students, and identify him/her as being an elm tree. Ask him/her to sit down- by sitting they are indicating that they are diseased or dead. Have this student read off the names on the back of their cards and ask these elms to sit down as well. Then have those students read off the names on their card. Continue until everyone is diseased or dead. Ask students what happened. (The disease passed from one tree to another; they infected each other, etc.) Emphasize that this scenario is an example of a monoculture.
- Have all of the students revive and stand back up. Tell them that we are going to do another simulation, and follow the same steps, but this time we are going to be looking at a system that has bio-diversity as opposed to a monoculture. Pass out cards and follow the same procedures. This time it will be more difficult for students to find partners because there are so many different species. They may only find one other person.
- Call time and have everyone take a seat in a circle. Tell the students this story, “A group of college students decided that they wanted to restore a native habitat. (This means that they wanted to take an area of land that was not healthy, and replant native plants.) So they went to a nursery, bought all different sorts of grasses, shrubs, and trees that were native to their area, and planted them. This garden became really valued in the community and volunteers often came to help maintain it. Over the years all of the plants grew strong and healthy. One year though, a new disease came to town! Sudden Oak Death. This is a fungus like organism that kills oak trees.
- Have all of the students stand up. Walk around until you find an oak tree, and ask this student to sit down and read off the names on their card. Continue this until there are no more names to read. Ask students what happened. How was this a different outcome than the previous simulation? Why was the outcome different?

- **Making Connections:** Invite the other students to share what plant they were. Was this a bio-diverse ecosystem? What impact did bio-diversity have on the spread of disease?
- **Leaf collection and journaling:** Take 10 minutes and have students collect leaves from the garden. Make sure they are only collecting 5 leaves, and only 1 leaf from a plant. Also, invite students to journal about their experience during the simulation. When the time is up have kids come back together and put all of their leaves into the center of the circle. Talk about the different sorts of leaves we found. Does our collection of leaves demonstrate bio-diversity within our garden?

Wrap up:

Making More Connections: Ask students if the large fields of wheat, corn, soybeans, etc, that we see on TV sometimes are examples of bio-diversity? If not, does this type of farming create a healthy eco-system? What sorts of problems do you think these large farms might experience as a result of their monoculture?

Assessment:

Teacher observation and student journal entries.

Notes/Feedback:



Diversity II

How does a lack of diversity affect an ecosystem?

16.2

STANDARDS

CCSS: 6.RP.3, 6.SP.1

OBJECTIVES

- I can use ecological terms in the proper context.
- I can understand the importance of ecological diversity.
- I can use math to calculate species diversity in different ecosystems.

MATERIALS

- White board, markers, eraser
- Bio-diversity bottles, trays (cookie sheets- something with an edge)
- Bio-diversity data collection worksheet (one for every student)
- Clipboards, journals, pencils, calculators

Preparation:

Put essential question and objectives on the board. Create bio-diversity bottles. These containers model species diversity within a particular habitat. Each one will have a label on the outside that identifies its habitat, “grassland, corn field, rain forest,” and inside each will have a certain number of colored beads to statistically represent the different kinds of animal species present.

Background Information:

To determine how many beads to put in each of the bio-diversity bottles, please see the data collection worksheet. This bio-diversity sampling activity is drawn from an

incredible curriculum developed by ConEd. To take a more in-depth look at what they have created, look at:

<http://www.fishwildlife.org/files/ConEd-Schoolyard-Biodiversity-Guide.pdf>

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain to students that today we will be continuing our study of healthy eco-systems by working with the concept of diversity, specifically bio-diversity. Today we are going to be amateur ecologists as we look at the biodiversity of animals in different habitats. Tell students that today we actually have managed to squeeze a couple of different habitats into our very own outdoor classroom! We have forests, grasslands, rainforests, and farms. Show students the biodiversity bottles and explain that obviously we can't bring whole habitats to them, so instead we are bringing models of those places. Hold up the rain forest bottle and ask them to notice the different colored beads inside. Each color of bead represents a different animal. So, if we have red, blue, orange, and black beads, how many different kinds of animals we have? And if agree that the red beads are monkeys, how many monkeys do we have?**
- **Pass out the data collection sheets. Ask students to read over the different habitats. Which do you feel like is going to be the most diverse? Put a star next to it. Which do you feel like is going to be the least diverse? Put a check next to it. Read over the sheet together and talk about how to count beads, where to record the information and how to calculate the simplified biodiversity index. Work on one biodiversity bottle/habitat as a class so that students understand how to do this.**
- **Divide students into groups of 3-5 and let them work on one bottle/habitat at a time. Once they finish with a bottle, they can start work another one.**
- **Once all groups have had an opportunity to analyze at least two habitats, clean up and have groups share out their index numbers. Explain how the index system works- 0 is no diversity, 1 is high diversity, .05 is average diversity. Discuss the results and compare the indexes.**
- **Have students keep worksheets, and pass out journals, clipboards, and pencils. Ask them to do a quick 5-minute observation of the garden.**

When they see an animal species (lady bug, Daddy Longlegs, Robin, squirrel, etc.) they write its name down in their journal and make a tally mark. If they see a second animal of the same species, they make another tally. If they don't know the proper name of the animal, write down a quick description, "large fly with stripes." Explain that once we are seated we will all need to be still and silent for this to work.

- **Analysis:** Gather back to together. Discussion prompts: How many different species (or types) of animals did you see (count your headings)? How many different animals total did you see (count all tallies)? What sort of diversity index would we wind up with? (Pass out calculators and assist as needed.) Do you think we have biodiversity in our garden? Do our statistics (our math, our numbers) match what we see or know? [Teacher note: Let's say that we observed 5 animals total, and 4 different species- that would give us an index of .8. This would seem to indicate a high level of bio-diversity, but is it really? Biodiversity means having lots of different species (species richness), having lots of individuals within each species (species evenness)]

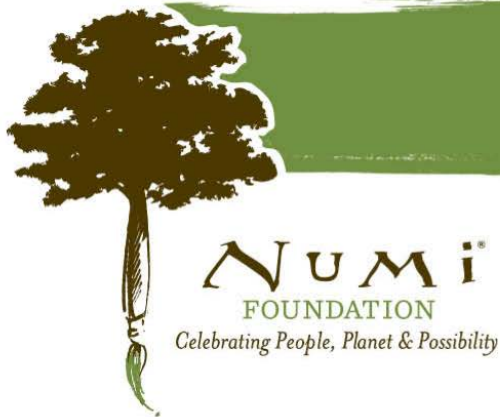
Wrap up:

Gather student together in the classroom area. Ask what steps we could take to increase animal species biodiversity within our garden.

Assessment:

Teacher observation, student journals, and biodiversity collection sheets

Notes/Feedback:



Ecosystem Niches I

What sorts of roles do different species play in a healthy ecosystem?

17.1

STANDARDS

NGSS: MS-LS2-2, MS-LS2-3

CCSS: 6.SL.1, 6.L.6

OBJECTIVES

- I can do my job when I am part of a group.
- I can demonstrate the roles different species have in a particular ecosystem.

MATERIALS

- White board, markers, eraser
- Peel off labels, roll of string or yarn, scissors
- Seeds, potting soil, seed pots (any kind, even plastic cups will work), water and watering cans, trowels.

Preparation:

Put essential question and objectives on the board. Set up the seed planting supplies in different parts of the garden- put soil in one area, seeds in another, watering cans in another.

Background Information:

This lesson teaches students about the importance of roles or niches in an ecosystem by reminding them of how group work doesn't get done unless every member fulfills his or her role. The first group activity needs to be engineered so that it doesn't go that well. The point is for students to see what happens when individuals in a system don't play their role- things fall apart. Within the procedures, one method for sewing a bit of chaos will be introduced, but feel free to use your artistic license. But, be sure to monitor this situation closely as students who care about succeeding will probably feel angry and upset.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain to students that today we will be continuing our study of healthy eco-systems by working with the concept of roles or niches. In ecology, the word "niche" means the particular function or job that a species has. So, in an ecological sense, your niche at this school is to learn and grow. For an ecosystem to be healthy, species need to be in their niche, or doing their job (eating what they are supposed to eat, living where they are supposed to live, etc.)**
- **Explain that first, we are going to have an exercise in team work. We want to get some seeds planted in pots. The most important rule that everyone needs to follow is that you can only do the job you have been assigned. Do NOT take on anyone else's job.**
- **Divide class into teams of 4 members each. Have team members number themselves off 1, 2, 3, 4. Explain that 1's are responsible for getting and holding the cup, 2's are responsible for getting the soil and putting it into the cup, 3's are responsible for planting the seed, and 4's need to water the cup. Point out where everything is. Before the seed planting begins, ask for a quick meeting with all of the 2's, have a secret huddle with them and tell them to wander around a bit like they can't find the trowels or the soil before they actually get the soil to their group. Make sure they don't tell anyone else about our plan. Then call the 4's over to you, and ask them to bring the watering cans over to their group without water first, and then get water but pour it as slowly as possible- like a drop at a time!**
- **Remind groups that they are to only do their job, and that they need to remain patient and calm. Let groups get started.**

- Keep an eye on things, if it seems like some groups are getting really overheated and upset, call time. Gather everyone together and explain the set-up. Give groups a moment to apologize/calm down if they need to, and then ask students to reflect. Making Connections: Discussion prompts- How did this activity go? How did you feel? Did everyone perform their role? What happened to the whole system/activity when one person didn't fill their niche? How does this compare to species niches in an ecosystem? What happens when the hawks don't eat enough gophers?
- Clean up and move on to looking at Food Webs. One of the major relationships species have to one another is prey/predator or who eats who. To better understand roles in an ecosystem, let's construct some webs. Create a label with the word "sun" on it, and have one student become the sun. Ask who uses the sun to make food? Who is a producer? (Plants) Create a label with the word, "grass" on it and have another student become grass. Have another student hand one end of the yarn to the sun and the ball of yarn to the grass. Who eats the grass? Continue making labels and having student come up to occupy the different niches. If students are stumped, suggest that different animals can eat the same plant, also remind them about decomposition. Once this web is as messy and full as it can be, start asking questions, "What happens if the deer doesn't eat the grass?" What happens if the farmer kills all of the coyotes? Have students trace the impacts as far as they can along the yarn connections.
- If time permits create food webs for different habitats, or try to build a food web that they are part of- this might illuminate some interesting points about where their food comes from.

Wrap up:

Gather student together in the classroom area. Redo the seed planting activity with everyone performing their role appropriately. Have students take seeds home to remind them that everyone has an important role to fill.

Assessment:

Teacher observation

Notes/Feedback:



Ecosystem Niches II

What sorts of roles do different species play in a healthy ecosystem?

17.2

STANDARDS

NGSS: MS-LS2-2

CCSS: 6.W.10

OBJECTIVES

- I can use ecological terms in their proper context.
- I can understand the importance of ecological niches.
- I can observe ecological phenomena in the garden.

MATERIALS

- White board, markers, eraser
- Magnifying glasses, trowels, tweezers, bug collection boxes
- A number of different insect id guides (kid friendly versions)

Preparation:

Put essential question and objectives on the board. Bring in a number of good insect id guides. These can be books, pamphlets, or even laminated posters. Also, do a bit or reconnaissance in the garden before the kids get there to determine some rich insect habitats.

Background Information:

This lesson makes the idea of roles even more personal by inviting student to engage in written reflections about their own roles and by having them observe insect roles in the garden.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Explain to students that today we will be continuing our study of healthy eco-systems by working with the concept of roles or niches. Ask students to raise their hand if they fit the role you say aloud. Say terms like, “daughter, brother, aunt, cousin, student, teacher, helper, artist, athlete, mathematician, gardener, etc.”
- **Lightening Round Sharing:** Have students turn to a neighbor and have them compare roles that they fill and jobs that they do. Ask students to think about what would happen if they didn’t fill that role?
- Pass out journals, clipboards, and pencils. Give students some time to think and write about what ecosystem/community they are part of, and what roles they play. Why are those roles important? What other roles would they like to play?
- **Wrap up journaling** and invite students to share their reflections if they would like.
- **Focused Observations:** Explain that now we are going to spend some time observing insects and the roles they play in our garden ecosystem. Demonstrate how to observe insects by using tools carefully and disturbing the insects as little as possible. Also, show students how to draw and take notes on the insect, being sure to include detailed physical descriptions as well as hypotheses about the insect’s role. Point out the insect id materials.

Wrap up:

Gather student together in the classroom area. Ask students to share what they discovered about insect roles in our garden.

Assessment:

Teacher observation

Notes/Feedback:



Stability I

Why is stability a key component of a healthy ecosystem?

18.1

STANDARDS

NGSS: MS-LS2-4

CCSS: 6.W.1, 6.RI.7, 6.L.6

OBJECTIVES

- I can use ecological terms in their proper context.
- I can understand the importance of stability.
- I can make predictions based on what I know about ecological stability.

MATERIALS

- Ecosystem scenarios (one for each student)
- Building blocks
- Some sort of props for tag game (something to identify the decomposer, and something to identify two death characters)
- Vocabulary words with definitions on small cards (for group vocabulary work)

Preparation:

Place essential question objectives on the board. Decide on vocabulary for the lesson- try reviewing some of the words introduced in previous lessons as well as some new terms: bio-diversity, niche, limiting factor, stability, mutualism, parasitism, commensalism, etc. Determine a safe place for playing tag.

Background Information:

This lesson focuses on the concept of ecological stability- this idea is closely linked to species diversity as well as niches. 6th graders have a pretty good understanding of balance, but they will need to be helped in applying this concept to an ecosystem. In short, the more diversified an ecosystem is, the more easily it will recover from system disturbances or upsets. More diversity, more niches, more redundancy of connections equals a more resilient ecosystem.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Explain to students that today we will be continuing our study of healthy eco-systems by working with the concept of stability. Stability has the same root as stable. Chat with your elbow partner and develop a definition for stability or stable.**
- **Have students share out their definitions. Share the definition of ecological stability: An ecosystem that will maintain or return to its original condition following any disturbance.**
- **Have 4-5 volunteers come up and build really unstable structures. These should fall down easily with a light wind or touch. Discussion prompt: Why were these building unstable? What might make them more stable?**
- **Have 4-5 volunteers come up and build stable structures. These should withstand some touch and some wind. Why are these structures more stable? (wider base, more connections, an array of different blocks (diversity), the blocks at the bottom are distributing the force evenly (niches, roles.)**
- **Invite students to think about ecosystem stability in a similar way. Lots of species, lots of connections between species, individual species doing what they should- all of this creates an ecosystem that can withstand more pressures, stresses, etc. It can stay stable and return to stability more easily.**
- **Vocabulary Building Activity: Divide students into groups of 4-5. Give each group one vocabulary card. Have them read the card aloud to the group, while you write the words on the board. Talk through the definitions as a class, and help students make meaning of them. Explain to students that their job is to make connections between their word and the other terms. They could create a sentence, or a drawing, etc. They want to come up with as many connections to the other terms as possible in 5 minutes. Remind students that their**

sentences should demonstrate their understanding of how these words are linked, if they come up with something like, “Niche comes after diversity in the dictionary,” they will forfeit their turn. Give an example if you feel it is warranted.

- When time is up, gather everyone together. Choose one group at random to go first. If they share something (sentence, drawing, poem) that links their words with another word, then the group who has that other word has to go next. Play until students run out of connections, or until you feel like everyone understands the words.
- Pass out ecosystem news article and stories, journals, clipboards, and pencils. Explain that we are going to read the stories aloud and the students are going to use what they have learned about healthy ecosystems to do some analysis and some hypothesizing.
- Read the article together and make sure students understand what the conclusion being drawn from the Antarctic research. Next read both eco vignettes aloud and then give students time to analyze them in their journal.
- Have students share their responses with a partner, and then amend their own if they feel revisions are warranted.
- Analysis: Gather students back together and ask a few closing questions: Which of these two ecosystems was more stable? Why? Which ecosystem recovered more quickly? Why? How does biodiversity allow an ecosystem to be more stable? How do relationships between different species build a more stable, resilient ecosystem?
- Decomposition tag: Explain that this game does a lovely job of reviewing one of the key concepts from the soil unit, as well as show how a system in balance can just keep going, whereas a system that is not stable, will quickly fall apart. Part of what keeps a system stable is species’ niches or individuals playing their roles. Outline the game quickly, “We will play two rounds of this game so that you can compare your experiences between the first round and the second. In the first round, one person will be “death.” When she taps you on the shoulder, you must sit down and then stay seated until I call time. Make it clear where the boundaries are and explain that if anyone runs out of the boundaries, they will also have to sit down. Choose who will be “death” and give them a hat, shirt, or scarf to wear to set them apart. Everyone else will be different biotic elements (living things) within this ecosystem.

- Let students play until everyone is dead. Announce that the first round of the game is over. Say, “With the second round, things are pretty similar. We still have “death,” but now we also have the “decomposer.” What does the decomposer do? (She breaks down organic matter and frees it up so that other living things can use it to grow and live.) So, with this round, when death taps you, you need to sit down. BUT, when the decomposer comes over to you, and runs around you in a circle one time, you can get back up because your organic matter is back in the game. Check for comprehension. Dress up death and decomposition characters and set them free to play.
- **Making Connections:** This game could go on indefinitely (which really is the point.) So call time once students are starting to get bored/tired. **Discussion prompts:** How was this round different than the first round? Which round was more stable? Why? How is this last round similar to a stable ecosystem?

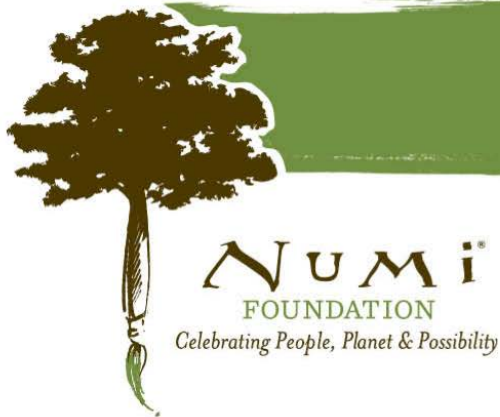
Wrap up:

Gather student together in the classroom area and ask them to really reflect on the idea of stability and balance from a variety of perspectives. (Physically, emotionally, etc.)

Assessment:

Student written responses

Notes/Feedback:



Stability II

Why is stability a key component of a healthy ecosystem?

18.2

STANDARDS

NGSS: MS-LS2-4, MS-ETS1-2

CCSS: 6.W.10

OBJECTIVES

- I can balance my body in space.
- I can communicate with others about what I need and what I see

MATERIALS

- Yoga props- mats, blankets
- Yoga pose suggestions for partners and groups- Yoga Planet and Yoga Pretzels are great
- Clipboards, pencils, and garden journals
- Bird nest examples- photos
- **Optional: Bird nest supplies so that students can try to make a bird nest that is balanced being light with being strong.

Preparation:

Decide on which yoga poses you'd like to do with your class today- remember that the focus is balance and stability. The lesson includes a suggested progression, but you can design your own flow.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Explain to students that today we will be finishing up our study of healthy eco-systems by playing around a bit with the concept of stability.
- **Making Connections:** Pass out journals, clipboards, and pencils. Have students turn to their individual health pledges from the beginning of the year. Thinking prompts: Now that you know more about health, both your own and the health of other living things and larger systems, do your goals still make sense? Do you feel like your goals are helping you to live a more balanced, stable life? (ie. Are you eating balanced meals that contain a diversity of foods? Are you taking care of the important connections in your life with family and with friends? Are you doing a good job in your different roles (student, son/daughter, etc.) Invite students to spend some time responding in writing to their health pledge progress in light of what they have learned about health.
- Put away journal materials, and have students share their reflections.
- Set up for yoga, making sure that everyone has space to stretch out and be comfortable.
- Begin with some sort of breath work and meditation. Students can breathe in a rainbow, they can tense and relax body parts, they can send breath to different body parts- there are many options.
- Have students move into child's pose for a minute, and then have them sit up. Discussion prompts: Was this pose relaxing? Did it feel stable? Why do you think?
- Challenge students to find the most stable pose possible and demonstrate it for everyone else. Compare poses.
- Now challenge students to find the most unstable poses possible with the caveat that there should be no "stands" (head or handstands.) Compare poses.
- Move through a series of individual balancing poses- tree, eagle, dancer, warrior 3, etc. Demonstrate how to do them and then let students experience the poses. Explain that building up strength and focus will improve balance.

- Suggest that we make things a little more complicated- let's do some partner balance poses. Some of the poses from Yoga Pretzels are great for this purpose- double boat, rooftops, elevator, back-to-back chair.
- If time permits, play yoga pretzels. One person says a couple of body parts like, "Ear, elbow, knee," and everyone else has to construct poses where those body parts are on the ground." Once again you will need to remind students that head and hand stands are not allowed.

Wrap up:

Have students return to a comfortable seated or prone position. Have them focus on slowing their breath, calming their mind and feeling balanced. Clean up!

Assessment:

Teacher observations

Notes/Feedback:



Healthy Ecosystems I

What does a healthy ecosystem look like?

19.1

STANDARDS

NGSS: MS-LS2-4, MS-LS2-2, MS-LS2-1

CCSS: 6.W.10

OBJECTIVES

- I can make meaningful observations of natural landscapes.
- I can evaluate the health of different ecosystems based on specific criteria.

MATERIALS

- Field trip supplies: permission slips, first aid, lunches, water, etc.
- Clipboards, pencils
- Field trip note taking form

Preparation:

Make whatever field trip preparations you would normally make (permission slips, chaperones, lunches, etc.) This field trip should be to a place where students can analyze ecosystem health, and work with a naturalist or ecologist. East Bay Parks offers some great field trips- they even tailor them to your needs. A couple of suggestions would be: The Watershed Ecology Boat Tour at Del Valle and the Habitat Hunters at Tilden Nature Area.

Procedure:

- **Once you get to field trip area, gather everyone together and review field trip rules and guidelines.**
- **Do some sort of brief team building activity to ground everyone and remind them that we are a community. (The human knot or some other simple activity would work.) Also, remind students that they are here for two reasons: to connect with nature and appreciate it on a spiritual, emotional level and to look at the environment around them as an ecologist would. Pass out clipboards, pencils, and field trip note taking form.**
- **Follow field trip program.**

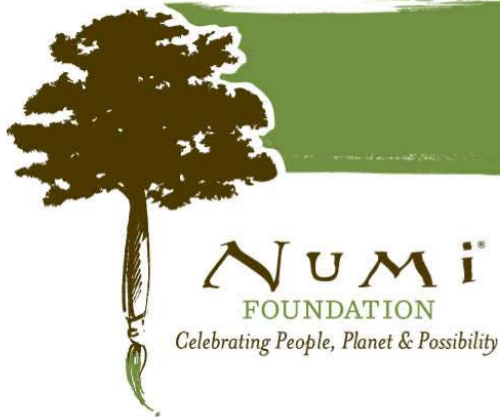
Wrap up:

Have students thank the naturalists then gather in a large circle. Have students go around and each share one thing they thought was inspiring. Get on the bus!

Assessment:

Teacher observations and field trip notes

Notes/Feedback:



Healthy Ecosystems II

What does a healthy ecosystem look like?

19.2

STANDARDS

NGSS: MS-LS2-4, MS-LS2-1

CCSS: 6.W.10, 6.W.1

OBJECTIVES

- I can evaluate the health of different ecosystems based on specific criteria.
- I can combine information from different sources to better understand the world around me.

MATERIALS

- White board, markers, eraser
- Field trip notes
- Clipboards, pencils, and garden journals
- Mind map template for students to copy into their journals
- Chalk for macro ecosystem model

Preparation:

Put essential question, mind map template and objectives on the board.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Summarize:** Have students look at the mind map template on the board and then work with a partner to come up with concepts they have learned from this unit. Encourage them to look through their journals and talk with each other. Thinking prompts: What activities have we done? What sort of art have we created? What vocabulary have we learned? What essential questions have we answered?
- **Gather students back in the classroom area, have students share out their ideas, and write them on the mind map.**
- **Place the following three questions on the board:**
 - c. **Given what we have learned about ecosystems, would you say that the ecosystem we visited on our field trip was healthy? Why or why not?**
 - d. **How can humans help natural ecosystems to be healthy?**
 - e. **Do you think that healthy human ecosystems (healthy communities) are like healthy natural ecosystems? Why or why not?**
- **Have students answer these questions in their journal. Read over the questions with them and make sure they understand them. Explain that this is their chance to show off all that they have learned in this unit. Encourage them to do their best work.**
- **Making Connections:** Have students think about what sorts of careers focus on the topics of this unit? Suggest that if they enjoyed these concepts, topics, and activities, they might enjoy being an ecologist, biologist, wildlife conservationist, etc.

Wrap up:

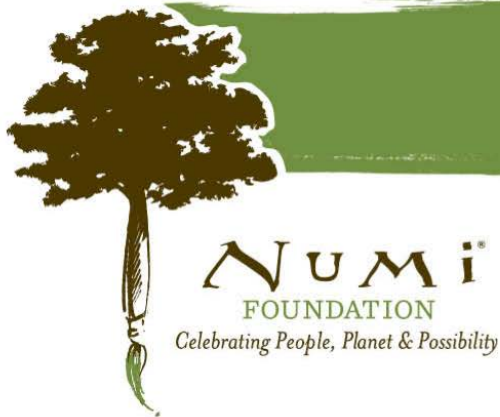
Making More Connections: Have students gather in the classroom area. Explain that we are going to create one last web in this unit- this web is going to show the students the next level of systems thinking. The ecosystems we have been talking about are not these neat, clean, unchanging things. They are messy, and full of ever-evolving, ever-moving life. They also bump into each other and overlap. They affect each other. Can we draw some sort of model on the ground that shows how some different ecosystems relate to each other? (Some examples could be school garden, local park, San Francisco Bay, Oakland hills, Lake Merritt, Wetlands, local stream or watershed,

Redwood Park, etc.) Are these completely separate ecosystems? Do they touch, overlap, and/or influence each other? What is our role in these systems?

Assessment:

Ecosystem health evaluations

Notes/Feedback:



Health Across Contexts I

What have we learned about health so far?

20.1

STANDARDS

CCSS: 6.SL.1, 6.W.10

OBJECTIVES

- I can use what I have learned about health to help me think about the health of our community.

MATERIALS

- Mind map template
- Clipboards, garden journals, and pencils
- Seeds, seedlings, trowels, watering cans, gloves, measuring sticks, twine, plant labels

Preparation:

Purchase seeds and seedlings of spring vegetable plants (peas, greens, root crops.) Decide on a planting area. Put essential question for the unit and the lesson, objectives, and mind map on the board.

Background Information:

This unit has students take what they have learned thus far about health and apply it to their own school community. They will take the concepts, activities, and vocabulary and use these items as a lens through which they view the health of their school. Ultimately, they will construct their own definition of community health, define

factors that contribute to that health, and administer a survey to measure these attributes.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Making Connections:** Explain to students that today we are starting a new unit about community health. The overarching essential question for this unit is, “How can we use what we have learned so far to evaluate the health of our school community? Help students to break this question apart. Discussion prompts: What does the word evaluate mean? Who makes up our school community? What are the biotic (living) and abiotic (nonliving) factors? (teachers, students, staff, parents, school building, garden, donors, neighbors, etc.)
- **Summarize:** Pass out clipboards, pencils, and journals and have students copy the mind map into their journals. Explain that first we need to try and summarize what we have learned this year about health. Ask them to use their brain and their journals to unlock and organize that knowledge. Have students work by themselves to complete their mind maps.
- **Next, have students break into triads and share what they have on their mind maps. As they chat with their partners have them update what they have written.**
- **Gather students back together and collaboratively fill in the mind map on the board.**
- **Take a moment to acknowledge just how much students have learned this year and the hard work they have done. Discussion prompts: So, we have learned a lot about health this year- our own health, the health of plants, soil, and of ecosystems. Why are we studying this topic of health in the garden? Why study personal health in the garden? And why are we going to talk about community health here? (strong communities make good use of green spaces, community health is very similar to ecosystem health, community health is connected to personal health, and as we have found personal health is very much rooted in nature and plants, etc.)**
- **Prepare for planting:** Say something along the lines of, “In acknowledgement of the links between personal health, community health, and planet health we are going to begin this unit by doing some planting. How does planting vegetables serve all of these health

needs?” Show planting areas to students, and explain what we will be planting. Have students engage in a lightning round session of partner sharing to review how to plant seeds and seedlings. Then have student volunteers demonstrate.

- Have students plant and water in seeds and seedlings.

Wrap up:

Gather student together in the classroom area and explain that we have moved lots of health-related learning into the front of our brains, so that we can use them over the next couple of weeks. Reflect on what we have talked about today, and be prepared to create some puzzling art with it during our next class time.

Assessment:

Mind maps

Notes/Feedback:



Health Across Contexts II

What have we learned about health so far?

20.2

STANDARDS

CCSS: 6.SL.1, 6.L.6

Arts: VA2.5

OBJECTIVES

- I can use what I have learned about health to help me think about the health of our community.
- I can use art to express what I have learned.

MATERIALS

- Clipboards, garden journals, and pencils
- Markers, crayons, colored pencils, ec.
- Large pieces of heavy weight poster paper cut into puzzle shapes (you might need to use more than one poster board.)

Preparation:

Put essential question and objectives on the board. Draw puzzle lines on the poster board and then in fairly large bold letters, write the word, **HEALTH**, across the puzzle. Precut puzzle pieces and set out art supplies.

Procedure:

113

- Gather students into the classroom area and have them read the essential question and the objectives.
- Pass out clipboard, pencils, and journals. Have students review their mind maps from the last class.
- Explain that today we are going to create a collaborative piece of artwork. We are going to make a giant puzzle that contains all of our learning about health so far. Show students the puzzle pieces.
- Discussion prompts: How do we want to go about this project? Do we want to give everyone complete freedom to do their own thing and then just see how it turns out? Do we want people to take on different concepts or ideas to make sure that we represent everything we have learned? Do we want to have a master plan?

Let students discuss with a partner and then share out. Take a vote if needed and then proceed according to the agreed upon plan.

- Set guidelines: Tell students that they need to do a sketch/rough draft in their journal first. Their puzzle piece needs to contain both words and artwork and it needs to be colorful and readable- no white space showing!
- Art time!

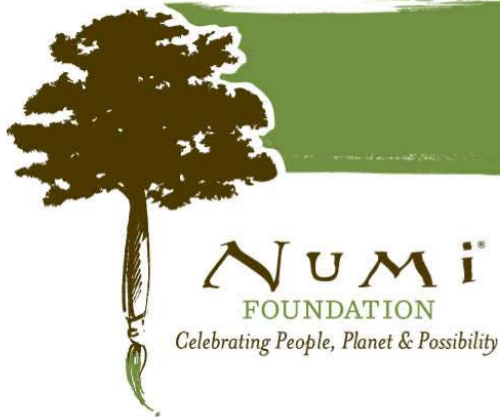
Wrap up:

Gather student together in the classroom area and assemble the puzzle.

Assessment:

Class concept puzzle

Notes/Feedback:



Evaluating Community Health I

How can we apply what we have learned to the concept of community health?

21.1

STANDARDS

CCSS: 6.SL.1, 6.W.10

NGSS: MS-LS2-2, MS-LS2-3

OBJECTIVES

- I can determine which health concepts are useful in a community context.
- I can analyze elements and connections within our school community.

MATERIALS

- Clipboards, garden journals, and pencils
- T-chart template for ecosystem/community comparison
- String and peel-able labels
- Watering cans

Preparation:

Put essential question, t-chart, and objectives on the board.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Pass out clipboard, pencils, and journals. Have students review their mind maps from the last class. Explain that today we are going to start

really making the connections between ecosystem and community health.

- Give students a chance to reflect on this idea on their own and to jot down some questions and ideas in their journals. Thinking prompt: What communities are you part of? How do you know if a community is healthy or not? What sorts of indicators should we look for?
- Have students copy down the t-chart into their journals. Explain that we are going to use this chart to compare how we determine if these systems (eco and community) are healthy. We are going to get our ideas flowing by doing speed-chats. First, you will have 2 minutes to jot down all of your ideas, then you will meet with another person for 2 minutes, and then another, and another.
- Begin speed chats. Make sure that you are engaged with the students during this time, as some of them may have difficulty thinking about how to look at community health. Offer suggestions and ask questions.
- Making Connections: Gather students back together in the classroom area, share-out ideas, and fill in the t-chart on the board. This should be a brainstorming session- all ideas go on the board, we evaluate and organize them later on. Ask if there are any lingering questions or confusion.
- Community web building: Remind students that we constructed a couple of different webs when we were learning about ecosystem health. Discussion prompts: Can we remember how we did this? What did we wind up seeing? Do you think it might be helpful to construct a web that represents our community? Do you think it might inspire some new ideas about what makes a healthy community?
- Create community web- being sure to have a variety of elements/roles (student, custodian, secretary, teacher, therapist, administrator, elders, parents, siblings, classroom, books, library, cafeteria, office, play yard, garden, neighborhood, etc.)
- Once the web is constructed, use the label to tape it to the ground. Have students try to copy the web into their journals.
- If time permits, have students water the baby plants.

Wrap up:

Gather student together in the classroom area and ask for reflections on the community web. Discussion prompts: Does this seem like an accurate representation of our school community? Did you come up with any other community health indicators?

Assessment:

Teacher observation and comparison chart

Notes/Feedback:



Evaluating Community Health II

How can we apply what we have learned to the concept of community health?

21.2

STANDARDS

CCSS: 6.SL.1, 6.SL.2

Arts: VA2.4

OBJECTIVES

- I can summarize key community health indicators.
- I can envision a utopian community.

MATERIALS

- Clipboards, garden journals, and pencils
- T-chart template for ecosystem/community comparison
- Drawing paper
- Markers, colored pencils, rulers, etc.

Preparation:

Put essential question, completed t-chart, and objectives on the board.

Set out art supplies.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Pass out clipboard, pencils, and journals. Have students review their t-charts from the last class. Explain that today we are going to create a list of key community health concepts. For each unit we have studied so far, we have looked at what different individuals and systems need to be healthy. Discussion prompts: What do you need to be healthy? What three areas did we talk about? What do plants need to be healthy? What would you expect to find in healthy soil? What are the key indicators of a healthy ecosystem?
- Synthesis and organization: Have students focus on the community health column of their t-chart and on their community web drawing. Discussion Prompt: If we had to develop a list of 8-10 key community health concepts, what would they be? (Possibilities: safety, communications, physical, mental, spiritual health of members, diversity, niches or roles for everyone, sustainability (good use of resources), pleasant healthy surroundings, connections)
- Have class reach some sort of agreement on the most important 8-10 concepts and have everyone write these down in their journal.
- Utopian Community Maps: Keeping these community health indicators in mind, we are going to draw maps of our idea school community. It does not need to look like our current school- it can look any way you want, as long as you build in spaces to support our agreed upon concepts. Discussion prompts: How could you create space that would support physical health of students and staff? How would your utopian community space increase diversity?
- Pass out art supplies and let students get to work!

Wrap up:

Gather student together in the classroom area and ask students to share their favorite design feature from their map.

Assessment:

Teacher observation and maps/designs

Notes/Feedback:



Evaluating Community Health III

How healthy is our school community?

22.1

STANDARDS

CCSS: 6.SL.1, 6.W.7

OBJECTIVES

- I can create survey questions that will gather useful data about the health of our school.

MATERIALS

- Clipboards, garden journals, and pencils
- Sample community health surveys and survey guidelines

Preparation:

Put essential question and objectives on the board. Decide what survey samples you want to share with students and think through some possible questions.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Pass out clipboard, pencils, and journals. Have students review their list of 8-10 community health indicators.
- Discussion Prompt: So, now we have identified some community health concepts. Examples: We believe that a healthy community has

members who are healthy in mind, body, and spirit. Also, a healthy community has clear roles for everyone and everyone feels very connected to each other. But, how do we figure out if our community has these markers or indicators? Have students discuss with their elbow partner. Have students share out ideas.

- Introduce the idea of a survey. Define, explain it, and share examples. Point out that there are structured and unstructured questions, and discuss the benefits of each. Look at multiple choice, rating scales, etc. Explain that the most difficult part is creating good questions- and for us good questions are clear, and get to the heart of the matter about our community's health.
- Choose one health concept that the class has developed and demonstrate how to create a question around it. For example, if the concept is: "A healthy community supports the emotional and spirit health of its members," a possible question might be: "Do you feel like our school provides adequate emotional health support in the form of counseling, class meetings, therapy groups, and other activities that build relationships between its members?"
- Break class into groups (depending on the number of concepts, you will probably want to have 2-3 students per question.) Give each group one health concept to develop 3-4 questions around. Have students record their health concept and their rough draft of questions in their journals.
- Let students work on their survey questions.

Wrap up:

Gather student together in the classroom area and ask students to share out some of their potential survey questions.

Assessment:

Teacher observation

Notes/Feedback:



Evaluating Community Health IV

How healthy is our school community?

22.2

STANDARDS

CCSS: 6.SL.1, 6.W.7, 6.W.5, 6.W.10

OBJECTIVES

- I can create survey questions that will gather useful data about the health of our school.

MATERIALS

- Clipboards, garden journals, and pencils
- Sample community health surveys and survey guidelines
- Survey question final draft worksheet
- Watering cans

Preparation:

Put essential question and objectives on the board. Decide if there are other survey examples you'd like to share.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives. Explain to students that today they will be finishing their final draft of two survey questions. You will collate these questions and create the survey, and then you will distribute the survey. Discussion prompt: We can't have everyone in the school answer this survey because it would be too much data for us to process. So, who should answer it to make sure we have an accurate sample of the community population? We want to make sure we have people from every segment of the community answer this survey.
- Pass out clipboard, pencils, and journals. Have students get into their survey groups and review their questions. Give them 5 minutes to check-in and share any new insights.
- Peer Review: Have each group present what they have to the class as a whole, and receive feedback. Prepare class to be a helpful audience- i.e. I really liked..., this part wasn't clear to me because..., what about if you added/change this....
- Let students get back into groups, rework their questions based on class feedback, and then record their top two questions on the final draft paper.
- If any groups finish early, invite them to meditate, reflect in their journals, or water plants.

Wrap up:

Gather students into the classroom area. Collect surveys. Let students know that one or both of their questions will be used.

Assessment:

Survey questions

Notes/Feedback:



Evaluating Community Health V

How healthy is our school community?

23.1

STANDARDS

CCSS: 6.SL.1, 6.RP.3

OBJECTIVES

- I can use a survey to gather useful data about the health of our school.
- I can compile data using my math skills.

MATERIALS

- Clipboards, garden journals, and pencils
- Completed surveys
- 8-10 different colors of construction paper
- Blank surveys- enough for each survey question group to get one.
- highlighters

Preparation:

Put essential questions and objectives on the board. Collect completed surveys and divide them into enough piles so that you have one for each group. Put each pile in a different colored folder.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives. Explain to students that today we will start examining the data we have gathered with our surveys. This is the exciting part- we get to see what our community members feel about the health of our community.
- Pass out clipboards, pencils, and journals plus one blank survey per group. Let students read over the survey, and mark the questions that are theirs.
- Data gathering: Explain to students how this process works. Have whole class sit in a large circle with survey question groups seated together. Show students the piles of surveys in colored folders. Explain that each group is going to get a folder of surveys, they will tally the results on their blank survey for only their questions, and then they will pass the folder with all of the surveys to the right. We will keep doing this until each group has had each folder once. Demonstrate how to tally results.
- If students asked an open-ended question, they should read over the responses, and highlight the portions they think are powerful or make a good point. Ask them to double check their tallies for each folder.
- Give each group a colored folder and have them record that color name on the top of their surveys (this is so that students can know when they have seen all folders.) Let students begin gathering data.
- If time permits, have students add up tallies in preparation for the next class.

Wrap up:

Gather students into the classroom area. Ask students to share out initial findings: open-ended responses they really liked, how people seemed to respond to different questions, etc.

Assessment:

Teacher observations

Notes/Feedback:



Evaluating Community Health VI

How healthy is our school community?

23.2

STANDARDS

CCSS: 6.SL.1, 6.RP.3, 6.W.10

OBJECTIVES

- I can use a survey to gather useful data about the health of our school.
- I can compile data using my math skills.
- I can reflect in writing on my own experience and emotions.

MATERIALS

- Clipboards, garden journals, and pencils
- Calculators
- Blank surveys (where students recorded tallies)
- Completed surveys in folders

Preparation:

Put essential questions and objectives on the board.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives. Explain to students that today we will start analyzing the data we collected during the last class.
- Demonstrate how to find a percentage from tally marks. (Add up tallies for each response, record total number of tallies, and divide. This will give you a decimal which you multiply by 100 to get a percentage.
- Analysis: Explain that during group work time today they need to accomplish two tasks:
 - f. Find percentages to all responses (to their survey questions)
 - g. Write down quotes they like from any of their open-ended questions.
- If groups finish early, ask them to reflect in their journal about their experience with administering a survey. What did they learn? What would they do differently next time? Were there any surprises?
- Give groups time to work.

Wrap up:

Gather students into the classroom area. Ask students to share out one exciting bit of analysis they have done.

Assessment:

Teacher observations and journal entries

Notes/Feedback:



ASSESSMENT-Evaluating Community Health

How can we use what we have learned so far to evaluate the health of our community?

24.1

STANDARDS

CCSS: 6.SP.1, 6.SP.5, 6.RI.1, 6.RI.7

OBJECTIVES

- I can use survey data to draw conclusions about the health of our school.
- I can illustrate data through the use of charts, graphs, and artwork.

MATERIALS

- Clipboards, garden journals, and pencils
- Calculators
- Blank surveys (where students recorded tallies)
- Completed surveys in folders
- Drawing paper and markers, crayons, colored pencils, etc.
- Large post-its of blank and graph paper
- Measuring sticks

Preparation:

Put essential questions and objectives on the board. Also, draw examples of bar graphs and charts on the board.

Procedure:

- **Analysis and Evaluation:** Gather students into the classroom area and have them read the essential question and the objectives. Explain to students that today we will continue analyzing and evaluating the data we have collected. Today, groups will be responsible for working on the following tasks:
 - h. Create one graph or chart for each close end survey question.
 - i. Create one piece of quote based artwork for each open-ended survey question. Your artwork should contain the quote as well as some sort of drawing that is connected with the quote.
 - j. Make an overall determination or judgment call **BASED ON THE DATA** about the health of our community. This means that you need to figure out how people rated your particular indicator. Your determination should sound something like, “75% of people seem to feel like our community is doing a good job supporting individual mental health. Therefore, we feel like this community health indicator is present.” OR “21% of people feel like we could provide more mental health services. Therefore, we feel like individual mental health is not being taken care of in our community.”
- Show students how to graph or chart data. (Make this just a quick overview- students should already know how to do this. Give groups more help individually if they need it.)
- Give groups time to work.

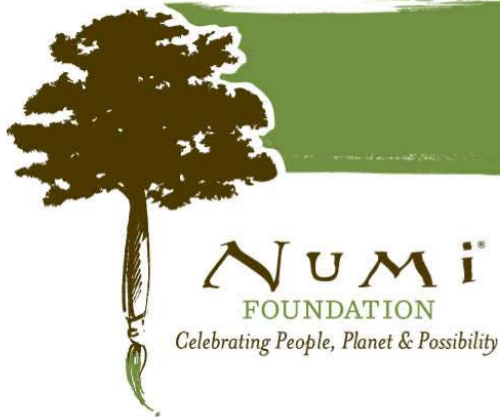
Wrap up:

Gather students into the classroom area. Ask students to share out one exciting bit of analysis they have done.

Assessment:

Charts/Graphs and teacher observations

Notes/Feedback:



ASSESSMENT-CONTINUED

How can we use what we have learned so far to evaluate the health of our community?

24.2

STANDARDS

CCSS: 6.SP.1, 6.SP.5, 6.RI.1, 6.RI.7

OBJECTIVES

- I can use survey data to draw conclusions about the health of our school.
- I can illustrate data through the use of charts, graphs, and artwork.
- I can engage in conversation with others about health-related topics.

MATERIALS

- Clipboards, garden journals, and pencils
- Calculators
- Blank surveys (where students recorded tallies)
- Completed surveys in folders
- Drawing paper and markers, crayons, colored pencils, etc.
- Large post-its of blank and graph paper
- Measuring sticks
- Large number line from 1-10 and stickers
- **Optional: Tea supplies (you can decide how complicated or fancy you want this to be)- cups, tea bags, and hot water

Preparation:

Put essential questions and objectives on the board. Also, find some place to put the large number line.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives. Explain to students that today we will share our findings with one another.**
- **Give students about 15-20 minutes to finish up their survey work. Remind them about the three parts they need to complete:**
 - k. **Create one graph or chart for each close end survey question.**
 - l. **Create one piece of quote based artwork for each open-ended survey question. Your artwork should contain the quote as well as some sort of drawing that is connected with the quote.**
 - m. **Make an overall determination or judgment call BASED ON THE DATA about the health of our community. This means that you need to figure out how people rated your particular indicator. Your determination should sound something like, “75% of people seem to feel like our community is doing a good job supporting individual mental health. Therefore, we feel like this community health indicator is present.” OR “21% of people feel like we could provide more mental health services. Therefore, we feel like individual mental health is not being taken care of in our community.”**
- **Call everyone back together. Put away supplies but keep out charts, graphs, artwork and statements. Find a way to set up these items so that students can do a gallery walk and read and look at what their peers have created.**
- **Make tea and then have students sip the tea as they walk around and look at each other’s work. Encourage them to have academic conversations about the graphs, charts, and artwork. Examples, “I think it is interesting that so many people responded like...” OR “I wonder why people responded in this fashion.”**
- **Evaluation: Gather everyone back into a group. Have each survey question group share their overall determination or judgment. Then give each student a sticker and explain that they need to place their sticker on the community health continuum. By placing their sticker, they are giving their community an overall health rating BASED ON THE DATA they have reviewed and listened to today. A ten means that our community is in perfect health, and a 1 means that our community is not healthy at all. Before you place your sticker, really evaluate the**

evidence you have seen presented today. Let everyone place their stickers and then discuss the distribution.

- **Make Connections:** If you loved what we did in this unit, you might want to look into a career as a researcher, statistician, community health worker, etc.

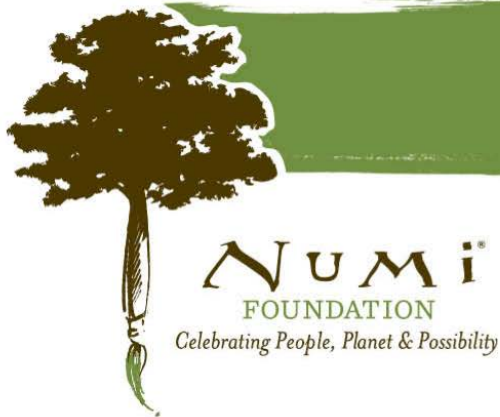
Wrap up:

Clean up and gather students into the classroom area and do group appreciations. [Make sure to carefully store all data, charts, graphs, etc. for the next unit.] Ask students to think about what we will be doing next. We have one unit left. What would make sense as a final unit of study based around the concept of health?

Summative Assessment:

Charts/graphs and teacher observation

Notes/Feedback:



Setting the Stage for Growth I

How can we prepare ourselves for our Capstone Project?

25.1

STANDARDS

CCSS: 6.RI.1, 6.RI.2, 6.RI.7, 6.SP.1

OBJECTIVES

- I can use our survey data to draw conclusions about the health of our school.
- I can use tools to plant seeds and seedlings.

MATERIALS

- White board, markers, eraser
- Survey data sheets
- Project packet- expectations and summary
- Garden tools- shovels, trowels, hand rakes, weeders, buckets, gloves
- compost

Preparation:

Put essential questions (unit and lesson) and objectives on the board. Decide which beds are going to be weeded and side-dressed with compost. **At this point in time, you might want to send out some sort of invitation/save the date announcement to the community members you would like to have present at the health summit featured at the end of this unit.**

Background Information:

This unit has students working on a Capstone Project. This project is meant to be the culmination of years' worth of garden learning. Students have spent a year

thinking, talking, and writing about many different health related concepts. They have looked closely at their own health and then compared their health needs to those of plants. They have looked at large and small ecosystems, and they have conducted research on the health of their own school community. Now they are ready to take on the role of problem-solver, and propose some solutions to some of the health-related issues within their school. On a more practical note, students will “side-dress” their plants with compost today. This involves taking a small amount of compost and applying it to the top of the soil around the plant stem. Be careful to not get compost on the leaves or the stem. Gently, so that you don’t disturb the roots, rake compost into the soil.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**
- **Welcome students to the last unit of study of their 6th grade year. Let them know that this unit is meant to be a place where they can really shine by combining what they have learned with their own creative ways of finding solutions. Have students read over the essential question of the unit, and talk about what a Capstone Project is.**
- **Share project expectations. Highlight the end of unit community health summit- where they get to share their ideas with their community. Discuss briefly and allow some time for questions.**
- **Analysis: Share survey data and results. Give students time to look at this information with a partner, just to refresh their understanding of the findings. Ask students to try to identify a few key areas, as identified by survey respondents, which might need some attention. Write these ideas on the board.**
- **Explain that we have now planted the seeds for this project, and now we are going to let them sit for a bit as we engage in a bit of metaphorical garden work. You might want to say something like, “Today we are going to pull weeds and side-dress our plants with compost. While doing this, think about how we are contributing to the health of the plants and the soil through our actions. We are removing weeds which compete with our plants for sunlight, water, and nutrients (thereby weakening our plants, or lessening their health.) We are also adding compost (which as you know from the plant health and soil health units) adds nutrients, as well as air and water space to soil. So we are both adding and removing items in order to better the health of our beds. What sorts of things need to be added and/or removed from our school system to improve its health?”**

- **Demonstrate how to pull weeds and side-dress with compost.**
- **Encourage students to process the concepts of ecosystem and community health as they work.**

Wrap up:

Clean up and give students to share any lingering questions or thoughts about the Capstone Project.

Assessment:

Teacher observation

Notes/Feedback:



Setting the Stage for Growth II

How can we prepare ourselves for our Capstone Project?

25.2

STANDARDS

CCSS: 6.SL.1, 6.W.10

OBJECTIVES

- I can be an effective group member.
- I can use writing to reflect on my goals.
- I can use stretching and breath work to calm my mind and body.

MATERIALS

- White board, markers, eraser
- Project packet- time line and rubric
- Clipboards, garden journals, and pencils
- Yoga mats, blankets, any other yoga props you might want
- Yoga Planet and or Yoga Pretzels publications

Preparation:

Put essential question and objectives on the board. Determine a good spot for a yoga class. Read through a couple of kid's yoga publications (some are listed above) and decide which meditation and poses you would like students to do. I would recommend starting with one simple meditation, then doing a couple of poses involving balance, flexibility, etc. and finally closing with a couple of partner/group poses.

Procedure:

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- Gather students into the classroom area and have them read the essential question and the objectives.
- Today we are going to review our own health progress in preparation for the Capstone Project. We will also learn about the project time line and rubric. Finally, we will take some time to do some stretching and breathing so that we can be sure that our bodies, minds, and spirits are ready to take on this project.
- Evaluation: Have students open their journals to the individual health pledges they created at the beginning of the year. Ask them to find a quiet place to sit for about 8-10 minutes so that they can reflect in writing on their progress. Have them evaluate what they have accomplished in terms of each goal that they set.
- Gather students back together in the classroom area and invite students to share out any inspiration or ideas they had while reflecting on their own health.
- Pass out project packets and give students a couple of minutes to review the timeline and the rubric. Let them talk about this project and ask questions of you and each other.
- Yoga Time! Have students put away journals, clipboards, pencils, and project packets. Move to whatever space you have designated for this group practice and let students get comfortable. Proceed with the flow you have decided on ahead of time. Remember to model acceptance and non-judgment. Demonstrate different options, ask questions and offer suggestions. Allow space for students to do what they need to be healthy- for some this might mean remaining in child's pose for a long time!

Wrap up:

Clean up yoga supplies and gather in a circle. Do a quick check-in by asking the following questions: "Show with one hand how healthy you are feeling. 0 fingers means really poor health, 1 finger is poor health, 2 fingers is fair health, 3 fingers is good health, 4 fingers is very good health, and 5 fingers is great health. Next, show with one hand, how you are feeling about this project. 0 fingers means scared and not prepared, 1 finger is worried, 2 fingers is okay, 3 fingers is I think I know what is expected of me, 4 fingers is I feel pretty confident about what I am doing, and 5 I am excited and ready to go.

Assessment:

Student journals and teacher observation

Notes/Feedback:



Choosing an Area of Improvement I

How do we determine which issues to focus on?

26.1

STANDARDS

CCSS: 6.SL.1

NGSS: MS-ETS1-1

OBJECTIVES

- I can work with a team to devise solutions for a community problem.
- I can engage in conversations about health-related topics.

MATERIALS

- White board, markers, eraser
- Project packets- areas of improvement/solutions lists
- Survey data
- Clipboards, garden journals, and pencils

Preparation:

Put essential question and objectives on the board. Decide how you want teams to be formed- can students choose their own 4-6 person teams, will you choose the teams, or some combination of both? Also, take some time to decide how you want to model brainstorming for them.

Background Information:

Today students begin formally working on their project.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Explain that last week we were preparing our bodies, minds, and spirits for this project and this week we are going to dive on in! Pass out project packets, and ask students to skim sections on expectations, guidelines, time line and rubric. Ask if there are any questions.
- Have students break apart into their teams. Pass out the survey data and review as a class. Co-create a list of identified areas of improvement, **BASED ON THE DATA**. Write this list on the board and have students write it in their project packets.
- Model how to brainstorm solutions. Choose a silly problem and write a description of it on the board- “Squirrels keep eating blueberries off of my blueberry bushes.” Explain that when you are brainstorming, you write ideas down without evaluating. That step comes later on. Be as wild and silly as you want with this process! So, for my blueberry problem, some possible solutions are: pull out blueberry plants, get a dog, cover blueberries, create a motion sensor alarm, move blueberry plants, put out poison, plant other blueberry plants for the squirrels, etc.”
- Give groups time to identify 3-4 areas of improvement they might be interested in, and brainstorm solutions for each.

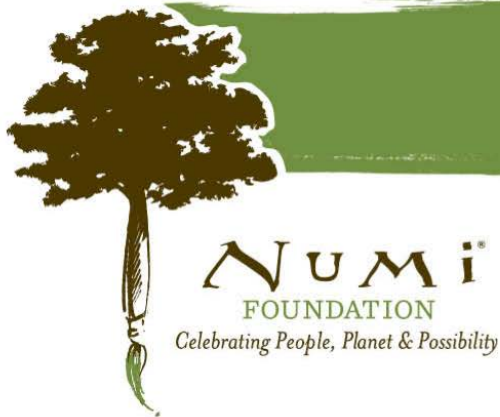
Wrap up:

Clean up and gather in the classroom area. Ask students to share any questions or concerns that might have at this point in the process.

Assessment:

Problem/solution brainstorming lists

Notes/Feedback:



Choosing an Area of Improvement II

How do we determine which issues to focus on?

26.2

STANDARDS

CCSS: 6.SL.1, 6.W.1, 6W.4

NGSS: MS-ETS1-1

OBJECTIVES

- I can be an effective group member.
- I can generate creative solutions for shared problems.
- I can evaluate ideas based on certain criteria.

MATERIALS

- White board, markers, eraser
- Project packets- problem statement and constraints/considerations page
- Clipboards, pencils, garden journals

Preparation:

Put essential question and objectives on the board. You will also need to be prepared to help groups choose their area of focus. While it would be ideal to have every group choose a different area of focus, groups can choose the same area, as long as they wind up developing different solutions.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.

- Explain that today groups are going to think through some considerations/constraints that have a bearing on their project, and they will choose one problem on which they will focus their time and energy.
- Explain that considerations/constraints are things you want to think about when planning your project- things you want to take into account- obstacles, issues you might need to work around. These constraints aren't deal breakers, but you might have to find creative ways to work around them.
- Model how to think through this portion of the assignment using your fictitious problem from the last lesson. "When I sit down and think about the factors that might have an impact on my ability to solve this problem, here is what I come up with: I only have a budget of about \$100, my backyard isn't fenced in, I REALLY like blueberries, I have some extra pots that are close to the house, I have a cat who likes to eat all sorts of things (even things that aren't good for her, etc.) Ask students if they can think of any other factors that we might want to consider. Then ask them to work out why these factors matter in terms of the plausibility (or workability) of the proposed solutions. For example, if my yard isn't fenced in, I might not be able to get a dog."
- Give teams time to work. Remind them that their goals for today are:
 - n. Choose one problem, and write it as a statement. (I.e. Some students are bullying other students.)
 - o. Identify constraints/considerations/obstacles in solving this problem.
 - p. Evaluate your solutions list based on your constraints.
- Circulate as teams work, answer questions and redirect as needed.

Wrap up:

Clean up and gather students together in the classroom area. Ask students to rate their progress today.

Assessment:

Teacher observations and project drafts in packet

Notes/Feedback:



Creating a Plan I

How should our solution be implemented?

27.1

STANDARDS

CCSS: 6.SL.1, 6.W.1, 6.W.4

NGSS: MS-ETS1-1

OBJECTIVES

- I can be an effective group member.
- I can generate creative solutions for shared problems.
- I can explain the steps in a process.

MATERIALS

- White board, markers, eraser
- Project packets- solution proposal and project implementation steps
- Clipboards, garden journals, pencils

Preparation:

Put essential question and objectives on the board.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Explain that today we are going to work in our teams to choose one solution based on our evaluation of the project constraints AND we are going to start generating project implementation steps.

- Pass out project packets and have teams review what they have done so far and give students some time to ask questions of each other and of you.
- Model how to evaluate solutions using your narrative from earlier lessons. “As I review my list of constraints, I realize that some of my solutions are too expensive or just impractical, like getting a dog, which would involve putting up a fence. Some solutions don’t fit with my moral code, or what I believe in (using poison, killing the squirrels.) Some solutions might be doable, but I don’t have the “know-how” at this time to make them happen (a motion detection system.) This leaves me with a couple of possibilities- covering the berries with something so that the squirrels can’t get to them, and planting more berries for the squirrels to have so that they will leave mine alone. I use my background knowledge to decide that putting in plants for the squirrels is not a workable solution. I have tried something like this with strawberries, and wound up just giving the pests more to eat! That leaves me with installing some sort of cover.”
- Tell students once they have one solution to focus on, they need to start thinking about the steps that would have to be taken to implement this solution. **Have students keep in mind that they are not going to be the ones implementing these solutions- they are simply going to be making recommendations to the community.**
- Give teams time to work and remind them that their goals for this lesson are to:
 - Finish evaluating potential solutions
 - Choose one solution and write it as a proposal: “We propose that our school community create a peer mediation group that would help students deal with conflict.”
 - Start brainstorming the steps the school community would have to take in order to implement their solution.

Wrap up:

Clean up and gather students into the classroom area. Remind them to be as detailed as possible when developing their implementation steps. It is possible that they don’t have enough background knowledge right now to develop their plan. If this is the case, what should they do? (Some research- talk with teachers, administrators, family and community members who have some experience with solving community problems and implementing plans.)

Assessment:

Teacher observations and project drafts in student packets

Notes/Feedback:



Creating a Plan II

How should our solution be implemented?

27.2

STANDARDS

CCSS: 6.SL.1, 6.W.1, 6.W.4, 6.W.5

NGSS: MS-ETS1-1

OBJECTIVES

- I can be an effective group member.
- I can explain the steps in a process.
- I can use tools safely in the garden.

MATERIALS

- White board, markers, eraser
- Project packets- project implementation steps
- Garden tools- trowels, weeders, gloves, watering cans, brooms, rakes, etc

Preparation:

Put essential question and objectives on the board. Walk the garden and determine what work needs to be done both to take care of the plants, but also to prepare the space for the health summit.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.

- Explain that today we are going to work on our project plans but we are also going to do some garden work to give ourselves time to be in our bodies and think about things from a different point of view. Highlight the importance of taking a break, switching activities, engaging our body and breath when we are doing important work on a project. By “switching gears or channels” we can refresh ourselves and often develop new insights.
- Pass out project plans, clipboards and pencils. Ask teams to review their work thus far. Ask for questions or thoughts. Spend a little bit of time covering the components of a strong project implementation plan.
 - It needs to be clear (i.e. both the writing and the ideas are understandable)
 - It needs to be detailed (explain exactly what folks will need to do to implement your plan)
 - It needs to be sequential (don’t tell folks to buy the chickens and then build the coop.)
 - It needs to assume nothing (if a project is going to take money, where is that money going to come from, if someone needs to teach a class, how do they get the knowledge/skills to teach that class?)
- Model how to do this briefly with the narrative from the previous classes. “Ok, so I have decided to build a cover for my blueberries. I have some ideas, but I am not sure what is going to work. Step one- I need to draw a map of my blueberry area including width, depth, height of my plants. On this map, I also need to show any other structures/plants that might impact my design like a fence right next to it, or a large tree. Step two- I need to do some research on how to build a cover. I am going to go on the internet and visit my local hardware store to get ideas.
- Explain to teams that they are going to have the rest of the time to be working on their plans. I will be pulling teams of students to “switch gears” and do some garden work. During this time, they need to work on the following portions of their project:
 - Project implementation steps
 - List of considerations relevant to this plan
 - Problem-solve any team issues that have arisen (communication, work sharing etc.)

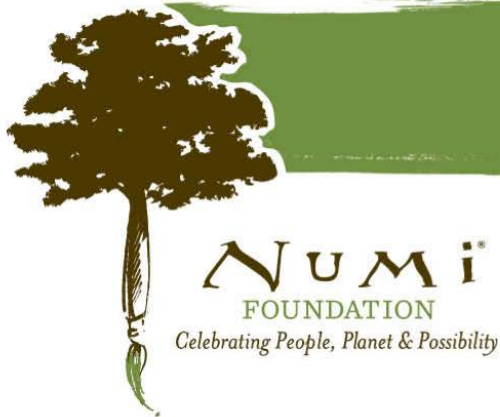
Wrap up:

Clean up and gather students into classroom area. Do a round of appreciations where team members appreciate one another for the hard work they each have done thus far.

Summative Assessment:

Teacher observations and project drafts in student packets

Notes/Feedback:



Presenting a Plan I

How do we convince others that our ideas are important?

28.1

STANDARDS

CCSS: 6.W.5

NGSS: MS-ETS1-1, MS-ETS1-3, MS-ETS1-4

OBJECTIVES

- I can be an effective group member.
- I can use the editing process to create a polished final draft
- I can accurately sketch the world I see around me.

MATERIALS

- White board, markers, eraser
- Project packets
- Clipboard, pencils, garden journals
- Final Project Summary Sheets
- ****Optional**** computer lab time for students to type up final drafts

Preparation:

Put essential question and objectives on the board. ****This would be a good time to send out a formal invitation to the community members you would like to have present at the health summit featured at the end of this unit. Be sure to invite school administrators, school partners, families, and possibly the 5th grade class.****

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Explain that today, they are going to be working on the last stages of their project rough draft, and beginning the final draft. As a team they will be working on the following components today:
 - Finish up rough draft list of solution specific considerations (or just circle/mark the ones that are relevant from the original list in the packet.)
 - Develop 3-4 alternative solutions- these suggestions should come from your original list. You are doing this to present your audience with some feasible alternatives, in case they don't agree with the solution you have focused on.
 - Create list of pressing questions- things your team has thought of but not answered to your satisfaction. This is a step we are taking because it shows we are aware that we don't have all the answers, but we are actively engaged with trying to think through this entire process.
- In addition, we are going to be taking some time today to some garden sketching. We are doing this because sometimes when we engage in artistic endeavor, we access other parts of our mind, and uncover new inspiration. As we sketch things in the garden today, be looking for examples of Mother Nature's inventiveness or as seen in another light- nature's endless ability to adapt. How does nature deal with problems? What sorts of solutions are developed? Reflect on these concepts as you draw today.
- Pass out clipboards, packets, final draft pages and suggest that teams make a fair and inclusive plan for how they are going to complete all of the work they need to get done.
- Give teams work time. Pull teams to work on sketches throughout the rest of class time.

Wrap up:

Clean up and gather student into classroom area. Debrief quickly and do a quick cheer or group hug to acknowledge all of the work everyone is doing.

Assessment:

Teacher observations and final draft of projects

Notes/Feedback:



Presenting a Plan II

How do we convince others that our ideas are important?

28.2

STANDARDS

CCSS: 6.SP.4, 6.SP.5, 6.W.5

NGSS: MS-ETS1-1, MS-ETS1-3, MS-ETS1-4

Arts: VA2.5

OBJECTIVES

- I can be an effective group member.
- I can represent ideas symbolically.
- I can use the editing process to create a polished final draft.

MATERIALS

- White board, markers, eraser
- Project packets and Final Project Summary Sheets
- Survey data (for visual aide material)
- Clipboards, garden journals, and pencils
- Assorted art supplies (poster paper, markers, rulers, scissors, crayons, colored pencils)
- ****Optional**** computer lab time so that students can create final drafts and charts/graphs

Preparation:

Put essential question and objectives on the board. Set up art supplies.

Procedure:

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- Gather students into the classroom area and have them read the essential question and the objectives.
 - As a class, discuss the essential question. How do we get our audience to agree that our ideas are important? What steps should we be taking now to make sure that our presentations are effective? (Guide students to think about the importance of neat, detailed, thoughtful written work, attractive clear visual aids, and strong oral presentations.
 - Ask students what we should be working on today, in order to accomplish this goal of having presentations that are taken seriously and listened to?
 - q. Editing rough drafts and writing up final drafts of our project plans
 - r. Begin work on visual aids (Briefly discuss how visual aids can support a presentation. What sorts of artwork, maps, charts, graphs might help your team to make its point?)
2. Let teams get to work. Circulate, answer questions, pose problems, and redirect as necessary.

Wrap up:

Clean up and give students to chance to share out visual aide ideas in an effort to inspire other teams.

Assessment:

Teacher observations and project drafts in student packets

Notes/Feedback:



Presenting a Plan I

How do we convince others that our ideas are important?

29.1

STANDARDS

CCSS: 6.SP.4, 6.SP.5, 6.W.5

NGSS: MS-ETS1-1, MS-ETS1-3, MS-ETS1-4

Arts: VA2.5

OBJECTIVES

- I can use my breath to calm my mind and body.
- I can represent ideas symbolically.
- I can summarize large concepts and plans.

MATERIALS

- White board, markers, eraser
- Project packets and Final Project Summary Sheets
- Survey data (for visual aide material)
- Clipboards, garden journals, and pencils
- Assorted art supplies (poster paper, markers, rulers, scissors, crayons, colored pencils)
- Yoga Pretzels or Yoga Planet publications (or other online or print meditation sources)
- ****Optional**** computer lab time so that students can create final drafts and charts/graphs

Preparation:

Put essential question and objectives on the board. Set up art supplies. Decide on what sort of whole group meditation you would like to do.

Procedure:

3. Gather students into the classroom area and have them read the essential question and the objectives.
4. Suggest that we have been trying to remain well balanced and healthy while working on this project by “shifting gears” occasionally. We have been doing this by gardening, sketching, doing yoga, etc. Today we are going to do a group meditation to help calm our bodies and minds and to help us prepare for our health summit next week.
5. Have all students get comfortable and begin meditation.
6. End meditation and pass out project supplies (clipboards, pencils, packets, final drafts.) Ask students what we should be working on today, in order to accomplish this goal of having presentations that are taken seriously and listened to?
 - a. Finishing up final drafts of our project plans
 - b. Finish work on visual aids
 - c. Develop “pitch.” A pitch is a catchy summary of your team’s proposed problem and solution. It needs to be no more than 4-5 sentences long, and it needs to try and capture the essence or spirit of your project. This will be part of how you introduce your problem to your audience.
7. Let teams get to work. Circulate, answer questions, pose problems, and redirect as necessary.

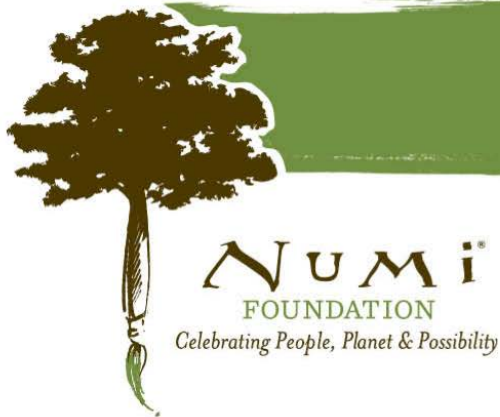
Wrap up:

Clean up and give students a chance to share out pitch ideas in an effort to inspire other teams.

Assessment:

Teacher observations and project drafts in student packets

Notes/Feedback:



The Presentation

What can we do to improve the health of our community?

29.2

STANDARDS

CCSS: 6.SP.4, 6.SP.5, 6.W.5

NGSS: MS-ETS1-1, MS-ETS1-3, MS-ETS1-4

OBJECTIVES

- I can speak publically about topics that interest me.
- I can present information that will improve the health of my community.

MATERIALS

- White board, markers, eraser
- Clipboards, pencils, garden journals
- Final project summary sheets in folders
- Visual aides

Preparation:

Put essential question and objectives on the board. Decide on what sort of whole group meditation you would like to do. Determine presentation order for health summit and overall agenda.

Procedure:

- Gather students into the classroom area and have them read the essential question and the objectives.
- Explain that today we are going to do a group meditation to help calm our bodies and minds and to help us prepare for our health summit next week.
- Have all students get comfortable and begin meditation.
- End meditation and pass out project supplies (final drafts in folders, visual aids.) Ask students what we should be working on today:
 8. Fine tune “pitch.” A pitch is a catchy summary of your team’s proposed problem and solution. It needs to be no more than 4-5 sentences long, and it needs to try and capture the essence or spirit of your project. This will be part of how you introduce your problem to your audience.
 9. Practice rest of oral presentation- Introductions, overview of considerations, major steps that need to be taken, thanking those who have helped. Figure out how visual aid is going to be used.
- Share summit agenda. Let students know the order they will go in. Explain that after everyone makes their very brief presentation- each team will move to a separate area of the garden so that community members can wander around to the different teams and ask questions and get more information.
- Let teams get to work. Circulate, answer questions, pose problems, and redirect as necessary. While teams are preparing, pull them one at a time to practice their presentation- introductions, pitch, key project steps, and giving thanks.

Wrap up:

Clean up and gather students in classroom area. Take a deep breath together and wish each other luck on the community health summit next week.

Assessment:

Teacher observations

Notes/Feedback:



ASSESSMENT: The Presentation

What can we do to improve the health of our community?

30.1

STANDARDS

CCSS: 6.SP.4, 6.SP.5, 6.W.5

NGSS: MS-ETS1-1, MS-ETS1-3, MS-ETS1-4

OBJECTIVES

- I can speak publically about topics that interest me.
- I can present information that will improve the health of my community.

MATERIALS

- Final project summary sheets in folders
- Visual aides
- ****Optional**** food and drink for community members, video camera to record presentations, microphone

Preparation:

Make sure all of the presentation supplies are accessible. Make sure there are places for community members to sit or stand.

Procedure:

- Gather health experts into presentation space and welcome community members.
- Explain flow of health summit to everyone.
- Let the summit begin!

Wrap up:

Gather students together and share observations about the event and share appreciations.

Summative Assessment:

Capstone Project- oral presentations and written projects

Notes/Feedback:



Closing of the Garden

What have we learned about the concept of health this year?

30.2

STANDARDS

CCSS: 6.SL.1, 6.W.10

OBJECTIVES

- I can share my ideas and emotions with others.
- I can enter into dialogue with others about health-related topics.
- I can make the world a healthier place.

MATERIALS

- White board, markers, eraser
- Clipboards, garden journals, pencils
- Salsa recipe of your choice
- Cooking supplies for making salsa (recipe ingredients, cutting boards, knives, big bowl for mixing, mixing spoon, juicer, colanders, buckets, and soap for washing hands and produce, chips, bowls for students)

Preparation:

Put essential question and objectives on the board. Set up cooking area, and decide how to divide up cooking tasks.

Procedure:

- **Gather students into the classroom area and have them read the essential question and the objectives.**

- Have students turn to their personal health pledges from the beginning of the school year and read over them. Let them talk briefly with their coach about their progress, and then give them about 10 minutes to reflect and write in their journals.
- **Analysis:** Gather back in the classroom area. Pose the essential question to students and cover the white board with their responses. Let them page through their journals if that helps them to remember what we have learned. Ask what new questions they have about health (personal, plant, soil, ecosystem, community.)
- **Making Connections:** Many of the topics we have learned about this year lend themselves to exciting professional work. If you enjoy what we did during this unit, you might want to think about the fields of: city planner, health worker, politician, social worker, educator, consultant, etc.
- Handout recipe, divide up cooking tasks, and review kitchen safety.
- Make, eat, and enjoy salsa and chips.
- Clean up.

Wrap up:

Let students take a couple of moments to say good-bye to the garden.

Summative Assessment:

Student written reflections

Notes/Feedback: