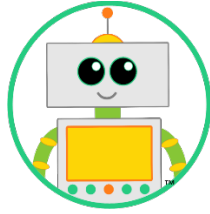


Welcome to the Early Science Initiative!



Our mission is to unleash the power of science in early childhood. That means engaging the entire school community in seeing and supporting young children as capable and competent thinkers and doers!

Young children are natural scientists! They are primed to investigate and explore their world and are actually doing science all the time! We aim to help the adults in children's lives "see" their children as scientists and be able to use these moments to support learning across domains.

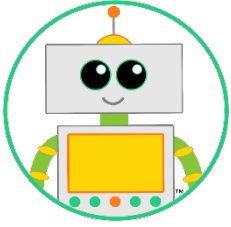
We are not a prescribed or scripted curriculum. Rather, we provide you with opportunities to build your knowledge of early science, support the transfer of that knowledge to practice, and provide opportunities to engage in communities of practice to reflect and connect with other educators.

The intention is that you can integrate science into what you are already doing to be able to enhance and extend your classroom experiences to support children's learning and development across domains as well as foster a lifetime of curiosity and wonder about the world around them.

How to use the ESI Implementation Guide

The ESI Implementation Guide supports the transfer of information learned in ESI online modules to your classrooms, reflective practice groups, and interactions with families.

Each module will also provide you opportunities to download these same documents. You can also find digital copies of all resources in the “Resource” section of Blackboard. Or, you can reference them right here in you Implementation Guide!



Building knowledge

Building Knowledge documents give you information at a glance.

They may include:

- ✓ Easy stems to support children in the classroom
- ✓ Examples of each concept/practice in context
- ✓ Word lists, charts.



Transfer to Practice

Transfer to Practice documents give you actionable activities for the classroom

They may include:

- ✓ Planned Experiences: typical lesson plan with objectives, materials, suggestions for dialogue, procedures
- ✓ Variations for infants/young toddlers, & older toddlers/preschoolers
- ✓ ESI Read Alouds: get comfortable talking about science with young children by sharing a story with them



Connecting with Families

Connecting with Families documents support your ability to give and get information from families

They may include:

- ✓ Informational sheets
- ✓ Examples of what this may look like in the home setting
- ✓ Activity ideas

Your school’s science committee may help organize how these documents are distributed to families



Communities of Practice

Communities of Practice documents are intended for use by teacher leaders (e.g., coaches, education coordinators, master teachers). They provide protocols and experiences to support teachers.

They may include:

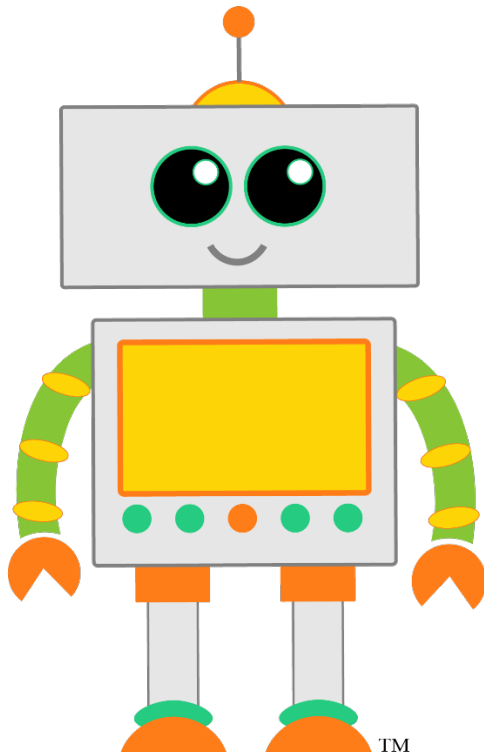
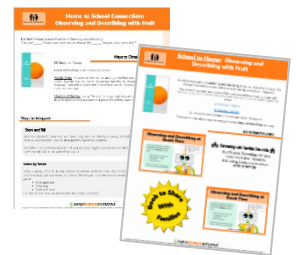
- ✓ Hands-on PD experiences
- ✓ Guiding reflective questions
- ✓ Critical readings

Module 1: Introductions & Getting Started

The list below will help you to progress through Module 1: Introductions and Getting Started. Take your time, thoughtfully considering how each step connects and extends upon one another. Reflect upon your experiences and the ways in which children and families engage.

Progressing through the module:

- ☐ Complete Module #1: Introductions and Getting Started
- ☐ Read ESI book, An Orange, to your children
- ☐ Engage children in the Classroom Experience:
Observing and Describing an Orange
- ☐ Connect with families
- ☐ Submit documentation and reflection Assignment
- ☐ Continue supporting observations and descriptions throughout your day



Remember to...

Explore a variety of attributes

Look and listen carefully to children

Invite, respond and extend experiences



Building knowledge

Observing & Describing

As young children explore their world, expose them to rich language and help them use all their senses. For toddlers and preschoolers, push this a step further by encouraging children to be intentional about observing and communicate what they are observing with specific language.

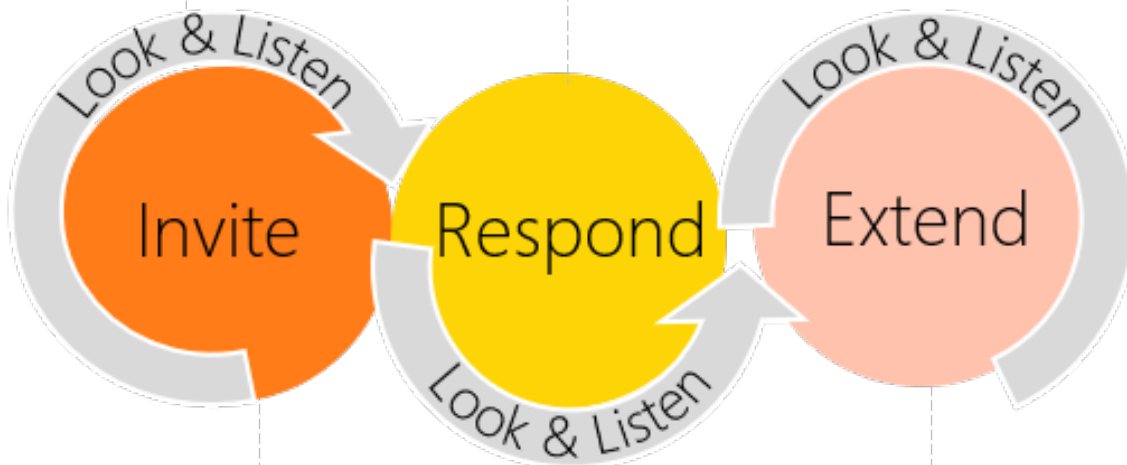
LOOK AND LISTEN: What are children interested in? What are they doing and saying and what does this tell you about how they are thinking?

RESPOND:

Model: "Let's observe the ____ (attribute) of the ____ (object). It is ____"

Label: "I see you observing the ____"; "You are describing the ____ . You said it was ____"

Challenge: "you said ____ . What makes you think that?"



INVITE: "What do you notice about the ____ (attribute) of the ____ (object)?"

EXTEND: What new materials or objects can you add to the classroom that might be interesting to children to observe and describe. Find things that help children notice similarities and differences in attributes

Mealtime:

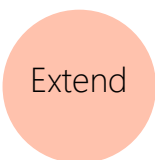
Look & Listen: What are children interested in? What are they doing or saying? What does this tell you about how they are thinking?



"Look at the peas on your plate. What do you notice about their shape?"



Model: "I'm observing with my eyes. I can see that the peas have a round shape."
Label: Child: "The peas are a ball!"
Teacher: "You are observing the shape of the peas with your eyes! You said they looked like a ball!"
Challenge: Child says: "The peas are big"
Teacher says: "You said the peas are big. What makes you think that?"



Look for other things that are round like the peas. Prompt children to observe and describe other attributes, aside from the shape of the objects, and to use all of their senses.

Outside time:

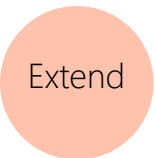
Look & Listen: What are children interested in? What are they doing or saying? What does this tell you about how they are thinking?



"Shhh... listen. What do you hear?"



Model: "I'm observing with my ears. I can hear the wind rustling the leaves of the tree."
Label: Child looks picks up a leaf and crumbles it
Teacher: "I see observing the texture of the leaves with your hands. The leaves feel smooth"



What can you add to your outside space to encourage sensory exploration? Think about herbs, water table, various types of soils (clay, sand, dirt, mulch), different types of rocks (pebbles, river rocks,). Set up these materials to allow children to explore freely.



Building knowledge

Observing & Describing

Let's observe & describe!

Attributes are characteristics or features of objects. We can observe different attributes with different senses.

Throughout the day, help children notice many different attributes and provide language that describes them.

Here are examples of attributes we can observe with our senses and examples of words we use to describe them:

Attribute

Descriptive Words

With our **eyes** we can observe and describe shape, size, color opacity, luster



Round, square, triangular, rectangular, cylindrical, oblong, irregular, long, short, big, small, tiny, large, bright, faded, clear, opaque, translucent, shiny, dull

With our **hands** we can observe and describe texture, weight, temperature



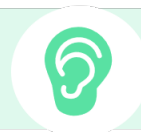
Rough, smooth, slimy, silky, fluffy, soft, hard, sticky, heavy, light, hot, warm, cool, cold

With our **tongues** we can observe and describe taste/ flavor



Sweet, bitter, salty, sour, fruity, fresh, citrusy, spicy, creamy, rich, bland

With our **ears** we can observe and describe Pitch, volume, duration



High, low, loud, soft, quiet, short sound, long sound, rhythm, fast/slow

With our **nose** we can observe and describe Scent/ aroma/odor



Stinky, fresh, pleasant, sweet, strong, subtle, fruity, rotten, peppery



Construir Conocimiento

Observar y Describir

¡Vamos a observar y describir!

Los atributos son características de los objetos. Podemos observar diferentes atributos con diferentes sentidos.

A lo largo del día, ayuda a los niños a notar muchos atributos diferentes y proporciona un lenguaje descriptivo.

A continuación algunos ejemplos de atributos que podemos observar con nuestros sentidos y ejemplos de palabras que usamos para describirlos:

Atributos

Palabras descriptivas

Con nuestros **ojos** podemos observar y describir la forma, el tamaño, la opacidad del color, el brillo



Redondo, cuadrado, triangular, rectangular, cilíndrico, oblongo, irregular, largo, corto, grande, pequeño, pequeño, grande, brillante, desvanecido, claro, opaco, translúcido, brillante, opaco

Con nuestras **manos** podemos observar y describir textura, peso, temperatura.



Áspero, liso, viscoso, sedoso, esponjoso, suave, duro, pegajoso, pesado, ligero, caliente, cálido, frío

Con nuestras **lenguas** podemos observar y describir el sabor/los sabores.



Dulce, amargo, salado, agrio, afrutado, fresco, cítrico, picante, cremoso, rico, soso

Con nuestros **oídos** podemos observar y describir tono, volumen, duración



Alto, bajo, suave, silencioso, sonido corto, sonido largo, ritmo, rápido/lento

Con nuestra **nariz** podemos observar y describir aroma/olor



Apestoso, fresco, agradable, dulce, fuerte, sutil, afrutado, podrido, picante



Classroom Experience: Observing and Describing an Orange



Objectives:

- Children will explore an orange using all five senses..
- Teachers will help surface children’s understanding of observing and describing..

Framework Focus:

Science Practices – Observing and Describing

Materials needed

- Book: An Orange
- 1 piece of fruit per child
- 1 plate/paper towel per child
- 1 plastic knife per child

The Experience

- In small groups, provide children with their own orange.
- Encourage children to notice various **attributes** using their senses.
 - ✓ Eyes: shape, color, luster, size
 - ✓ Hands: texture, weight, temperature
 - ✓ Nose: scent/smell
- Document children’s observations in writing on chart paper, through photos, or through audio/video

The Support

As you are guiding children through the experience, remember to scaffold them by Looking & Listening, Inviting, Responding, and Extending

Look & Listen

Observe the children throughout the experience. What attributes are they attending to? What attributes are they not attending to?

Invite

Invite children to observe and describe

Touch/taste/ look/listen/smell the ____ (fruit) with your ____ (body part). What do you notice?

Model: Talk out-loud as you observe and describe with your senses.

I am observing the ____ (attribute) with my ____ (body part). It is ____ (descriptive word)."

Respond

Label: Label observing and describing for children when they engage in the practice

You are observing with your ____ (body part). You Described the fruit as ____ (descriptive word)

Challenge: encourage children to tell you more about their idea

You described the fruit as _____. Tell me more about that. How do you know?

Extend

What **new foods, objects, and materials** can you explore that may be intentionally similar to, or different from the fruit used in this experience?

Dial it Down



Model and label how you are using your senses to explore. Encourage children to do so as well. Compare foods that are very different to help make descriptive language clear (e.g., the strawberry is sweet and the cracker is salty)

Dial it Up

Encourage children compare attributes of a variety of objects.

Introduce materials that are very similar (e.g., both soft) to help build more specific vocabularies (e.g., one is fuzzy and the other is silky)



Experiencia en el Aula de Clases: Observar y Describir una Naranja



Objetivos:

- Los niños explorarán una naranja usando sus cinco sentidos.
- Los maestros ayudarán a que los niños entiendan mejor la observación y la descripción.

Enfoque del marco de la ciencia:

Prácticas científicas: observación y descripción

Materiales:

- Libro: una naranja
- 1 pieza de fruta por niño
- 1 plato / toalla de papel por niño
- 1 cuchillo de plástico por niño

La Experiencia

- En grupos pequeños, proporcione a los niños su propia naranja.
- Anime a los niños a notar varios atributos usando sus sentidos.
 - ✓ Ojos: forma, color, brillo, tamaño
 - ✓ Manos: textura, peso, temperatura
 - ✓ Nariz: olor
- Documentar las observaciones de los niños por escrito en papel cuadriculado, a través de fotografías o mediante audio / video.

El Apoyo

Mientras guías a los niños a través de la experiencia, hazlo mirando y escuchando, invitando, respondiendo y extendiendo.

Mira y Escucha

Observa a los niños durante toda la experiencia. ¿Qué atributos están llamando su atención? ¿Qué atributos no llaman su atención?

Invita

Invita a los niños a observar y describir

Toca/prueba/mira/escucha/huele la ____ (fruta) con tu ____ (parte del cuerpo). Que notaste?

Modela: Habla en voz alta mientras observas y describes con tus sentidos.

Estoy observando el ____ (atributo) con mi ____ (parte del cuerpo). Es ____ (palabra descriptiva) ".

Responde

Etiqueta: Etiqueta sobre observación y descripción a los niños cuando participen en la práctica.

Estás observando con tu ____ (parte del cuerpo). Describiste la fruta como ____ (palabra descriptiva)

Reta: anima a los niños a que te cuenten más sobre su idea

Describiste la fruta como _____. Cuéntame más sobre eso. ¿Cómo lo sabes?

Extiende

¿Qué nuevos **alimentos, objetos y materiales** puedes explorar que sean intencionalmente similares o diferentes a la fruta utilizada en esta experiencia??

Bájale



Modela y etiqueta cómo estás usando tus sentidos para explorar. Anima a los niños a que lo hagan también. Compara alimentos que son muy diferentes para ayudar a aclarar el lenguaje descriptivo (por ejemplo, la fresa es dulce y la galleta salada)

Súbele

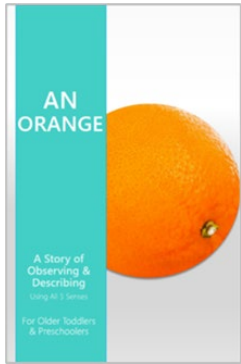
Anima a los niños a comparar los atributos de varios objetos. Usa materiales que sean muy similares (por ejemplo, Ambos suaves) para ayudar a construir vocabularios más específicos (p. Ej., Uno es difuso y el otro es sedoso)



Home to School Connection: Observing and Describing with Fruit

Framework Focus: Science Practices – Observing and Describing

“Use your _____ (hands, eyes, nose, etc.) to observe the _____ (texture, color, scent, etc.).”



Ways to Obtain Information

ESI Story: *An Orange*

Home Information: Fruit in children’s homes

Activity Sheet: Provide families with an activity sheet that asks them to identify the child’s favorite fruit by name (encourage families to document in their home language) and with a picture and 3 descriptive words. (drawn or attached). Sample sheet on next page.

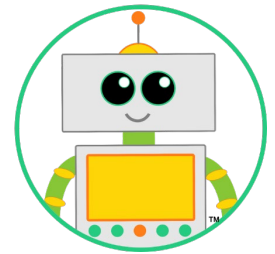
Question of the Day: Using “Remind” or a sign outside your classroom, ask parents to write down or send a picture of a piece of fruit they have in their house.

Ways to Integrate

Show and Tell

Build on children’s observing and describing skills by offering a variety of fruits to observe and describe. Use the fruits families experience at home.

Invite the children whose favorite fruit you are exploring to share about their fruit (e.g. how they eat it at home, where they buy it).



Sense by Sense

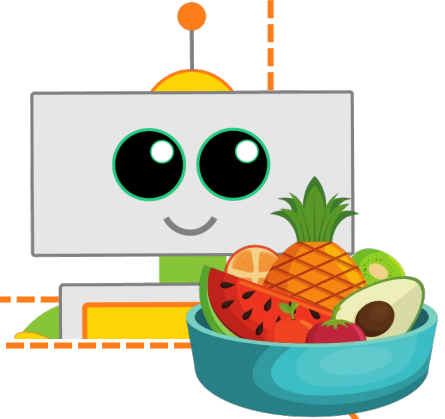
Using a variety of the fruits that children experience at home, have children explore multiple fruits at one time using just one sense. Try these different ways to isolate various senses and play challenging game!

- Blind taste test
- Feely bag
- Blind smell test

Can the children who are familiar with it identify it correctly?

Our family's favorite fruit is:

Three words to describe my fruit (e.g. color, size, texture, taste, shape, smell, weight) are:

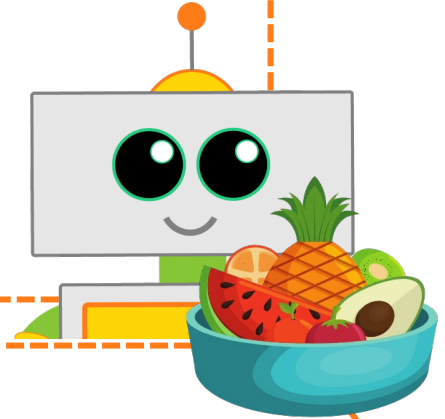


This is a picture of our favorite fruit:
(draw or attach photo)

Name: _____

La fruta favorita de nuestra familia es:

Tres palabras para describir mi fruta (por ejemplo, color, tamaño, textura, sabor, forma, olor, peso) son:

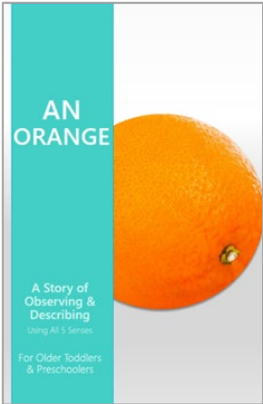


Esta es una imagen de nuestra fruta favorita:
(dibujar o adjuntar foto)

Name: _____



School to Home: Observing and Describing with Fruits



To extend exploration of **observing and describing** to home, share the ESI book "An Orange" and extension card below with families (also available in Spanish).

Your school may have hard copies of the book and extension card to share with families, or, you can share the read aloud and extension cards using the digital links below.

[An Orange: English](#)

[An Orange: Spanish](#)

All resources can be found in Blackboard under "Resources"

Continue to think about ways we engage in **observing and describing** each day.

Extension Card

Observar y describir a la hora del refrigerio

La hora del refrigerio es un buen momento para observar y describir. Anima a los niños a notar varios **atributos** usando sus sentidos. Con nuestras/os... podemos observar....

- Ojos: forma, color, brillo, tamaño
- Manos: textura, peso, temperatura
- Nariz: olor / olor

¡Tómate un tiempo para pensar en dónde más puedes observar y describir!



EARLYSCIENCEINITIATIVE

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Your Science Committee will have more information related to distributing books and extension cards to families.

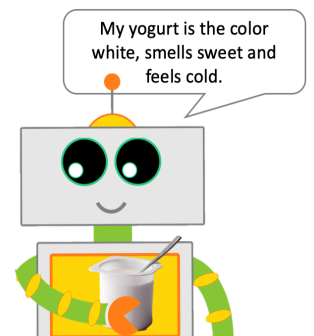


Observing and Describing at Snack Time

Snack time is a great time to observe and describe. Encourage children to notice various **attributes** using their senses. With our... we can observe....

- Eyes: shape, color, luster, size
- Hands: texture, weight, temperature
- Nose: scent/smell

Take some time to think about where else you can observe and describe!



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PD Facilitation: Observing and Describing An Orange

Introduce teachers to the ESI story, *An Orange*, and engage them in a hands-on experience using all five senses to observe and describe an orange.

Framework Focus: Science Practices – Observing and Describing

"Use your _____ (hands, eyes, nose, etc.) to observe the _____ (texture, color, scent, etc.)."



ESI Learning Goals For Teachers

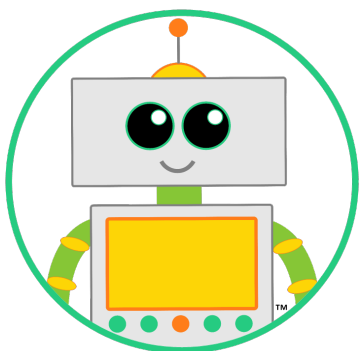
- To understand the practice of observing and describing as a hands-on experience using all five senses.
- To be able to identify various attributes and characteristics of an object being observed.
- To practice using language specific to structure function (i.e., "Use your _____ (hands, eyes, nose, etc.) to observe the _____ (texture, color, scent, etc.)."
- To think about how to adapt experiences to various ages and abilities.

An Orange


Materials Needed

- Book: *An Orange T/P*
- Book: *An Orange Infant*
- 1 piece of fruit per teacher
- 1 plate/paper towel per teacher
- 1 plastic knife per teacher
- Attributes/Characteristics reference page
- Chart paper
- Markers

1. Hold up one of the pieces of fruit and ask "How might children describe this piece of fruit to you?". Write down responses on chart paper at front of group.
2. In small groups, read the story, *An Orange*. Clarify with teachers that they have the appropriate version of the book, infant or older toddler / preschool.
 - Discuss with your group: How did the story help you think about observing and describing as a hands-on practice?
3. Next, provide each teacher with a copy of the Attributes / Characteristic Resource page and review together.
4. Provide each teacher with a whole fruit and 1 plate/paper towel.
 - First, teachers to **observe and describe** the fruit with JUST their eyes. Write responses on chart paper hung at front of group.
 - Then, teachers to **observe and describe** the fruit with JUST their sense of touch. Write responses on chart paper.
5. Finally, teachers to **observe and describe** the fruit using ALL 5 SENSES. Remind them, there are not restrictions in how they explore. Write responses on chart paper



Invite teachers to reflect on the 2 experiences and share their thoughts.

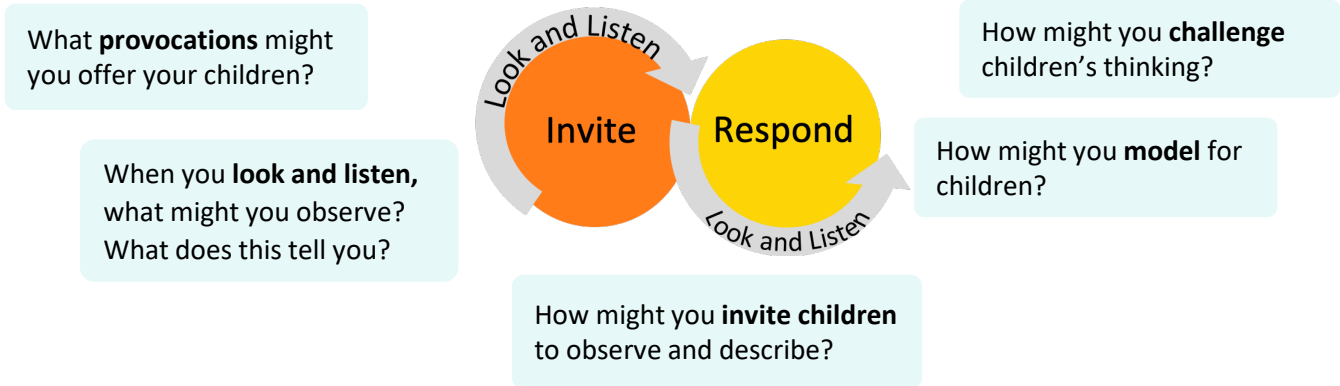
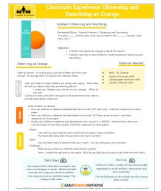
<p>1</p> <p>Compare the description lists of the initial question “How might children describe this piece of fruit to you?” to the list created from engaging with all five senses. What do you notice?</p>	<p>2</p> <p>How does using all five senses during the experience deepen one’s understanding?</p> 	<p>3</p> <p>How does this practice of observing and describing support the children in asking more questions about their world?</p>
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Adapt to your Classroom

Ask teachers to make a plan for how they will **1)** engage children in a similar experience, **2)** extend the experience in the classroom, and **3)** make connections to home. Ask teachers to discuss with others and write down their plans using the “Teacher Extension and Application” page.



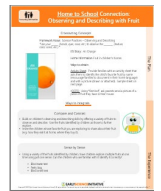
1. Classroom experience: Refer teachers to their ESI binders to review the “Classroom Experience: Observing and Describing an Orange”. Then, discuss ways in which they might adapt this experience for the various ages and abilities in their classroom. Use the questions below to prompt thinking



2. Extend and Connect Learning: encourage teachers to discuss ways in which they might connect and extend learning through related experiences and make a plan on their *Teacher Extension and Application* page.



3. Home to School: Refer teachers to their resource binders and review the “Home to School Connections: An Orange” document and make a plan on their *Teacher Extension and Application* page.



Partnering with Families Site-wide



Be sure to share with teachers how the Science Committee is engaging families.



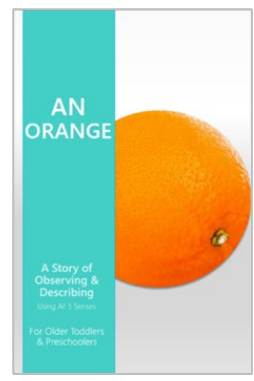
PD Facilitation: Teacher Extension & Application

The Plan

Framework Focus: Science Practices – Observing and Describing
"Use your _____ (hands, eyes, nose, etc.) to observe the _____ (texture, color, scent, etc.)."

ESI Learning Goal for Teachers:

- To understand the practice of observing and describing as a hands-on experience using all five senses.
- To be able to identify various attributes and characteristics of an object being observed.
- To practice using language specific to structure function (i.e., "Use your _____ (hands, eyes, nose, etc.) to observe the _____ (texture, color, scent, etc.)."
- To think about how to adapt experiences to various ages and abilities.

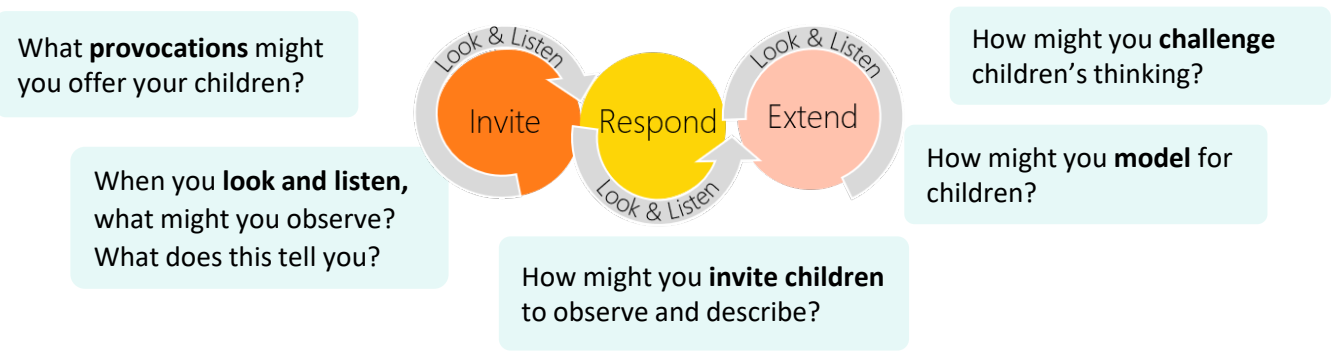


Adapt to your Classroom

After engaging in a hands-on, minds-on experience, discuss with others how to apply this to your classroom. Make a plan for how you will:

- 1) engage children in a similar experience
- 2) extend the experience in the classroom
- 3) make connections to home.

1. Classroom experience: Review the "Classroom Experience: Observing and Describing an Orange". Then, discuss ways in which you might adapt this experience for the various ages and abilities in your classroom. Use the questions below to prompt your thinking



In my classroom we will...

The Application



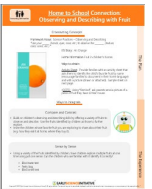
2. **Extend and Connect Learning:** how might you connect and extend learning through related experiences?

Three ways I will extend children's experiences with observing and describing in my classroom are:

Blank space for writing responses to question 2.



3. **Home to School:** Review the "Home to School Connections: *An Orange*" document and make a plan for how you will connect learning from home to school.



What information I will gather from families is...

I will gather this information by...

I will then use this information in my classroom by ...

Blank space for writing responses to question 3.



Communities of Practice

Observing & Describing

Across Contexts

Observe and describe your children’s world by helping them notice attributes of things within their daily routines!

Invite children to notice by posing a question. Respond by labeling the attribute and description for them.

Brainstorm possible extension ideas. You do not need to enact the extensions if you’re not ready to.

	Feel texture, temperature	Smell/Taste aroma, flavor	See shape, size, luster	Hear volume, pitch, duration	Extend
Week 1 What did you observe? What did children do/say?					Select one of the observations you made this week. How might you be able to extend this experience?
Week 2 What did you observe? What did children do/say?					Select one of the observations you made this week. How might you be able to extend this experience?



Observing & Describing

Facilitated by your Master Teacher

The purpose of this reflection is to think critically about supporting children as scientists. Reflect with others about your experiences with observing and describing in the classroom.

In your next reflective practice meeting discuss the following questions and make a plan for moving forward.

Reflecting on the role of the teacher:

- How did you feel (comfort level) as you were observing and describing with children?
- What was challenging for you? Why do you think this was challenging?
- What effective teaching practices did you engage in?
- What other learning domains (e.g., language, math, executive functions, social/emotional learning) did you support during this experience? How did you do this? Did you find this easy or difficult to do and why?
- What did you like about this experience? Why?
- What would you do differently? Why?

Reflecting on children's experiences:

- How did children respond?
- What was challenging for them? Why do you think this was challenging? What did you do to scaffold children?
- What crosscutting concepts were explored?

After your collaborative reflection, make a plan for continuing to support children in observing and describing.

I plan to...

This will support the children in my classroom because...
