



Bundle Overview LEs1.1-1.5

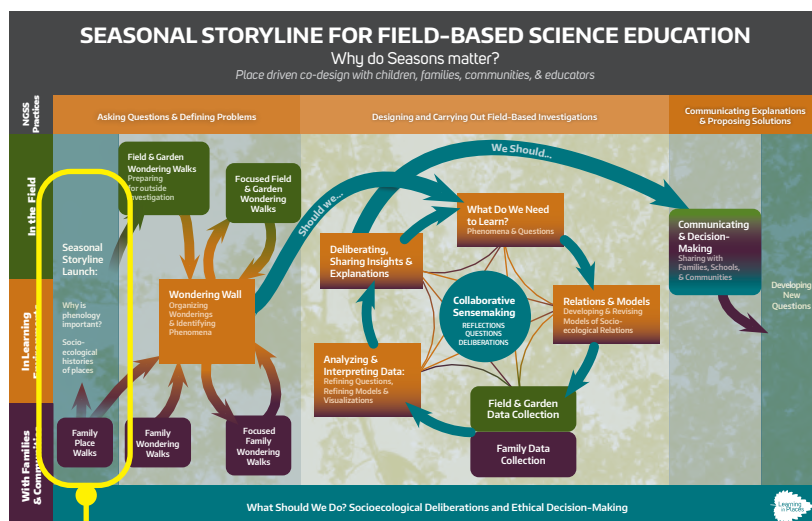
Bundle 1.A: Learning outdoors as place-based and historicized

This is the launch of the Field-Based Seasonal Storyline. This bundle supports learners and families in deepening their relationships with places, and reflecting on what we do in those places to build a *place-centered foundation* for our Storyline investigations.

This launch will give our learning activities throughout the Storyline purpose, rooted in our unique relationships with places—including all the humans and more-than-humans who share these places. In this bundle, we will intentionally make learning connections to places by considering families' local and global histories with places, going on outdoor observation walks to think about who/what else we share our places with, and expanding learning opportunities for often-marginalized students to feel themselves centered in teaching and learning. Because no two sets of learners are the same—they will have different experiences, histories, and relationships to power and privilege—it will be important to take time learning about the social and ecological histories of places in our learners' lives. By beginning with the places that are important to everyone in our learning environment, we may open pathways for scientific sense-making and socio-ecological decision-making that are meaningful to learners and their families. Importantly, in this bundle we will lay the foundations for learner agency and decision-making, which are critical to equitable classroom management and necessary 21st century skills—as we consider the daily social and ecological decisions we make in our everyday lives and how they impact others in the places that are important for us.

Big Ideas About Nature-culture Relations To Have In Mind As You Plan For This Bundle of Activities

Socio-ecological decisions are those decisions made by humans, communities, organizations, and institutions that are informed by and impact the natural world. These decisions are affected by how we think about and enact relationships between humans and the natural world, what are called “nature-culture relations”. Emerging research demonstrates that there is cultural variation in how these relationships are conceptualized and impact how learning and teaching occur. For example, there is important variation across cultural communities around the coordination of attention in observation practices. Further these relational construals are shaped by history and powered social dynamics. For example, variations in air quality and soil quality in neighborhoods are often correlated with race and class. Engaging cultural variation as well as historicity and power, can and should serve as resources for more equitable and expansive field-based science learning. This suggests that learning outdoors in places that matter for learners and their families, that is, in complex socio-ecological systems, may enhance reasoning and decision-making and equitable science education.



LEARNING GOALS

This engagement incorporates both school and family learning activities to introduce place-based learning. By the end of this bundle, learners will be able to:

- » Describe places that are important to them and their families
- » Describe what they observe in places around the school
- » Start to describe wonderings about places and their histories across various timescales
- » Imagine more-than-human uses of places
- » Describe human decisions that have occurred in places across time and space

CONNECTIONS TO NGSS/ FIELD-BASED SCIENCE

- » **Crosscutting Concepts:** Cause and Effect; Scale; Systems and System Models, Stability and Change
- » **Science Practices:** Obtaining, Evaluating, and Communicating Information
- » **Disciplinary Core Ideas:** ESS3.C: Human Impacts on Earth Systems (K-2)

Learning Engagements in this bundle

- **LE1.1: Socioecological Histories of Places Launch:** This is a **launch** of the bundle and the storyline. It introduces teachers and learners to the Histories of Places framework, which will be a key tool in organizing sensemaking across the storyline.
- **LE1.2: Family Histories of Places Walk:** This is a **family-based** walk where families explore the various timescales from the Histories of Places framework introduced in LE1.1.
- **LE1.3: Sharing Places:** This is a **school-based** introduction to place and who we share places with. Students will make predictions about who they share the schoolyard with, do outdoor observations of places, and then begin to discuss their observations in relation to Histories of Places.
- **LE1.4: Families' Learning Across Places:** This is a **family-based** exploration of places that are important to families, both now and historically. It allows families to reflect on what they know about places, and how they might imagine ethical futures for those places, their families, and their communities.
- **LE1.5: Synthesizing Place-Based Learning at home and at school:** This is a **school-based synthesis** of the bundle and an opportunity for the class to reflect on all of the place-based wonderings done by learners and their families. This is the beginning of wonderings about place that will continue throughout the storyline, so it's important to record them now and return to them as you proceed!



Engaging the Rhizome

Complex Socio-Ecological Systems: This bundle introduces the Histories of Places framework as an integral tool for sensemaking across multiple timescales. It will be used throughout the storyline. It is essential that learners come to understand that socio-ecological systems do not exist in a temporal vacuum, and therefore neither does socio-ecological decision making.

Culture, families, and communities: This bundle orients students to their cultural and familial connections to places, as well as beginning to notice the places, lands, and waters that surround them and shape their everyday lives. This connection between humans and natural systems is a critical perspective.

Field-based science Learning: It is important in this bundle to support a sense of wonder and making place-based observations. This will be the foundation for place-based investigations later on in the storyline.



Power and Historicity:

Science is often taught from ahistorical, narrow, and decontextualized viewpoints. In contrast, when learner and family ways of knowing and doing are included in the classroom and positioned as equal to the knowing and doing generated in school, it signals to learners and families that family knowledge and practices are important and valued. In addition, research has shown that helping learners make connections among knowledge, ideas, and practices across contexts (home, school, hobbies, for example) is a critical and powerful learning strategy. When learners see themselves, their families, and the places that are important to them connected to the science they are learning in school, they understand that science is related to their lives and the lives of their communities. With respect to Histories of Places, school science often privileges geologic time if time is acknowledged at all. It is critical to support learners in investigating and analyzing phenomena across multiple time scales as part of their sense-making about complex socio-ecological systems, and to help them deeply engage in deliberations and decision-making related to socio-ecological systems.

It is natural to be nervous about learners' behavior while outdoors. This might come from concerns about safety while outside, but it often results in policing of children of color (especially black and brown children) more often and more harshly than white children. Students **will** be excited to be outside. Many **will** speak in louder voices than they normally would in the classroom. Many **will** spread out but will come back together as they share their ideas. Allow them both emotional and physical space to do this. Black people especially have historically not felt welcome in outdoor spaces. This is an opportunity to directly refuse anti-blackness while outdoors. For more ideas and practices related to supporting learning outdoors, consult the Supporting Learning Outdoors Framework.

LE1.1: Socio-Ecological Histories of Places Launch

Purpose

REASONING ACROSS MULTIPLE TIMESCALES

In this opening lesson to the Seasonal Storyline for Field-Based Science, students will be introduced to the Socio-Ecological Histories of Places Framework. It will be an ongoing tool to structure sensemaking about how the socioecological systems we see today have both histories and futures that may not be readily apparent but are nonetheless critically important to consider when learning about and making decisions about places. This launch will give students an opportunity to reflect on what they already know about the various timescales in relation to the places around their school and their neighborhood.

Why this is important

Thinking within and across many time scales is necessary to understand the complexity of socio-ecological systems more deeply. Research shows that thinking across time scales is an important practice of scientists because they need to understand the geologic and past social contexts of the land they are studying in order to understand the land as it is today, as well as what it might become in the future. Similarly, structural inequalities in our society are historically rooted and continue to accumulate across different scales of time. Grappling with these layered histories and the way they continue to shape the present is critical in order to create ethical, just and sustainable futures.

Engaging family and community knowledge and practices

Students should be encouraged to bring what they know from their own families, experiences, neighborhoods, and communities into the discussion about Histories of Places.

LEARNING GOALS

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

1. Describe what they know across each of the relevant timescales
2. Connect the timescales to places that they know

CONNECTIONS TO NGSS

- » **Crosscutting Concepts:**
Stability and Change
- » **Science Practices:**
Obtaining, Evaluating, and Communicating Information
- » **Disciplinary Core Ideas:**
ESS3.C: Human Impacts on Earth Systems (K-2)

ASSESSMENT OPPORTUNITIES

- » Whole-class discussions
- » Whole-class Histories of Places graphic organizer

Teacher background information

There are many temporal scales that make a place what it is today, and what it could be in the future. Histories span across lands, waters, plants, animals, and communities over time. A place's histories are impacted by political and other dimensions that have shaped and continue to shape how people interact with, influence, and are otherwise in relationship with lands, waters, and more-than-humans (like plants and animals, for example), and how all of this takes place in local, regional, national, and global contexts. Thinking across many time scales makes visible the complexity of socio-ecological systems. An important part of sense-making about those systems, and making-decisions related to those systems, is not only exploring places as they are now but also exploring how they could be in the future and what they were like in the past.



To prepare for this lesson

To learn more about each of the timescales, start by exploring the Socio-Ecological Histories of Place Framework, especially the Vignette in Appendix A and the self-assessment in Appendix D. Use these time scales to think about and research the places that are important to you, including the place on which your school is located, as well as the surrounding communities and regions. What are your relationships to those places? What are your students' and their families' relationships to those places? If you don't know the answers to these questions, how could you find out? You should also use this framework throughout the Seasonal Storyline for Field-Based Science to help support your students in thinking about place within and across these time scales. Begin by thinking about places that are important to you, students in your classroom, their families, and surrounding communities. Then think about these places across different time scales, and conduct research using various sources to help you do that. You can use a chart like the one embedded below to help you document your learnings, wonderings, and thoughts about implications for teaching.



Fill in the graphic organizer with your own ideas, answering these questions:

- What do I know from prior experience and research I have conducted?
- What questions or wonderings do I have?
- How can I support students' sense-making within and across scales of time?

Centering equitable practices:

- **All places have historical contexts:** Science is often taught from ahistorical perspectives, as if scientific studies and theories were done in a social and political vacuum. We know that this isn't true. Surfacing histories of places is an important step to help students realize that all places have ongoing histories, past, present, and future.
- **"Histories" are ongoing:** It is very easy for students to assume that, because we talk about timescales as "histories", they are in the past. In this lesson and throughout the storyline, we are trying to understand timescales as ongoing--with histories but also futures. This is why the "living ethical possibilities and responsibilities time" is a timescale that cuts across all timescales, so that we can start to imagine futures for lands, waters, plants, animals, soil, indigenous people, nation-states, and/or the world on a global scale.
- **"De-settle" your own ideas about place and Indigenous peoples:** History is often taught in a way that (1) completely invisibilizes Indigenous peoples, (2) romanticizes relationships between Indigenous peoples and settlers, and/or (3) makes it seem as if Indigenous peoples no longer exist. Educate yourself about what Indigenous lands your school sits on, which Indigenous nations are your school's neighbors, and how Indigenous practices influence the places, science, and stories of the places where you live and work. Doing this work is an important step in supporting your students to think within and across timescales about complex socio-ecological systems. Vignette A in the Histories of Places framework can give you an example of how to structure this discussion with your students.
- **Continuously support students and families in thinking about the histories of the places they are learning about and studying:**

One error educators can make is grounding students and families in the histories of places that are interesting and important to them in LE 1, and then failing to use this framework throughout the rest of the Seasonal Storyline for Field-Based Science. Throughout the storyline, you should continuously be asking important Histories of Places questions and asking learners to keep using these various timescales as part of their sense-making. This will help to ensure that learners are thinking deeply about the complex socio-ecological systems they are studying, and it will help to ensure that their deliberations and decision-making about aspects of those systems are as complex and informed as possible.



MATERIALS

- » Histories of Places graphic organizer
- » A variety of maps: world maps, maps of the U.S., Indigenous land maps, water maps
- » Materials to make timelines
- » Information (from your own research) about various Histories of Places surrounding the school and student and families' neighborhoods

TIME

45 min



Instructional Sequence

1. Ask students: when I say the word "history", what do you think of? What kinds of places do you think have histories? What kinds of people have histories?
 - » You can keep this as a whole-class discussion or have students talk with a partner, or individually write or draw some ideas first, then share as a whole class.
2. Allow students to share the histories that they know about. Write them down on sticky notes or word cards so that you can sort them later into the Histories of Places Framework.
3. Ask students: when I say the word "future", what do you think of? What kinds of places do you think have futures? What kinds of people have futures?
 - » You can keep this as a whole-class discussion or have students talk with a partner, or individually write or draw some ideas first, then share as a whole class.
 - » Students' ideas here will be varied. As you listen to students' ideas about futures, try to take a sensemaking stance--meaning, as students share, ask probing questions like, "can you say more about that?" "Is there anything that you've experienced today that makes you think about that kind of future?" "What timescale do you think that future belongs to?"



Assessment opportunity:

The point of this discussion is to get at students' ideas of histories, that all people and places have histories, and that histories are also what we're living in today.

The point of this discussion is to get students thinking about the idea that all places and people have futures



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4. Show students the Histories of Places graphic organizer (you might want to make this poster-sized so that you can hang it on the wall and make it visible throughout the storyline. Here are some ways to explain each timescale to students:

- » **Geologic time:** this is about the land and water forming, including our mountains, glaciers, rivers, and oceans. While these were formed in the past, they are always still changing.
- » **Plant, animal, and soil time:** this is plants, animals, and soil, their histories in places, and also how their relationships between each other and with humans (because we are animals too!) are changing as the climate changes.
- » **Indigenous peoples time:** Indigenous peoples have always been on this land and still are.
- » **Nation-state time:** this is how countries interact with the land, waters, plants, animals, and soil based on the things that are important to those countries.
- » **Global time:** this is how the places where we live are connected to other places around the world.
- » **Living ethical responsibilities and possibilities:** this is how we imagine the future for all of the other timescales!

You might have other names for these timescales. What is important is for students to realize that there are multiple timescales along which they are thinking. You might want to show close-ups of each of the images on the Histories of Places graphic and ask students what they see in those pictures, why they think a picture represents a particular timescale.

5. Ask students: based on these timescales, which ones were we thinking about as a class as we thought about the word “history”? What about the word “future”?

- » Sort students’ ideas into each of the relevant timescales.
- » If there are timescales that are blank after step 5A, explain to students: it looks like we know a lot about several of these timescales, but also that we have some things to learn about other timescales! Maybe your families know more about some of these that are blank. We will do some exploration with your families about these, and we will continue to talk about these throughout our investigations in the next couple of months!

It is important throughout the storyline that you center students’ ideas and questions in your instruction. This means using their ideas as the basis for your instruction by publicly displaying their ideas as legitimate and valid.

6. Ask students: what do you know about the history of the place that surrounds our school?

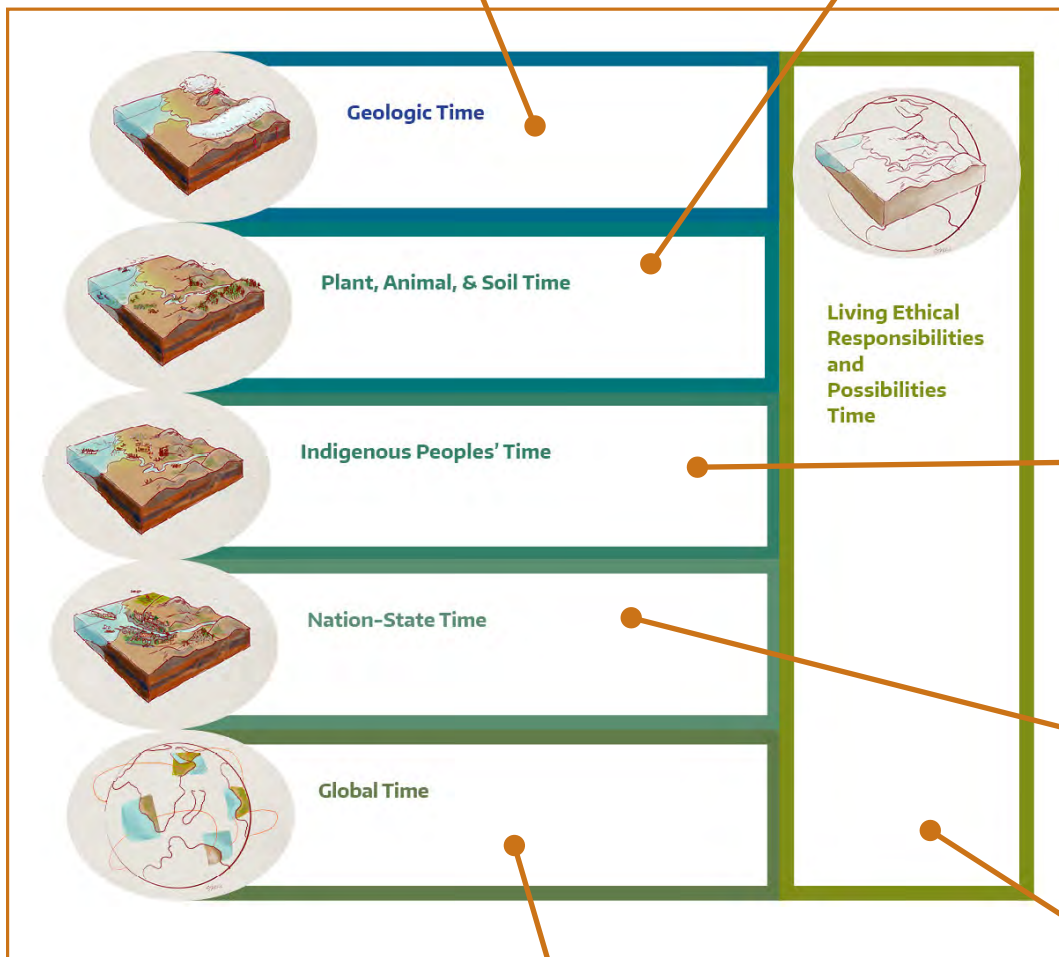
- » As students share what they know, point out which timescale in the Histories of Places framework they are thinking about.
- » Present to students some of your research about the histories of the place surrounding the school. While you do this, point out the timescales from the Histories of Places framework that you’re highlighting. This will help students apply their understandings of the timescales to your description.

Remember to include history of the Indigenous peoples whose land your school sits on. Show students a map of Indigenous land, and make sure to explain that Indigenous people still live on that land, but that it was taken from them without their permission.

7. Explain to students that they will get a chance to do this same type of work and have these discussions with their families, and that it will really help our classroom learning to hear from their families.
8. Explain to students that we will next explore the place surrounding our school, but as we see what is there **now**, we want to think about what it might have been like in the past and what it could be like in the future, and what questions and wonderings we have about those things

Even though the land and waters formed a long time ago, they are still changing today!

Remember that humans are animals too!



Indigenous peoples have deep histories in the places you are studying: remember to make that visible.

Countries' politics always have an effect on people's relations with the land.

Our local places are all connected in some way to other places around the world.

Each timescale has imagined responsibilities and futures.



Geologic Time



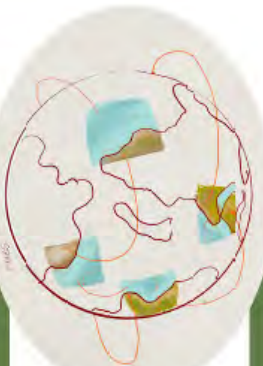
Plant, Animal, & Soil Time



Indigenous Peoples' Time



Nation-State Time



Global Time



**Living Ethical
Responsibilities
and
Possibilities
Time**



Lesson Plan

LE1.2 Family Histories of Places Walk

Purpose

OBSERVING HISTORIES OF PLACES IN OUR NEIGHBORHOODS

This family tool is meant to give students and their families an opportunity to observe and wonder about their neighborhoods while using the Histories of Places framework that was introduced in LE1.1.

Why this is important

You have just completed a discussion about histories of places in the classroom. This is an opportunity for families to apply this knowledge to the places where they live. This will also give you an idea of which timescales families are attending to and wondering about. Including these wonderings and observations in with the class wonderings and observations about place is an important power-sharing move to help students see their family knowledges and places as important and valid alongside classroom knowledge.

Engaging family and community knowledge and practices

This is your opportunity to elicit family and community knowledges about Histories of Places where families live. As a teacher, it is impossible to have complete knowledge of all of your students' backgrounds and histories as they pertain to place. This family tool is a chance for you to put students and their families in positions of experts to teach you about what they know. LE1.5 will be an opportunity to merge classroom and family-based wonderings about place into one chart so that you can hold those as you move forward in the storyline.

LEARNING GOALS

By the end of this lesson, families will be able to:

1. Apply the Histories of Places Framework to their observations and wonderings about the places where they live.
2. Share and discuss family stories about those places

CONNECTIONS TO NGSS

- » **Crosscutting Concepts:**
Scale; Stability and Change
- » **Science Practices:**
Obtaining, Evaluating, and Communicating Information
- » **Disciplinary Core Ideas:**
ESS3.C: Human Impacts on Earth Systems (K-2)

ASSESSMENT OPPORTUNITIES

- » Family tool LE1.2

Teacher Background/Preparation Information

As you have familiarized yourself with the Histories of Places Framework and taken the self-assessment, you have done research into the histories of the place occupied by your school and its surrounding land, and you have explored the places around the school with your students. This is an opportunity for you to hear from the families in your classroom what they already know about places and histories. They may be able to fill in some knowledge about the various timescales that were missing after your discussion with your class in LE1.1. They may have firsthand experience with places around the world and understand how your local places are connected globally. They may be Indigenous families and have firsthand knowledge around the ways in which nation-states have forced change with relationships to the land. This family tool is a powerful way to understand the knowledge that is held in the families in your classroom.

Centering equitable practices:

- **Engaging equitable relations with families:** Sometimes schools hold deep deficit views of families, such as assuming that families won't fill this out because they don't care, cannot understand complex timescales or complex systems because either they don't have enough scientific background knowledge or their first languages are not English. Avoid falling into these assumptions. All families engage in sophisticated reasoning about places, have culturally-based practices that they engage in, and have historical knowledge about the world. Allowing opportunities for all families to share these with you is a big step towards building trusting relations with them. It is important to provide translations of all family tools, as well as adequate time for families to return them.
- **Broaden at-home work beyond "homework":** Homework can be a toxic term to families. In schools, homework has been shown to increase inequities and not lead to substantial learning. Try to frame these as "family learning activities" with no right/wrong answers to lower the stakes and make these more accessible tools for families to fill out. It is helpful to write a target return date on the top of the front sheet.
- **All family tools contain valued knowledge!:** Families will have different relationships with the school, with "homework", and with sharing personal information with you. This is the **first of many** family tools that will be distributed throughout the storyline. Even if you don't have many that are returned this first time, you can still learn valuable knowledge about families. You can also ask students to share what they discussed with their families even if they didn't return LE1.3 back to you.

MATERIALS

» Family tool LE1.2

TIME

Allow at least 5 days for this to be returned to you. You can hand this out after you've done LE1.1

Introducing the tool to your students

1. Explain to students that now that they have explored the Histories of Places, it's time to see if they can find any **evidence** of these timescales as they walk around their neighborhoods with their families.
2. Return to the Histories of Places chart that you've started to fill out as a class and remind students that while they already know and wonder about many of the timescales, there are some that we can learn more about. They may be able to fill some of these timescales out as they walk around their neighbourhoods with their families.
3. Emphasize to students that there are no right or wrong answers to any of the parts of the chart. It is really just for them to have a family walk so that we can add to our classroom chart what their families notice and wonder about!



Taking a Socio-ecological Histories of Places Walk

Please return on _____

Name: _____

Instructions:

As a family, pick a place outside in your neighborhood. Observe that place (what do you see, hear, and smell, for example). Think about different time scales to deepen your observations. For example, what are you noticing that might be related to geologic time? What are you noticing that might be related to plant, animal, and soil time? Then consider how human decision making has contributed to changes in the place.

Activity Overview:

Go for a walk in your neighborhood. Make observations, and ask questions about what you wonder about as you observe (there is no “right” answer). Think about your observations and questions from different time scales. What did you observe related to some or all of these time scales? What questions do you have? How has human-decision making impacted this place from each time scale? There are no “wrong” answers here!

What Can You Do To Support Learning?

- The goal of this activity is to practice making observations in specific places, and to use different time scales to deepen your observations.
- Ask questions throughout this activity to encourage family members to make and share their observations. For example, ask what they see, hear, and smell. If they have been to this place before, ask them to share what they notice that is the same and what they notice that is different (and why they think that is). What questions do they have about what they are noticing? Which time scales do they want to learn more about given what they are observing in the place?
- Consider how the places have changed over time and why. How have the decisions people made contributed to this change? Which people made choices? Why did they make those choices?



LE # 1.2

Taking a Socio-ecological Histories of Places Walk

Taking a walk, making observations, and asking questions

First, decide where you and your family want to take a walk.

Where did you go for a walk and why? _____

Make observations of what you see and notice in the place you picked. Use this chart on the next page to think about the place you observed on your walk. Think about that place from the perspective of these different time scales. Fill out as much of the chart as you want. There are no right or wrong answers!

Learning
in Places



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LE # 1.2

Time Scales	What did we observe in our place related to each of these time scales?	What questions or wonderings do we have about our place related to these time scales?	What decisions have people made that shaped this time? Which people? Why did they make those decisions?
Geologic Time: Land and ocean processes, mountain formation, glaciation, etc.			
Plant, Animal, and Soil Time: Plants, animals, and soils of the area, species extinctions or adaptations			
Indigenous Peoples' Time: Recognizing First Peoples and their histories and current relationships to this place			
Nation State Time: How the development of nations over time has shaped and impacted this place			
Global Time: How this place is connected to, impacts, or is impacted by other places across the earth and interacts with other time scales			
Living Ethical Responsibilities and Possibilities Time: What's possible for this place?			



Lesson Plan

LE1.3: Sharing Places

Purpose

SUPPORTING SENSEMAKING AROUND PLACE AND NATURE-CULTURE RELATIONS

In this lesson, students will begin to make connections among places, people, and others who share a place. With this lens, we can attune our outdoor learning to attend to species, places, lands, and waters. In this activity, we begin inside the classroom by drawing our schoolyard and who we might find in it (including humans!). After the walk, students draw what they saw on their walk. Students are then asked to think about who they share their neighborhoods with as a way to connect their learning in and across places.

Why this is important

Place-centered learning is foundational to the storyline and is also deeply connected to family and cultural practices and knowledges. It is also critical for field-based science learning. This lesson is an introduction to noticing, wondering, and observing in places--which in turn will lead to "Should-We" questioning and decision-making about socio-ecological phenomena later in the storyline.

Engaging family and community knowledge and practices

In this lesson, it is important to connect to students' prior knowledge, experiences and family practices to places around the school. Your questions should position students' home-based knowledge as strengths for classroom learning. Prompt students to draw on these knowledge bases and experiences as they observe, wonder and draw on the Wondering Walk. Making social and ecological connections between places that are important to students and places around the school will be important as students move towards the LE1.4 family tool.

LEARNING GOALS

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

1. Describe what they observe in places around the school
2. Start to describe wonderings in terms of various timescales
3. Imagine more-than-human uses of places
4. Describe human decisions that have occurred in places

CONNECTIONS TO NGSS

» Crosscutting Concepts:

Scale; Systems and System Models

» Science Practices:

Asking questions and defining problems

» Disciplinary Core Ideas:

ESS3.C: Human Impacts on Earth Systems (K-2)

ASSESSMENT OPPORTUNITIES

- » Whole-class discussions
- » Noticing student talk during outdoor walk
- » LE1.2 Student tool

Teacher background information

All students' learning experiences are grounded in place. Whether that place is indoors or outdoors, places help students understand who they are, how they are connected to the land or with each other, and who they share places with. It is important to understand that humans do not all experience the same place in the same way, and this is connected to gender identity, race, class, ability, or other factors. As scientists begin to do place-based investigations, they need to understand the histories of that place, who lives there (humans and more-than-humans), the geological features of the place, and how human decisions have affected that place. This lesson is an introduction into noticing features of places, as well as starting to talk about what places are important to us and why. The Place & Place Designing: Mapping Opportunities to Learn framework will be helpful to you as you think about how to discuss place with your students, and how to plan for instruction by walking in place.

Centering equitable practices:

- **Broaden what counts as science and science knowledge, who does science, and where science is done:** Science is often taught from very narrow conceptions of what counts as science, who does science, and where science is done. This lesson gives you an opportunity to open up the thinking space in science to include students' prior knowledge, family-based knowledge, and expertise as they begin to engage in place-based investigations.
- **Provide equitable access to outdoor learning experiences:** It is natural to be nervous about students' behavior while outdoors. This might come from concerns about safety while outside, but it often results in policing of children of color more often and more harshly than white children. Students **will** be excited to be outside. They **will** speak in louder voices than they normally would in the classroom. They **will** spread out but will come back together as they share their ideas. Allow them both emotional and physical space to do this.
- **Encourage more-than-human perspective taking:** Descriptions of ecosystems are often framed in terms of how ecosystems are useful for humans. In order to engage in ethical deliberation about places, however, we need to support students in taking the perspective of more-than-humans in natural systems. How is this decision good for the trees? How is this place good for the worms? for the soil? Beginning to ask these questions will encourage students to take on broader perspectives when engaging in ethical deliberation and decision-making around ecosystems.
- **Encourage human connections to ecosystems:** It is common for science learning to position humans as disconnected or apart-from nature. This activity encourages thinking about connections between humans and the rest of the natural world and starting from assumptions of complex interdependence.



To prepare for this lesson

- Make sure that you have done some **place mapping** to know where you'll take students on their walk, what you'll draw their attention to, and what questions you'll ask.
- Make sure that, as you prepare for this lesson, you think carefully about how much time to allocate to the lesson launch, outdoor walk, and the lesson closing. It is important that students have time to reflect on their outdoor observations after you get back inside the classroom.

MATERIALS

» LE1.3 student tool

TIME

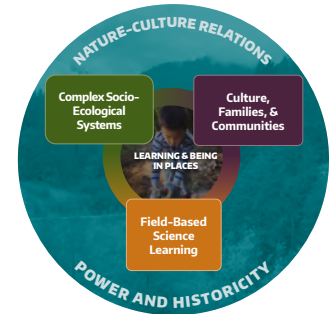
45 min



Instructional Sequence

Lesson Launch: In the classroom (10 minutes):

1. Begin the lesson by asking students: when I say the word “place”, what do you think of?
2. Explain to students that place is the combination of a setting, or a physical location, everything and everyone in that location, our history in that location, and what all of that means to us and our families. It’s a big idea that we started talking about when we talked about the histories of places in the last lesson, and that we’ll continue to talk about today as we explore the physical location around our school and who else is there!
3. Ask students to think about what they would see if we walked around the outside of the school. What plants and animals would we see? What buildings? Would we see rocks? Water? Sand or soil? Other people? How is this similar or different from what you would see around your neighborhood?
4. Explain to students that today, we’re going to start out by thinking to ourselves about what we think we’ll find as we walk around the school outside and drawing those things. Then we’ll go for a walk to actually see what’s there, and then come back and add to our drawings and talk about what we found.
 - » Ask students to capture their ideas about how they “see” their school yard (e.g., What things have they attended to as they have come to school each day, gone outside for recess, etc.? What things might be important to them?).
 - » For students who may need additional scaffolding, consider asking them to tell a story with a partner before drawing. Use the Socio-Ecological Histories of Place Framework as a guide to consider what students are drawing.
 - » For example, are they noticing and representing human-built structures, particular species of plants or animals, other people who are important to them? Do they focus on a particular place around the school (such as the playground, garden, or a pathway to/from school)? Are they representing elements of the school yard as tied to one or more of the time scales? Students’ drawings and/or writings suggest how they might be currently thinking about the area around the school as a place for learning, as well as elements of the area that are important to them.



Students and families all experience place in different ways. Sometimes this has to do with what someone looks like, how much money they have, or whether they have trouble walking, seeing, etc. You can point out that we all have different ways of experiencing places, and we notice different things about places based on how we experience them.

This is asking students to make predictions about what they’ll see once they’re outside. This is a literacy practice as well, and you can also connect this to books about what’s in a schoolyard.

Pointing out evidence of human decision-making in places helps orient students to how to notice both human and more-than-human complexity in systems. We want students to understand that humans are deeply connected to, but not necessarily dominant in, socioecological systems.

Instructional Sequence Continued

Outside (25 minutes): supporting place-based observations

- After students document their initial ideas, go outside and walk around the school yard to make observations about who and what is in the place. Students can bring paper and pencil to record their observations, or record them when they come back to class. If you are wondering about where to take students for a walk, think about planning a walking path that provides rich opportunities for students to notice and wonder about who and what shares their school yard.
- Below are some possible prompts, or “backpocket questions”, that you might have in mind as you and your students walk outside.

Power and Historicity:

The outside walk is a place where anti-Blackness can arise in how students' behavior is policed outside. Pay attention to encouraging and supporting students' sense making first. The outdoor learning framework is helpful in giving you tips for anti-racist support of students' learning outdoors.

	Species & Behaviors	Relationships	Lands & Waters
Observations	What do you see, hear, smell, or feel outside today? You noticed lots of holes in the ground. Who do you think might have made those? Prompt students to use all their senses and to look up, down, and around.	You found flowers! Who else besides humans do you think would like to find flowers and why? Prompt students to consider web-like relationships about species or kinds they find.	Why do you think you noticed flowers growing in this place? Do you see water or evidence of water? Where?
Connections	Do you notice the same animals or plants here as in your neighborhood? Does this remind you of a place that you go to often? What are the similarities and differences?	Why do you think some animals are easy to observe by humans and others are harder to observe by humans?	Does the land and/or water here look the same or different than the land and/or water in your neighborhood?
Purpose	Why do you think it's important to learn about who we share this place with?	What role do you think XX plays in this place? What are they doing? Why is what they are doing important?	How did this place come to be this way? Why do you think it's important for us to learn about this place and who we might share it with?

Instructional Sequence Continued

Back in the classroom (10 minutes): connecting to outdoor learning

7. Once you and students are back in the classroom, have students draw a new picture from their walk or revise their original drawing. As they draw, you can ask them questions like, "did anything surprise you as you walked? did you notice anything outside that is similar to what you find around your house?"
8. Have students either share with each other or in a whole-class format what they noticed as they were walking. Students can then make sense of what they noticed as a whole group and why it might be important to learn more about who they share their schoolyard with. You might consider using the purpose prompts above to scaffold student discussion and thinking during whole group conversation.

Concluding the lesson: preparing for the next lesson

9. Ask students: who do we share our schoolyard place with? What is a "place"? Why is it important to notice who is in the places where we spend time?
10. Return to the Histories of Places graphic organizer and ask students if they have anything they would like to add to that based on their observations today. What evidence of any of these timescales did they see on their walk today? What are they wondering about now in terms of any of these timescales?
11. Explain to students that they'll next be talking with their families about places that are important to them, and what timescales they know or wonder about.

Bringing students back indoors is a transition. Allowing time for this transition and re-engagement with classroom learning should be scaffolded. Use the Outdoor Learning Framework to intentionally plan how you will support students' transition from one place of learning to another.

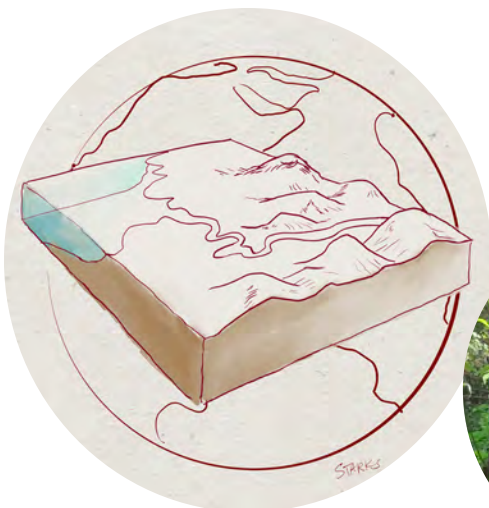
Assessment Opportunity:

This is an opportunity for you to see students' sensemaking around their outdoor observations.

This discussion question is really important for beginning to get students thinking about ethical decisions around places. Investigating human decisions around places is one step towards this ethical consideration.

Assessment Opportunity:

This is an opportunity to hear how students apply the Histories of Places timescales to their observations today



Scientist's Name _____

Date _____

Sharing Places -- School Yard Walk

Part 1: Before Your Walk

We share our school with many others including animals, plants, water, and other humans. We can learn a lot from others about our school yard by asking questions and making observations.

*Before we go outside for a walk, draw a picture of **who** and **what** you remember is outside around our school. Include words, symbols, and drawings.*

What kinds of things do you think we can learn by walking in our school yard?

1

Use the Histories of Places Framework to help guide your noticing of students' drawings here: are they noticing and representing human-built structures, plants or animals, other people who are important to them?

Again, you can use the Histories of Places framework to help guide a discussion on this:

- What can we learn about what is there now?
- About what used to be here and why?
- Who else besides humans use this place? How do they use it?

Part 2: After Your Walk

Think about what you observed on your walk. Draw another picture of who and what is in our school yard. Use words, symbols, and drawings to share your ideas.

With a partner, talk about if your first drawing (that you made before the walk) changed after your walk. If your first drawing did change, talk with your partner about how it changed.

2

As students complete their post-walk pictures, some questions you can ask are:

- Did you notice anything that surprised you?
- Did you notice anything that is similar to what you see around your house?
- What changed between your first and second drawing?

Scientist's Name

Date

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Lesson Plan

LE1.4 Learning Across Places Family Tool

Purpose

REFUSING SCHOOL DOMINANCE IN PLACE-BASED KNOWLEDGE

This family tool is meant to give students and their families an opportunity to share their knowledge about places that are important to them, as well as their wonderings about different timescales from the Histories of Places framework. This is meant to complement the work that you have done with your class in LEs 1.1 through 1.3, as well as to give you and the class an opportunity to include family and community knowledge in your class's wonderings about place.

Engaging family and community knowledge and practices



This is your opportunity to elicit family and community knowledges about place. As a teacher, it is impossible to have complete knowledge of all of your students' backgrounds and histories as they pertain to place. This family tool is a chance for you to put students and their families in positions of experts to teach you about what they know. LE1.4 will be an opportunity to merge classroom and family-based wonderings about place into one chart so that you can hold those as you move forward in the storyline.

LEARNING GOALS

By the end of this lesson, families will be able to:

1. Describe places and practices that are important to them
2. Share and discuss family stories about those places
3. Discuss and describe their knowledge and wonderings around the seven timescales in the Histories of Places Framework

CONNECTIONS TO NGSS

- » **Crosscutting Concepts:**
Scale; Systems and System Models
- » **Science Practices:**
Asking questions and defining problems
- » **Disciplinary Core Ideas:**
ESS3.C: Human Impacts on Earth Systems (K-2)

ASSESSMENT OPPORTUNITIES

- » Family tool LE1.4

Teacher background/preparation information

You have already done so much preparation for this part of the bundle: you have familiarized yourself with the Histories of Places Framework and taken the self-assessment, you have done research into the histories of the place occupied by your school and its surrounding land, and you have explored the places around the school with your students. This is an opportunity for you to hear from the families in your classroom what they already know about places and histories. They may be able to fill in some knowledge about the various timescales that were missing after your discussion with your class in LE1.1. They may have firsthand experience with places around the world and understand how your local places are connected globally. They may be Indigenous families and have firsthand knowledge around the ways in which nation-states have forced change with relationships to the land. This family tool is a powerful way to understand the knowledge that is held in the families in your classroom.

Centering equitable practices:

- **Engaging equitable relations with families:** Sometimes schools hold deep deficit views of families, such as assuming that families won't fill this out because they don't care, cannot understand complex timescales or complex systems because either they don't have enough scientific background knowledge or their first languages are not English. Avoid falling into these assumptions. All families engage in sophisticated reasoning about places, have culturally-based practices that they engage in, and have historical knowledge about the world. Allowing opportunities for all families to share these with you is a big step towards building trusting relations with them. It is important to provide translations of all family tools, as well as adequate time for families to return them.
- **Broaden at-home work beyond "homework":** Homework can be a toxic term to families. In schools, homework has been shown to increase inequities and not lead to substantial learning. Try to frame these as "family learning activities" with no right/wrong answers to lower the stakes and make these more accessible tools for families to fill out. It is helpful to write a target return date on the top of the front sheet.
- **All family tools contain valued knowledge!** Families will have different relationships with the school, with "homework", and with sharing personal information with you. Even if you don't have many that are returned this time, you can still learn valuable knowledge about families. You can also ask students to share what they discussed with their families even if they didn't return LE1.3 back to you.

MATERIALS

» Family tool LE1.4

TIME

Allow at least 5 days for this to be returned to you. You can hand this out after you've done LE1.1 or after 1.2.

Introducing the tool to your students

1. Explain to students that now that they have explored the Histories of Places and who they share the schoolyard with, it's time to do this at home with their families. Explain that they will take LE1.4 home and have a discussion about places that are important to them, and also the timescales that they know and wonder about.
2. Return to the Histories of Places chart that you've started to fill out as a class and remind students that while they already know and wonder about many of the timescales, there are some that we can learn more about. Our families may be able to help with that, or add to some of the timescales that we already know something about!
3. Emphasize to students that there are no right or wrong answers to any of the questions in here. It is really just for them to have family discussions and so that we can add to our classroom chart what their families already know!



LE1.4 Family Learning Across Places

Activity Purpose:

In our class, we are exploring who we share important places with and what we do in those places. We would like to know who you share your places with and what you do in places that are important to you! Use this activity to discuss a place (or several places) that are important to your family/ You can use the template provided for this activity, or make your own template by drawing and writing on blank sheets of paper. There are no right or wrong answers to these types of questions so invite everyone to share and contribute ideas.

Activity Overview

This is a two-part activity.

- Part 1: Pick a place that is important to your family. Draw it, and then discuss different questions about this place.
- Part 2: Interview a family member (or several family members) about the place you chose as a family.

What Can You Do To Support Learning?

- The goal of this activity is to think and talk about the importance of place for your family.
- Families can participate in different ways during this activity (there is no one “correct” way to participate). For example, you may want to have these discussions together prompted by the various questions in the template. Or, different family members could participate in different parts of this activity.
 - For example, someone could draw the place your family decides is important while someone interviews other family members about this place. Then everyone can share what they did, and what questions they have.



Part 1: An Important Family Place

What is a place that is important to your family? _____

If you can, go for a walk in this place.

Draw or paste a picture of this place.

	Why is this place important to your family? _____ _____ _____
	What are you curious to learn more about in this place? _____ _____ _____
	What does your family do in this place? _____ _____ _____

Part 2: Family Interview about Place



Learning in Places is funded by NSF grant #1720578. Not for distribution.



LE # 1.4

How did your family come to be here?
How do you feel when you are in this place? Has this place changed since you were last here? How do you know?
Who and what else do you share this place with?





Extension activity: Think about the important place that your family discussed. Fill out the chart below to think about and discuss the different Histories of Places timescales that you observe, wondering about, and make decisions about. Remember that there are no “wrong” answers about this--just fill out the parts of this that you either know about or are interested in!

Time Scales	What did we observe in our place related to each of these time scales?	What questions or wonderings do we have about our place related to these time scales?	What decisions have people made that shaped this time? Which people? Why did they make those decisions?
Geologic Time: Land and ocean processes, mountain formation, glaciation, etc.			
Plant, Animal, and Soil Time: Plants, animals, and soils of the area, species extinctions or adaptations			
Indigenous Peoples’ Time: Recognizing First Peoples and their histories and current relationships to this place			
Nation State Time: How the development of nations over time has shaped and impacted this place			
Global Time: How this place is connected to, impacts, or is impacted by other places across the earth and interacts with other time scales			
Living Ethical Responsibilities and Possibilities Time: What’s possible for this place?			



Lesson Plan

LE1.5: Synthesizing Histories of Places and wrapping up the bundle

Purpose

SYNTHESIZING HISTORIES OF PLACES KNOWLEDGE ACROSS HOME AND SCHOOL

This lesson will help you synthesize the noticings and wonderings around place and histories of places from both your classroom lessons and from the family tool LE1.3. This synthesis work is important so that you can see **patterns** in students' thinking, such as:

- What *relationships* do students and families notice?
- What features of places make them significant to students and families?
- What do students and families do in these places?

This lesson has 2 parts:

1. The first is your own reflection on what you see in the Histories of Places chart from LE1.1, students' drawings and wonderings from LE1.3, and the family tools in LE1.2 and 1.4.
2. The second part is to have a discussion with students about the LE1.5 classroom tool from this lesson. Engaging students in the synthesis work from part 1 will help you plan for this discussion.

Engaging family and community knowledge and practices

This lesson is an opportunity to put classroom observations and wonderings alongside family knowledges and practices around place. This sends an important signal to students that their family knowledge is valued and an important part of science learning.

LEARNING GOALS

By the end of this activity, students will:

1. Describe places and practices that are important to them in terms of various timescales from the Histories of Places
2. Imagine more-than-human uses of places
3. Describe human decisions that have occurred in places

CONNECTIONS TO NGSS

- » **Crosscutting Concepts:**
Scale; Systems and System Models
- » **Science Practices:**
Asking questions and defining problems
- » **Disciplinary Core Ideas:**
ESS3.C: Human Impacts on Earth Systems (K-2)

ASSESSMENT OPPORTUNITIES

1. Filled out Histories of Places chart from LE1.1
2. Family tool in LE1.2 Histories of places walk
3. Student tool from LE1.3
4. Family tool LE1.4

Teacher Background/Preparation Information

Throughout this bundle, you have engaged students and families in noticings and wonderings about place and the various timescales within the Histories of Places framework. It is important to take some time now to think about all of the noticings and wonderings that have been shared both in the classroom and from families in order to establish a firm foundation in reasoning across timescales for the rest of the storyline.

To prepare for this lesson

Gather all of the tools from LEs1.1-1.4 and reflect on what has been shared so far using the chart below. This chart does two things. First, it helps you keep track of what students and families share about the places that are important to them and why they are important. Second, you see the diversity of family practices in the places where they learn. For example, after you've synthesized information from students and families, you can share this with students to see if there is anything they would add (e.g., a new place they might add to the list, more information about why a place is important to their family, more information about what they do in a place). This will also give you ideas about **building partnerships with community-based organizations** that families name as important to them. These organizations contribute to students' relationships with places, give you perspective on histories of communities with which your students identify, or even offer learning activities to enhance your investigations. Finally, you can also **map (using Google Maps, for example) the places that are important to families** and communities. Over time, this map could include the places where you are conducting your classroom investigations so that students can see that the places you investigate are also places that are important to them.

Places that are important to students and families	Why the places are important to students and families	Practices that students and families use the places for or do in the places	What time scales are students and families attending to?	What questions are they posing about those time scales?	How do you see power and historicity reflected in the family and student tools?

Now that you have completed this table, reflect on patterns you see in student and family thinking.

1. What are the *relationships* students see?
2. What features of places make them significant to students and families?
3. What do students and families do in these places?
4. How are power and historicity showing up in family tools, classroom discussions, and student tools?

Centering equitable practices:

- **Include family wonderings in with students' wonderings from class:** Sometimes when family tools from LE1.3 are slower to come in, it may seem more difficult to include them when you're synthesizing information from class. Avoid this by sending home reminders to fill out the family tools and intentionally asking students to share what they discussed in their families even if they did not return the family tools so that students can see that their families' ideas are truly valued and made a part of the classroom data.
- **Broaden what counts as sensemaking:** Remember that sometimes families' and students' sensemaking will not sound like scientists' sensemaking. This is one way that non-dominant students' and families' experiences get discounted in science. Remember that sophisticated reasoning can be found in drawings, descriptions of places, and in seemingly simple phrases and words.
- **Encourage more-than-human perspective taking:** Descriptions of ecosystems are often framed in terms of how ecosystems are useful for humans. In order to engage in ethical deliberation about places, however, we need to support students in taking the perspective of more-than-humans in natural systems. How is this decision good for the trees? How is this place good for the worms? for the soil? Beginning to ask these questions will encourage students to take on broader perspectives when engaging in ethical deliberation and decision-making around ecosystems.
- **Encourage human connections to ecosystems:** It is common for science learning to position humans as disconnected or apart-from nature. This activity encourages thinking about connections between humans and the rest of the natural world and starting from assumptions of complex interdependence.



MATERIALS

- » Histories of Places chart from LE1.1
- » Student drawings from LE1.3
- » Family tools from LE 1.2 and LE1.4
- » Synthesis chart for LE1.5

TIME

30 minutes



Instructional Sequence

1. Remind students that they have now engaged in many explorations of place and histories of places. Point out all of the knowledge they shared in the Histories of Places chart, remind them of the exploration of places around the schoolyard, and the discussions that they had with their families about places that are important to them.
2. Explain to students that they are going to be putting all of that together today before we move on to exploring another aspect of places.
3. Show the chart below. Ask students: What places were important to us and our families and why?
 - Ask students to share what they discussed with their families and record their answers. Ask students what they do in those places, what they're wondering about in those places. You can ask students to share one connection they made to the Histories of Places chart and record that on the class charts from LE1.1 and their Histories of Places family walk in LE1.2
 - NOTE: you can ask students to also draw or write their answers to these questions individually and then share with the class or add to the class chart.
4. Ask students to specifically think about who they share places with. If they have a hard time coming up with more-than-humans, ask specifically: Do we share these places with the water? soil? other animals besides humans? plants? Do you think those were there before humans got there?
5. Ask students: why do you think it's important for us to understand and wonder about places that are important to us? Why is it important to think about and wonder about the different histories in those places? What does that help us do?



Nature-Culture Relations:
Avoiding a human-dominant or human-apart-from view of ecological systems

Taking perspectives of more-than-human others is an important step in engaging in ethical deliberation around socioecological systems

Places that are important to students and families	Why the places are important to students and families	Practices that students and families use the places for or do in the places	What time scales are students and families attending to?	What questions are they posing about those time scales?	How do you see power and historicity reflected in the family and student tools?

6. Explain to students that as they continue with their explorations of places, they're going to be constantly going back and forth between explorations they do in school and explorations that they do with their families at home.