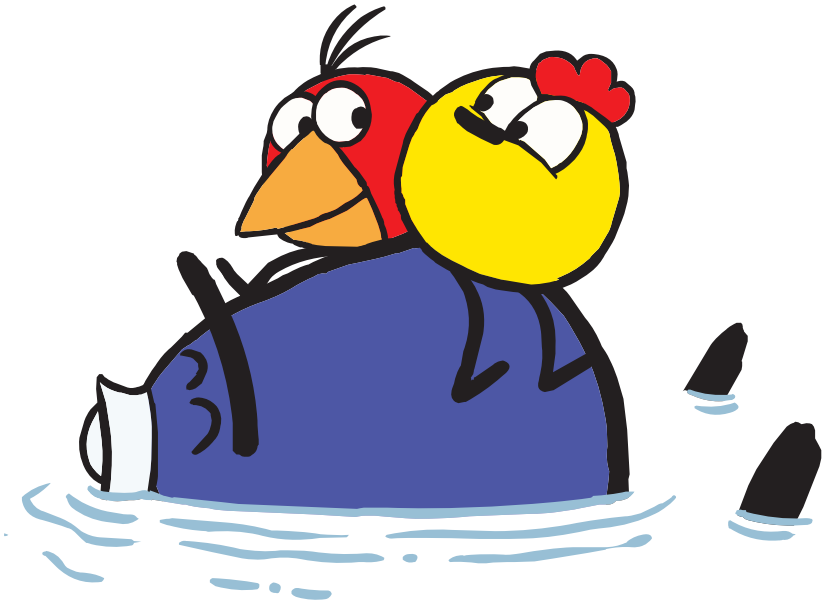


TEACHER'S GUIDE

SCIENCE

Welcome Educators!

Thank you for participating in the PBS Kids Project. As part of this project, we examine how PBS TV programs and computer games can be used in preschool classrooms to help children get ready to read. To do this, we used the latest research on literacy to design a 10-week curriculum for preschool teachers to use. Good, scientifically-based research requires us to compare the early reading scores of children who receive the literacy curriculum to children who receive a non-literacy curriculum. Therefore, we created a high-quality 10-week science curriculum that focuses on promoting early science knowledge and skills but does not focus on literacy.

We have crafted a preschool science curriculum that is full of interesting activities based on the latest research for your students. The following is a quick introduction to preschool science and the research that shaped our science curriculum.

The television episodes and segments, computer games, and hands-on activities that you will facilitate each week will build four fundamental areas that are essential to early science development:

SCIENCE CONTENT

Children explore science content through hands-on investigations that are easily observable with the five senses. Although much of the content is new, children are likely to have had some prior experiences with it.

SCIENCE VOCABULARY

Children are exposed to vocabulary words related to science content, such as transformation and decay, and to science skills, such as observation.

SCIENCE SKILLS

Children observe using their senses. They record their observations through drawing and chart survey information. Children also have opportunities to make and monitor predictions.

SCIENCE THINKING

Children share their observations and predictions with peers, compare beliefs and observations with classmates, and play games that test their memory.

About the TV Programs

The curriculum uses video clips and other materials from two different PBS television programs.

Sid the Science Kid

Sid the Science Kid is an educational animated television series that promotes exploration, discovery and science readiness among preschoolers. *Sid the Science Kid* features a practical in-school science curriculum and uses music and humor to celebrate children's natural curiosity about science in everyday life.

Peep and the Big Wide World

Set in and around a pond, a bush, and a tin can, the show follows a newly hatched chicken named Peep, and his friends Chirp and Quack (a robin and a duck), on their daily adventures. Surrounding them is a large urban park — a place of great wonder and mystery, a place they call "the big wide world." Episodes feature animated stories that explore science concepts and live-action shorts presenting real kids playing and experimenting with these concepts.

For more information on early science, please see the Project Rationale at the end of this guide.

The contents of this document were developed under a cooperative agreement from the Department of Education. However, those contents do not necessarily represent the policy of the Department of Education and you should not assume endorsement by the Federal Government.

Weekly Activities

In the next section, you will find scripts and activities for each of the 10 weeks of the curriculum. The activities are designed to be simple and repetitive. The content changes from week to week but the activities remain the same so children have a familiar routine to follow. Below is an overview of the activities.

ACTIVITY	
WARM-UP (5-10 minutes) Whole Class	**Warm-ups are brief and designed to motivate interest and excitement in the *Sid the Science Kid* episodes. Any words or concepts that may be unfamiliar to the children are discussed during the warm-up. New concepts are presented and previously presented concepts are reviewed before viewing the DVD.**
EPISODE VIEWING (35 minutes) Whole Class	As you view the *Sid the Science Kid* episode with the children, **Pause** prompts wil direct you to stop the DVD at key points to reinforce their understanding of new concepts and keep them actively engaged in the viewing. During these times, you will ask the children questions and lead them in activities.
FOCUSED VIEWING (20 minutes) **Whole Class**	**In addition to the *Sid the Science Kid* episodes, each week your class will view a montage of targeted clips from *Sid the Science Kid* and *Peep and the Big Wide World*. During these viewings, you will facilitate more interactive activities similar to those you'll do during the episode viewing.**
HANDS-ON FOLLOW- UP ACTIVITIES (20 minutes) Whole Class or Small Groups	Large and small group activities will further reinforce new concepts presented each week. Large group activities such as teacher demonstrations and group investigations are designed for whole class participation. Small group activities such as collage making, drawing observations, and using science tools are center activities that should be offered simultaneously to allow the children to make choices among the activities. During all of the small group activities, children should be free to use the materials in any way they choose, but you may use the prompts listed to guide and support their learning. Many of the Hands-on Follow-up Activities involve food. We strongly encourage you to allow the children to taste, eat and consume all of the materials. Very little should be thrown away.
COMPUTER GAMES (10 minutes) **Individually/Pairs**	**In addition to videos, the children will also be exposed to online games to reinforce key concepts. Most weeks there will be a choice of two games. The games can be made available to the whole class, but the children selected for the study will play at least one of the games once a week for a total of 10 minutes.**
QUICK REVIEW (5 minutes) Whole Class	Each week you will quickly review and reinforce the concepts and vocabulary learned.

Schedule

This curriculum will be most effective if you schedule the activities to happen on the same day each week. Our recommended schedule and two alternatives are provided below.

RECOMMENDED

Monday	Tuesday	Wednesday	Thursday	Friday
Warm-Up (5 minutes) **Episode Viewing** (35 minutes) **Hands-on Follow-up Activity** (20 minutes)	**Focused Viewing** (20 minutes) **Hands-on Follow-up Activity** (20 minutes)	**Computer Games** (10 minutes for each child)	**Focused Viewing** (20 minutes) **Hands-on Follow-up Activity** (10 minutes)	**Computer Games** (10 minutes) **Quick Review** (5 minutes)

Alternate A

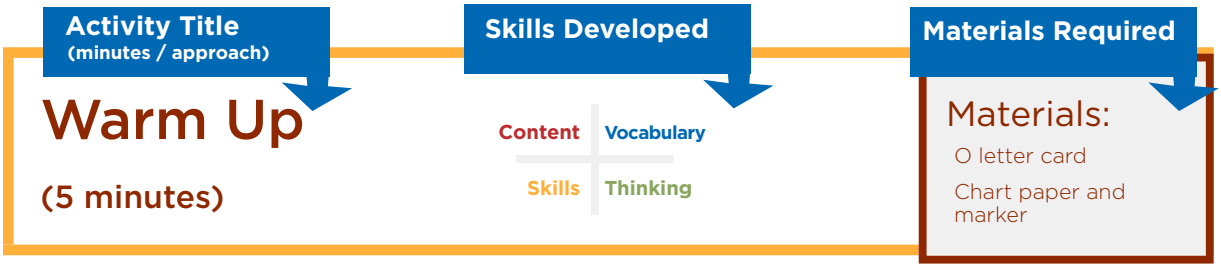
Monday	Tuesday	Wednesday	Thursday	Friday
Warm-Up (5 minutes) **Episode Viewing** (35 minutes) **Hands-on Follow-up Activity** (20 minutes)	**Focused Viewing** (20 minutes) **Hands-on Follow-up Activity** (20 minutes)		**Computer Games** (10 minutes for each child)	**Focused Viewing** (20 minutes) **Hands-on Follow-up Activity** (10 minutes) **Quick Review** (5 minutes)

Alternate B

Monday	Tuesday	Wednesday	Thursday	Friday
Warm-Up (5 minutes) **Episode Viewing** (35 minutes) **Hands-on Follow-up Activity** (20 minutes)	**Focused Viewing** (20 minutes) **Hands-on Follow-up Activity** (20 minutes)	**Computer Games** (10 minutes for each child)	**Focused Viewing** (20 minutes) **Hands-on Follow-up Activity** (10 minutes) **Quick Review** (5 minutes)	

Using this Guide

We have divided this guide into weekly units (10), each of which provides one or two activities for you to undertake each day of the week (labeled 1-5). Each activity is titled with some or all of the following information.



Short scripts are provided to help you lead students through the activities.
- **What you say** to the class is displayed in large type and marked with ❞.
- **What you do** is displayed by smaller text that typically follows.
- **How students should respond** is italicized.

For **Episode Viewing** activities, the scripts correspond with specific pause points in the episode videos. We indicate these points with a number 1 that appears on the video and in the guide. You should pause the video and follow the corresponding script. *See example script below.*

What You Say

❞ Why do you think Sid's banana got mushy? Let's help Sid find out.

Call on 2 or 3 volunteers to describe their thoughts. ← **What You Do**

Pause → ❞ 1 Raise your hand if you would eat a mushy banana. Raise your hand if you would not.

Comment on the number of hands that were raised for each scenario and which group had the most responses.

❞ 2 How did Gerald know the pumpkin smelled bad? What sense did he use to make that observation?

His nose. His sense of smell. ← **Student Response**

In addition to helpful scripts, this guide also highlights key points in **bold**.

Pumpkin Investigation

1. Place the pumpkins on a table where children can gather and see them.
2. Observe the pumpkins. You and the children can describe what they look like and feel like.
3. Carefully cut the pumpkin, scoop out the seeds and divide it in enough pieces for pairs or individual children to investigate. Place the pieces on paper plates and invite the children to describe how it looks, smells, and feels.

Ask:

1. **What do you think will happen to the pumpkin if we keep it out? How do you think we can find out?**
2. After the activity, place the pumpkin pieces in the plastic container and **save for the investigation of decayed pumpkin in Week 3**.

Because children learn through repetition, you will do many of the activities more than once. When this is the case, there will be a reference to the original description. For example:

Trash Stash

(See Week 3, Day 3) **Repeated Activity**

Finally, background information on video resources and computer games are provided in callout boxes.

Callout Boxes

See Games DVD

GAME DESCRIPTION:

Mystery Lunchbox

Children watch a sandwich decay over time. They can click on a magnifying glass to take a closer look.

Week 1:
Decay and Making Observations

Objectives:

CONTENT	○ Children will learn about decay and things that decay.
VOCABULARY	○ Children will be introduced to the terms observation, investigation and decay.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.

See Episode DVD - Disc 1

EPISODE SYNOPSIS:

My Mushy Banana

Sid wants to know why his beloved yellow banana has turned brown and mushy. After exploring how fruits and vegetables slowly change, Sid learns that it's natural for his banana to ripen and turn brown and mushy. Over time, fruits and vegetables decay!

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Episode DVD - Disc 1
- Yellow banana card
- Brown banana card

- Today we are going to meet Sid the Science Kid. Sid is a Science Kid because he asks lots of questions about the world around him just like a scientist. Scientists work together to solve problems and find answers.

- Sid heard some great things about our class and wants us to help him find the answers to some of his questions. Today, Sid wants to know what happened to his banana. Last week it looked like this:

  Show the children the card with the yellow banana.

- But today he's discovered it looks like this:

  Show the children the card with the brown banana.

- Since we're Science Kids like Sid, we are going to help him with an investigation. An investigation is when you explore things and find stuff out.

- We're going to explore bananas and some other fruits and vegetables to find out how they change. We're going to do this by making observations or using our senses to learn more about something.

- We will be using our eyes, our noses, our hands, and sometimes our mouths to learn more about how fruits and vegetables change.

- Are you ready to be a Science Kid?

  Play *My Mushy Banana* (Episode DVD - Disc 1) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:

- Episode DVD - Disc 1
- Bunch of Yellow Bananas (save for Day 5)

1. Why do you think Sid's banana got mushy? Let's help Sid find out.

   Call on 2 or 3 volunteers to describe their thoughts.

2. Raise your hand if you would eat a mushy banana. Raise your hand if you would not.

   Comment on the number of hands that were raised for each scenario and which group had the most responses.

3. Let's say the word DECAY together. DECAY is what happens to fruits and vegetables when they get old.

4. What is an investigation?

   When you explore thing and find stuff out.

5. How did Gerald know the pumpkin smelled bad? What sense did he use to make that observation?

   His nose.
   His sense of smell.

6. What will Sid use to touch the pumpkin? What sense will he use?

   His hands/fingers.
   His sense of touch.

After viewing the whole episode, ask:

7. I have some bananas here.

   Show children the yellow bananas.

8. What do you think will happen to these bananas if we don't eat them? How can we find out?

   They will turn brown/decay.

   We can keep them and watch them/ investigate them.

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Construction paper
- Wiggly Eyes
- Glue Sticks
- Assorted shape manipulatives
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough
- Yellow bananas

Sense Collage

1. Tell children that we use our eyes and our sense of sight to make observations.
2. Give each child a sheet of construction paper. Make crayons, markers and/or colored pencils, Wiggly Eyes and glue sticks available. Invite them to create drawings of people and to add the Wiggly Eyes.
3. Encourage them to create anything they want.

> What can you do with your eyes? What do you observe around you with your eyes?

Sorting Shapes

1. Make an assortment of plastic, foam and/or wooden shapes available for children to explore.
2. Encourage the children to find ways that the shapes are alike in shape, size and/or material and group them.

> Show me a circle (or other shape). How can you tell it's a circle (or other shape)?

> How is a circle (or other shape) different from the other shapes?

> How many circles (or other shape) can you find?

Observing Bananas

1. Place the bananas on a table and make crayons, markers and colored pencils available for drawing.
2. Invite the children to observe the bananas (look, touch and smell) and draw pictures of their observations in their journal.

> What does the banana look/feel/smell like? Can you draw a picture of what you see?

Playdough/Clay

1. Make playdough available for children to explore.
2. Encourage them to make observations about the playdough.

> How does the playdough feel when you touch it?

> How does it feel different from the table? What does it do when you squeeze it?

> What other observations can you make about the playdough?

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Focused DVD — Weeks 1-5 (1)

1 What happened to the pumpkin?

2 How did Gerald know that the pumpkin smelled bad? What sense did he use to make that observation?

His nose.
His sense of smell.

What will Sid use to touch the pumpkin? What sense will he use?

His hands/fingers.
His sense of touch.

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Fresh pumpkins, squash or other gourds (After the activity, save in plastic container for Week 3)
Knife to cut pumpkins
Paper plates
Plastic container

Pumpkin Investigation

1. Place the pumpkins on a table where children can gather and see them.
2. Observe the pumpkins. You and the children can describe what they look like and feel like.
3. Carefully cut the pumpkin, scoop out the seeds and divide it in enough pieces for pairs or individual children to investigate. Place the pieces on paper plates and invite the children to describe how it looks, smells, and feels.

Ask:

4. **What do you think will happen to the pumpkin if we keep it out? How do you think we can find out?**

After the activity:

5. Place the pumpkin pieces in the plastic container and **save for the investigation of decayed pumpkin in Week 3**.

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Trash Stash

Select *Trash Stash* on the Games DVD. Keep children engaged by asking questions:

- Can you find something else that is blue?

Mystery Lunchbox

If you have Internet access, visit **http://pbskids.org/sid/#/MysteryLunchbox.** Keep children engaged by asking questions:

- What do you think will happen to the sandwich over time? How can you find out?

See Games DVD

GAME DESCRIPTION:

Trash Stash

Children sort junk items by color, shape and type.

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 1-5 (1)
- Pointer

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Survey Chart
- Colored Tiles

Sid's Survey: Would you eat a mushy banana?

1. Distribute colored tiles.
2. Ask the class: **Would you eat a mushy banana?**
3. Call on children individually to place their tile above the Yes or No icon.
4. Engage children in discussion around why or why not.
5. Discuss which choices have more/less responses.
6. Give the children the opportunity to taste and eat the brown bananas **after the Quick Review on Day 5**. Optional extension: Use the brown bananas in smoothies or another classroom cooking experience.

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Trash Stash

(See this week, Day 3)

> Can you find something else that is blue?

Vary this question with other items to find (food, striped, etc.).

Mystery Lunchbox

(See this week, Day 3)

> What do you think will happen to the sandwich over time? How can you find out?

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bananas

Decay

1. Show children the bananas from Day 1.

> Here are the bananas we looked at on Monday. Using your eyes, do you observe any differences? Why did they change?

2. Later in the day, invite the children to taste and eat the bananas, or use the bananas in a classroom cooking activity.

Week 2:
Growth

Objectives:

CONTENT	○ Children will learn about growth and things that grow.
VOCABULARY	○ Children will be introduced to the term transformation.
SKILLS	○ Children will learn about planting seeds.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.

See Episode DVD - Disc 1

EPISODE SYNOPSIS:

My Shrinking Shoes

When Sid's shoes don't fit, he declares that his shoes must be shrinking. Sid and his friends discover that it's hard to see things growing, because growing happens slowly over time. It turns out Sid's shoes weren't shrinking -- he was growing!

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Episode DVD - Disc 1
- Yellow Banana card
- Brown Banana card

- When we watched *Sid the Science Kid* last week, we learned about decay and making observations. Sid wanted to know why his banana turned from yellow to brown.

  Show children the cards with the pictures of the yellow and brown bananas.

- Does anyone remember what DECAY means?

  The change that happens to fruits and vegetables when they get old.

- Does anyone remember what an observation is? What did we observe about the pumpkin?

  If necessary, prompt children to describe how it looked, smelled and felt.

- Today Sid has another problem. His favorite shoes don't fit him anymore and he wants to find out why. Let's see if we can help him.

  Play *My Shrinking Shoes* (Episode DVD - Disc 1) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Episode DVD - Disc 1
Pointer

1. Why do you think Sid's shoes don't fit anymore? Let's help him find out.

   Call on 2-3 volunteers.

2. Can you name something that grows? Let's find out more.

   Call on 2-3 volunteers.

3. Raise your hand if you have something that you can't fit into anymore? Let's see what Sid's friends have to say.

   Count the number of hands raised and call on 3-4 volunteers to name something that doesn't fit anymore.

5. Let's say that together, TRANSFORMATION. TRANSFORMATION is when something changes to something else.

6. Can you think of a transformation? Let's find out more.

   Call on 2-3 volunteers.

7. Why did Grandma give her shoes to her little sister?

After viewing the whole episode, ask:

- Sid wanted to know if his shoes were shrinking. What did he find out? Were his shoes getting smaller?

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Construction paper
- Large Plastic Tub filled with sand
- School Glue
- Paint brushes
- Small containers for glue
- Assorted shape manipulatives
- Dried beans
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Sand Collage

1. Cover a table with newspaper.
2. Give each child a sheet of construction paper and invite them to paint a picture with the paintbrushes and glue.
3. When their designs are complete, place drawings one at time face up into the plastic tub.
4. Invite the child to scoop handfuls of sand on top of the paper and ask them how the sand feels.
5. Pick up the paper by the corner and allow excess sand to fall back into the tub.
6. Set sand drawing aside to dry.

> What senses can you use to observe the sand? What does it look like? How does it feel? Does it make a sound?

Sorting Shapes

(See Week 1, Day 1)

Observing Seeds

1. Place a handful of dried beans on a table and make science journals, crayons, markers and colored pencils available for drawing.
2. Invite the children to observe the seeds (look, touch and smell) and draw pictures of their observations in their journals.

> What does the seed look/feel/smell like? Can you draw a picture of what you see?

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Focused DVD — Weeks 1-5 (2)

1 What do you think would happen if we planted bean seeds? How could we find out?

They might grow. We could plant some seeds.

2 Why did Grandma give her shoes to her little sister?

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Dried beans
- Plastic cups
- Plastic Tubs filled with potting soil
- Small pitchers of water
- Permanent marker

Planting Seeds

1. Distribute plastic cups and place tubs of potting soil on the table.
2. Demonstrate how to scoop potting soil into a cup so it is about half way full.
3. Invite the children to fill the cups.
4. Demonstrate how to make a hole in the soil with your finger. Invite the children to do the same.
5. Demonstrate how to put a seed in the hole and cover it with soil. Place a handful of seeds on each table and invite the children to plant their seeds.
6. Demonstrate how to add a little water to your plant with a small pitcher. Invite the children to do the same.
7. Write children's names on cups with permanent marker and place in a sunny spot.
8. Continue to water plants periodically in Weeks 2 – 10.

Ask:

9. **What do you think will happen to our seeds? Do you think they will start to grow before we go home today? Do you think we will see leaves when we come to school tomorrow? How long do you think it will take our seeds to grow? How can we find out?**

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Memory Lane

Select *Memory Lane* on the Games DVD. Keep children engaged by asking questions:

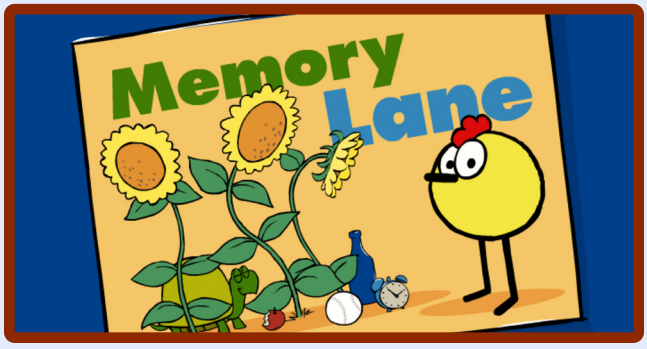
- What else do you remember from the walk?

I Sense

If you have Internet access, visit **http://pbskids.org/sid/#/isense**. Keep children engaged by asking questions:

- If you could smell the things on the shelf, which one do you think would smell nutty?

  Vary this question by choosing another sense (taste, hearing, etc.) and quality (sticky).



See Games DVD

GAME DESCRIPTION:

Memory Lane

In this game, Peep takes a walk and passes many things. The children are asked to remember the items.

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 1-5 (2)
- Pointer

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Survey Chart
- Colored tiles

Sid's Survey: Do you have something that doesn't fit anymore?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Do you have something that doesn't fit anymore?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Memory Lane

(See this week, Day 3)

- What else do you remember from the walk?

I Sense

(See this week, Day 3)

- If you could smell the things on the shelf, which one do you think would smell nutty?

  Vary this question by choosing another sense (taste, hearing, etc.) and quality (sticky).

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bean plants

Growing Plants

- Here are some of the bean plants we planted this week. Using your eyes, do you observe any differences?

- What does TRANSFORMATION mean? What do you think our plants will look like next week? How can we find out?

Week 3:
Decay and Making Observations

Objectives:

CONTENT	○ Children will learn about decay and things that decay.
VOCABULARY	○ Children will be introduced to the terms observation, investigation and decay.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.

See Episode DVD - Disc 1

EPISODE SYNOPSIS:

My Mushy Banana

See Week 1

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Episode DVD - Disc 1
- Yellow banana card
- Brown banana card

- Last week, Sid was wondering if his shoes were shrinking because he couldn't fit into them anymore. What did he find out?

- We planted some bean seeds last week and this is what our plants look like today.

  Show children are few of the bean plants.

- What did seeds look like before we planted them? Now, what do you see? Does anyone remember the word that describes what happened to the seed? (If the seeds have not yet sprouted, ask what will happen to the seeds as they grow.)

  Transformation.

- How do you think the plants will look after lunch today? Why? How do you think they will look next week?

- A couple of weeks ago Sid was wondering what happened to his banana. It started out looking like this:

  Show the children the card with the yellow banana.

- But then it turned out looking like this:

  Show the children the card with the brown banana.

- Why did that happen?

- Today we're going to watch again to see if we can learn anything else about decay.

  Play *My Mushy Banana* (Episode DVD - Disc 1) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Episode DVD - Disc 1
- Bunch of Yellow Bananas

1 Why do you think Sid's banana got mushy?

Call on 2 or 3 volunteers to describe their thoughts.

3 What is DECAY?

When you explore things and find stuff out.

5 How did Gerald know the pumpkin smelled bad? What sense did he use to make that observation?

His nose.
His sense of smell.

What will Sid use to touch the pumpkin? What sense will he use?

His hands/fingers.
His sense of touch.

After viewing the whole episode, ask:

What happened to the bananas we had in our classroom before? What changes did we observe?

Here are some more bananas, what do you think will happen to these?

They will turn brown/decay.

How can we find out?

We can keep them and watch them/investigate them.

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Construction paper
- Wiggly Eyes
- Glue Sticks
- Assorted shape manipulatives
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Sense Collage

(See Week 1, Day 1)

Sorting Shapes

(See Week 1, Day 1)

Observing Bananas

(See Week 1, Day 1)

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 1-5 (3)
- Pointer

1. What happened to the pumpkin?

2. How did Gerald know that the pumpkin smelled bad? What sense did he use to make that observation?

His nose. His sense of smell.

What will Sid use to touch the pumpkin? What sense will he use?

His hands/fingers. His sense of touch.

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Pumpkins in container from Week 1
- Paper Plates
- Plastic Gloves or sandwich bags

Pumpkin Investigation

1. Ask the children if they remember observing the fresh pumpkin. Invite them to discuss their observations. Ask how the pumpkin looked, smelled and felt.
2. Place the container with the pumpkins on a table where the children can gather and see them. Ask how the pumpkins have changed.
3. Place pieces of pumpkins on paper plates and give the children plastic gloves or sandwich bags to cover their hands.
4. Invite the children to make observations.
5. Ask: **How does the pumpkin look, smell, feel? How has it changed?**
6. After making observations, encourage children to record their observations in their journals.
7. Throw the pumpkins away. If you have a compost pile, put the pumpkins there.

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:

- Pointer
- Dr. Seuss' ABC
- Chart paper
- Marker

Trash Stash

(See Week 1, Day 3)

- Can you find something else that is blue?

  Vary this question with other items to find (food, striped, etc.).

Mystery Lunchbox

(See Week 1, Day 3)

- What do you think will happen to the sandwich over time? How can you find out?

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 1-5 (3)
- Pointer

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Survey Chart
- Colored tiles

Sid's Survey: Would you eat a decayed pumpkin?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Would you eat a decayed pumpkin?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Trash Stash

(See Week 1, Day 3)

- Can you find something else that is blue?

  Vary this question with other items to find (food, striped, etc.).

Mystery Lunchbox

(See Week 1, Day 3)

- What do you think will happen to the sandwich over time? How can you find out?

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bananas
Bean plants

Decay

- Here are the bananas we looked at on Monday. Using your eyes, do you observe any differences?

  Later in the day, invite the children to taste and eat the bananas, or use the bananas in a classroom cooking activity.

- What happened to the pumpkin we observed a couple of weeks ago? Why did that happen?

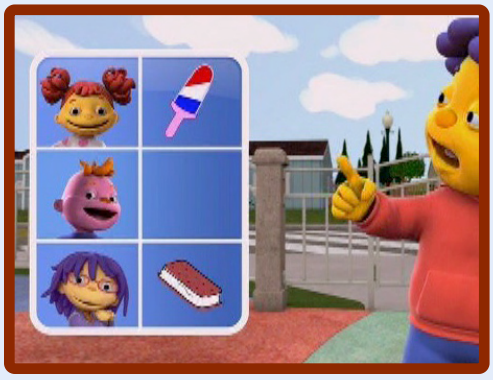
- Here are the bean plants we planted last week? How have they changed? Do you remember what TRANSFORMATION means?

Week 4:

Reversible Change and Observing Water

Objectives:

CONTENT	○ Children will learn about the relationship between water and ice.
VOCABULARY	○ Children will be introduced to the term reversible change.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.



See Episode DVD - Disc 1

EPISODE SYNOPSIS:

My Ice Pops

Sid wakes up and discovers that his ice pops melted! This sticky situation leads him to ask, "Why do things have to melt?" After investigating at school, Sid learns that if liquids don't stay in a really cold place, they slowly melt over time. He also discovers that liquids can freeze into solid ice and then melt right back into liquid.

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Episode DVD - Disc 1
Melted Ice Pop card

- We've helped Sid find answers to a few of his questions. When he thought his shoes were shrinking, what did we find out?

- When his banana turned brown and mushy, what did we find out?

- Today, Sid has another question. Last night, he left an ice pop on his desk and this morning he noticed that it looked like this:

  Show the Melted Ice Pop card.

- He wants us to help him figure out what happened. Let's find out.

  Play *My Ice Pops* (Episode DVD - Disc 1) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Episode DVD - Disc 1

1. Have you ever eaten something frozen that melted?
2. If you want something to stay frozen where should you keep it?
3. What is reversible change?
4. What happened to Sid's ice pop?

   Call on 2-3 volunteers.

5. How do you think they can get to the fruit?
6. Do you think the water will turn back into ice? Why?
7. Have children stand to play the melting/freezing game.

After viewing the whole episode, ask:

- What did Sid learn about his ice pops?

  Water freezes and melts. Ice that melts can be frozen again. Freezing takes time.

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Ice cubes in small plastic containers
- Jingle bells
- Pipe cleaners
- Assorted shape manipulatives
- Dried beans
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Listening Bracelets

1. Make pipe cleaners and jingle bells available.
2. Invite children to string the bells on the pipe cleaners to make a bracelet.

What sense are we using to hear the bells? What else do we hear in the classroom? How does the pipe cleaner feel? What other observations can you make?

Sorting Shapes

(See Week 1, Day 1)

Observing Ice Cubes

1. Place the ice cubes in small plastic containers on a table and make crayons, markers and colored pencils available for drawing.
2. Invite the children to observe the ice (look, touch and smell) and draw pictures of their observations in their journal.

What does the ice look/feel/smell like? Can you draw a picture of what you see?

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 1-5 (4)
- Pointer

1. What happened to Sid's ice pop?
2. How do you think they can get to the fruit?
3. Do you think the water will turn back into ice? Why?
4. Have children to stand to play the melting/freezing game.

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Ice cube trays
- Fruit in bite sized pieces on paper plates
- Small pitcher of water
- Science journals
- Crayons
- Colored Pencils
- Markers

Freezing Fruit

1. Explain that this week you will be doing an investigation with fruit and ice in class.
2. Have the children select a piece of fruit and place it into a section of the ice cube tray.
3. Demonstrate how to pour a small amount of water over the fruit in one of the sections of the ice cube tray. Have the children pass the water pitcher and pour water into one section.
4. Put the ice cube trays in the freezer (if in the classroom) or tell the children that you are going to put them in the freezer. Save the ice cubes for continued investigation in Week 7.
5. Invite the children to record their observations in their science journals and to eat any extra fruit.

- What happened to the fruit when we poured the water in the tray? What other observations can you make? What do you think will happen when we put this in the freezer?

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Sounds Like Fun!

Select *Sounds Like Fun!* on the Games DVD. Keep children engaged by asking questions:

> What do the animals sound like? Have you heard a sound like that before? What are you using to hear the sounds?

I Sense

(See Week 2, Day 3)

> If you could smell the things on the shelf, which one do you think would smell nutty?

Vary this question by choosing another sense (taste, hearing, etc.) and quality (sticky).

See Games DVD

GAME DESCRIPTION:

Sounds Like Fun!

Children listen to and mix sounds by clicking on different animals.

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Focused DVD — Weeks 1-5 (4)

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Survey Chart
Colored tiles

Sid's Survey: Do you like Ice Pops?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Do you like Ice Pops?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Sounds Like Fun!

(See this week, Day 3)

- What do the animals sound like? Have you heard a sound like that before? What are you using to hear the sounds?

I Sense

(See Week 2, Day 3)

- If you could smell the things on the shelf, which one do you think would smell nutty?

  Vary this question by choosing another sense (taste, hearing, etc.) and quality (sticky).

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bean Plants

Reversible Change

- This week Sid wanted to know what happened to his Ice Pop. He left it on his desk and when he woke up, this is what he found:

  Show the Melted Ice Pop card.

- What happened? What else did we learn about water and ice?

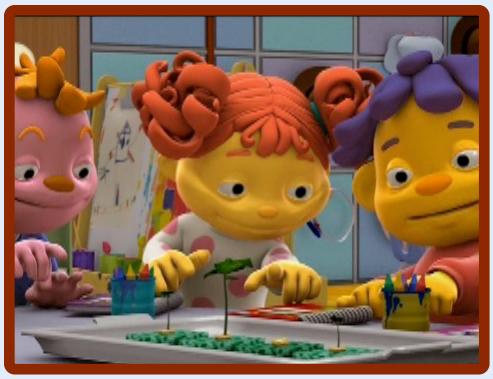
- Let's take a look at our bean plants this week. How have they changed? How do you think they will look next week?

  Show the children some of the bean plants.

Week 5:
Growth

Objectives:

CONTENT	○ Children will learn about growth and things that grow.
VOCABULARY	○ Children will be introduced to the term transformation.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.



See Episode DVD - Disc 1

EPISODE SYNOPSIS:

My Shrinking Shoes

See Week 2

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Episode DVD - Disc 1
Bean Plants

- After we watched *Sid the Science Kid* last week, we observed some things about ice and water. What did we do with the ice and what did we observe?

  If necessary, prompt children to discuss how it looked, felt, etc.

- A few weeks ago, Sid wanted to know why his shoes didn't fit him anymore. Does anyone remember what he learned?

- Sid's class planted seeds, and we planted some too. Here are some of the plants we planted.

  Show children some of the bean plants.

- What happened to the seeds?

- Today we're going to watch *My Shrinking Shoes* again and see if we can learn more about things that grow.

  Play *My Shrinking Shoes* (Episode DVD - Disc 1) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary | Skills | Thinking

Materials:
Episode DVD - Disc 1

1. Why do you think Sid's shoes don't fit anymore? Let's help him find out.

   Call on 2-3 volunteers.

2. Can you name something that grows? Let's find out more.

   Call on 2-3 volunteers.

4. What happened when we planted our bean plants? How long did it take for them to grow?

5. Let's say that together, TRANSFORMATION. What does transformation mean?

6. Can you think of a transformation?

   Call on 2-3 volunteers.

7. Why did Grandma give her shoes to her little sister?

After viewing the whole episode, ask:

- Sid wanted to know if his shoes were shrinking. What did he find out? Were his shoes getting smaller?

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Construction paper
- Large Plastic Tub filled with sand
- School Glue
- Paint brushes
- Small plastic containers for glue
- Assorted shape manipulatives
- Dried beans
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Sand Collage

(See Week 2, Day 1)

- What senses can you use to observe the sand? What does it look like? How does it feel? Does it make a sound?

Sorting Shapes

(See Week 1, Day 1)

Observing Seeds

(See Week 2, Day 1)

- What does the seed look/feel/smell like? Can you draw a picture of what you see?

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary | Skills | Thinking

Materials:
Focused DVD — Weeks 1-5 (5)

1. What happened when we planted our bean plants? How long did it take for them to grow?
2. Why did Grandma give her shoes to her little sister?
3. Have children to stand to play the melting/freezing game.

Hands-on Activities

(20 minutes / Whole Class)

Materials:
- Bean plants
- Science journals
- Crayons
- Markers
- Colored Pencils

Observing Bean Plants

1. Distribute bean plants and science journals.
2. Ask children what changes they observe.
3. Invite them to record their observations in their science journals.

What happened to our seeds? How did they change? What do you observe about your plants?

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Memory Lane

(See Week 2, Day 3)

- What else do you remember from the walk?

Mystery Lunchbox

(See Week 1, Day 3)

- What do you think will happen to the sandwich over time? How can you find out?

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Focused DVD — Weeks 1-5 (5)

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Materials:
Survey Chart
Colored tiles

Sid's Survey: Do you have something that doesn't fit anymore?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Do you have something that doesn't fit anymore?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Memory Lane

(See Week 2, Day 3)

- What else do you remember from the walk?

Mystery Lunchbox

(See Week 1, Day 3)

- What do you think will happen to the sandwich over time? How can you find out?

Quick Review

(5 minutes / Whole Class)

Materials:
Bean plants
Melted Ice Pop card

Growing Plants

- What did we learn about things that grow this week?

- Let's take a look at our bean plants this week. How have they changed? How do you think they will look next week?

  Show children some of the bean plants.

- A few weeks ago, Sid wanted to know why his banana turned brown and mushy. What happened? What else did we learn about decay?

Week 6:
Irreversible Change

Objectives:

CONTENT	○ Children will learn how heat changes different foods.
VOCABULARY	○ Children will be introduced to the term irreversible change.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.

See Episode DVD - Disc 2

EPISODE SYNOPSIS:

The Perfect Pancake

Sid wants to know how his Grandma always makes perfect pancakes. They're never too squishy or burnt. At school, Sid makes an important discovery–heat changes things! This lesson reveals the secret of Grandma's pancakes: she heats them on the stove for the perfect amount of time...not too much and not too little.

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Episode DVD - Disc 2
Melted Ice Pop card

- We've helped Sid find answers to a few of his questions. When he thought his shoes were shrinking, what did we find out?

- When his banana turned brown and mushy, what did we find out?

- Last week, Sid wanted to know what happened to his ice pop. He left it on his desk overnight and in the morning it looked like this:

  Show the Melted Ice Pop card.

- What happened? Why did that happen? What else did we learn about ice and water?

- Today, Sid wants us to help him find out how to make the perfect pancake. His mother's pancakes are too squishy and his father's pancakes are too hard, but his grandma's pancakes are always perfect. Let's find out why.

  Play *The Perfect Pancake* (Episode DVD - Disc 2) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary | Skills | Thinking

Materials:
Episode DVD - Disc 2

1. What kind of pancakes do you like to eat? What do you like to eat on your pancakes?

   Call on 3-4 volunteers.

2. How do you think you could make a perfect pancake that's not squishy and not hard?

3. What do you think heat does to things?

   It changes things.

4. Can we all say IRREVERSIBLE CHANGE? IRREVERSIBLE CHANGE means a change that can't go back to the way it was before.

5. What did they figure out? Why are Sid's mom's pancakes squishy and his dad's pancakes hard?

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Cinnamon sticks
- Sand paper
- Assorted shape manipulatives
- 4 apples
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Cinnamon Drawings

1. Give each child a sheet of sand paper and a cinnamon stick.
2. Invite them to draw on the sandpaper with the cinnamon stick.
3. Encourage them to draw anything they want.

What observations are you making? What senses are you using? What are you using to smell the cinnamon? How does the sandpaper feel?

Sorting Shapes

(See Week 1, Day 1)

Observing Apples

1. Place 4 whole apples on a table for children to observe.
2. Invite children to record their observations (sight, smell and touch) in their science journals.

What observations can you make about the apples? How do they look, smell, feel?

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 6-10 (6)
- Pointer

1. What do you think heat does to things?
2. Do you think applesauce can change back into apples? Why or Why not?
3. Have children to stand to play the melting/freezing game.
4. What did Sid learn about making perfect pancakes? Why are Sid's mom's pancakes squishy and his dad's pancakes hard?
4. What does irreversible change mean?

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- 16 apples, peeled and cut into chunks
- 1/2 cup water
- pot
- hot plate, stove top or microwave
- plastic bowls
- plastic spoons
- wooden spoons
- potato mashers
- measuring cup
- measuring spoons

Making Applesauce

1. Put half of the apples into bowls for the children to investigate. Put the other half into a pot or bowl with 1/2 cup of water and heat on the stove/hot plate or in the microwave. This should take about 10-12 minutes on a burner set to medium or 3 minutes in a microwave.
2. Invite the children use the potato mashers to try to mash the raw apples in the bowls. **Start a discussion about this by asking if it is easy or hard.**
3. Pour the heated apples into bowls and invite the children to try to mash the heated apples with the potato mashers. Be sure to remind them to be careful with the hot bowl!
4. **Ask the children about the changes and what happened to the apples.**
5. Once the applesauce has cooled enough, enjoy. Encourage the children to eat the raw apples while they wait for the applesauce to cool.
6. Invite the children to taste the applesauce after it cools

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Memory Lane

(See Week 2, Day 3)

- What else do you remember from the walk?

Kitchen Magician

If you have Internet access, visit **http://pbskids.org/sid/#/KitchenMagician**.

Keep children engaged by asking questions:

- What do you think Grandma used to make that?

Visit http://pbskids.org/sid/#/KitchenMagician

GAME DESCRIPTION:

Kitchen Magician

Children are shown a cooked dish and are asked to find one of the ingredients that was heated to make the dish.

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary | Skills | Thinking

Materials:
- Focused DVD — Weeks 6-10 (6)
- Pointer

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary | Skills | Thinking

Materials:
- Survey Chart
- Colored tiles

Sid's Survey: Did you like the applesauce we made?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Did you like the applesauce we made?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Memory Lane

(See Week 2, Day 3)

- What else do you remember from the walk?

Kitchen Magician

(See this week, Day 3)

- What do you think Grandma used to make that?

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bean plants

Irreversible Change

- This week, Sid wanted to find out how to make the perfect pancake. What did he learn?

- What did we learn? We investigated apples to make applesauce. Can applesauce change back into apples? What is something that can change back to what it was before?

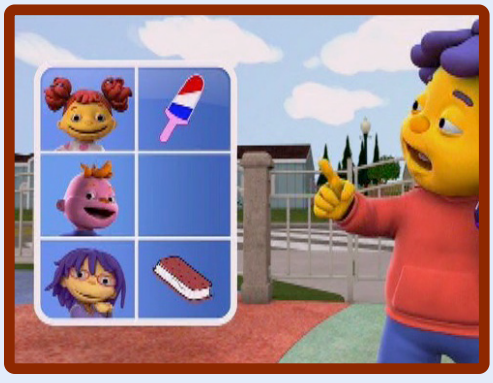
- Let's take a look at our bean plants this week. How have they changed? How do you think they will look next week?

Show the children some of the bean plants.

Week 7:
Reversible Change and Observing Water

Objectives:

CONTENT	○ Children will learn about the relationship between water and ice.
VOCABULARY	○ Children will be introduced to the term reversible change.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.



See Episode DVD - Disc 1

EPISODE SYNOPSIS:

My Ice Pops

See Week 4

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Episode DVD - Disc 1

- We've helped Sid find answers to a few of his questions. When he thought his shoes were shrinking, what did we find out?

- When his banana turned brown and mushy, what did we find out?

- When Sid wondered what happened to his ice pop after he left it on his desk overnight, what did we find out?

- What kind of change happens when something goes back to what it was before?

  That is reversible change.

- Today, we're going to watch *My Ice Pops* again to learn more about reversible change.

  Play *My Ice Pops* (Episode DVD - Disc 1) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Episode DVD - Disc 1
3

1. Have you ever eaten something frozen that melted?
2. If you want something to stay frozen, where should you keep it?
3. What is reversible change?
4. What happened to Sid's ice pop? How do you think they will get to the fruit?

   Call on 2-3 volunteers.

5. How do you think it feels?
6. Do you think the water will turn back into ice? Why?
7. Have children to stand to play the melting/freezing game.

After viewing the whole episode, ask:

- What did Sid learn about his ice pops?

  Water freezes and melts. Ice that melts can be frozen again. Freezing takes time.

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Ice cubes in small plastic containers
- Jingle bells
- Pipe cleaners
- Assorted shape manipulatives
- Dried beans
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Listening Bracelets

(See Week 4, Day 1)

- What sense are we using to hear the bells? What else do we hear in the classroom? How does the pipe cleaner feel? What other observations can you make?

Sorting Shapes

(See Week 1, Day 1)

Observing Ice Cubes

(See Week 4, Day 1)

- What does the ice look/feel/smell like? Can you draw a picture of what you see?

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Focused DVD — Weeks 6-10 (7)

1. What happened to Sid's ice pop?
2. How do you think they can get to the fruit?
3. Do you think the water will turn back into ice? Why?
4. Have children stand to play the melting/freezing game.

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Ice cubes made in Week 4
- Small pitcher of warm water
- Plastic bowls
- Science journals
- Crayons
- Colored Pencils
- Markers

Finding Frozen Fruit

1. Explain that today you will finish the investigation of the ice cubes that were made a few weeks earlier.
2. Engage children in a discussion of how the ice cubes were made and what they looked like before they were put into the freezer.
3. Give each child an ice cube in a paper bowl and invite them to observe it with their eyes, nose, hands and tongue. **Ask them about the observations they are making?**
4. Invite the children to try to get to the fruit in the ice cube. **Ask if it is easy or hard.**
5. **Ask the children what they think could be done to the ice to make it easier to get to the fruit.**
6. Suggest pouring warm water on the ice cube and demonstrate how to pour a little on the ice cube to melt it.
7. Pass the pitcher around the table and invite the children to pour water on their ice cubes.
8. Encourage the children to try to get to the fruit again and ask if it is easier or harder. Engage the children in a discussion about what is happening to the ice.
9. Invite the children to eat the fruit when the ice has melted enough to get to it. **Ask them what they think would happen if the melted ice water was put back into the freezer.**

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Sounds Like Fun!

(See Week 4, Day 3)

- What do the animals sound like? Have you heard a sound like that before? What are you using to hear the sounds?

I Sense

(See Week 2, Day 3)

- If you could smell the things on the shelf, which one do you think would smell nutty?

  Vary this question by choosing another sense (taste, hearing, etc.) and quality (sticky).

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Focused DVD — Weeks 6-10 (7)

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Survey Chart
Colored tiles

Sid's Survey: Did you like the frozen fruit?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Did you like the frozen fruit?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Sounds Like Fun!

(See Week 4, Day 3)

"What do the animals sound like? Have you heard a sound like that before? What are you using to hear the sounds?

I Sense

(See Week 2, Day 3)

"If you could smell the things on the shelf, which one do you think would smell nutty?

Vary this question by choosing another sense (taste, hearing, etc.) and quality (sticky).

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bean plants

Reversible Change

"This week, we investigated ice pops. What did we do? What did we learn? What would happen if we put the melted water from the ice pops in the freezer? What is this kind of change called?

"A few weeks ago, Sid wanted to know why his banana turned brown and we looked at an old pumpkin. What did we learn? What is this kind of change called?

"Last week, we investigated apples to make applesauce. What did we learn? Can applesauce change back into apples? What do we call this kind of change?

"Let's take a look at our bean plants this week. How have they changed? How do you think they will look next week?

Show the children some of the bean plants.

Week 8:
Review of Change and Transformation

Objectives:

CONTENT	○ Children will review decay, growth, the relationship between water and ice, and the ways that heat changes foods.
VOCABULARY	○ Children will review the terms decay, transformation, reversible change and irreversible change.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.

See Episode DVD - Disc 2

EPISODE SYNOPSIS:

No More Changes

Sid isn't too thrilled that his favorite shirt shrunk, his shoes don't fit anymore and his Mom changed his favorite toothpaste. He really wants to ask, "Why do things have to change?" Sid discovers that change is a natural part of the world as he and his friends review lessons learned from change and transformation such as decay, growth, and change caused by heat.

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Episode DVD - Disc 2
- Bean plants
- Bean seed

- Over the last few weeks we have done some investigations and learned a lot about different kinds of changes. When we investigated pumpkins, we learned about DECAY. What is DECAY?

- We planted some seeds in another investigation. What did we observe? How did the seeds change?

  Show the children some of the bean plants and a bean seed.

- We also investigated water and ice to learn about REVERSIBLE CHANGE. What is REVERSIBLE CHANGE?

- When we investigated apples and made applesauce, we learned about IRREVERSIBLE CHANGE. What is IRREVERSIBLE CHANGE?

  Play *No More Changes* (Episode DVD - Disc 2) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary | Skills | Thinking

Materials:
Episode DVD - Disc 2

1. Does anyone remember what we heated up and how it changed?
2. When we made applesauce, what did the heat do to the apples?
3. What happened when we tried to mash the apples before we cooked them?
4. What did the heat do to the apples?
5. What does heat do to things?
6. Do you remember our ice pop investigation? What did we do to get to the fruit?
7. What did the warm water do to the ice?
8. How did the ice pop look?
9. How did it feel?
10. What do you think would happen if we put the melted ice water in the freezer?
11. What happened to the pumpkin? Why?
12. What's the word that describes what happened?
13. How did Gerald know the pumpkin smelled bad? What sense did he use to make that observation?
14. What will Sid use to touch the pumpkin? What sense will he use?
15. What did we observe about our plants? How long did it take for them to grow? What are some other things that grow?

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Cheerios or other O cereal in plastic bowls
- Pipe cleaners
- Assorted shape manipulatives
- Bean plants
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Listening Bracelets

1. Make pipe cleaners and Cheerios available.
2. Invite children to string the cereal on the pipe cleaners to make a bracelet.
3. The children can eat the cereal on the bracelets later in the day for a snack.

What sense are we using to taste the cereal? How does the pipe cleaner feel? What other observations can you make?

Sorting Shapes

(See Week 1, Day 1)

Observing Bean Plants

(See Week 5, Day 2)

What do the plants look/feel/smell like? How have they changed? Can you draw a picture of what you see?

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 6-10 (8)
- Pointer

1. What happened to the pumpkin?
2. How did the decayed pumpkin smell when we investigated it? What senses did we use to make observations about the pumpkins?
3. What does heat do to things?
4. Do you think applesauce can change back into apples? Why or Why not?

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Magnifying glasses
- Art paper with tiny details

Magnification Observation

1. Give each child a magnifying glass and make art papers available for exploration.
2. The children can also be encouraged to look at their fingerprints.
3. Ask the children to put the magnifying glasses down and observe what they can see without them and compare it to what they can see with the magnifying glasses.
4. Ask the children to describe what they see with the magnifying glass and how the magnifying glasses change the things they are looking at.

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Where's Quack?

Select *Where's Quack?* on the Games DVD. Keep children engaged by asking questions:

- How did Quack's voice sound? What do you think made his voice sound like that? Where do you think he's hiding?

Kitchen Magician

(See Week 6, Day 3)

- What do you think Grandma used to make that?

See Games DVD

GAME DESCRIPTION:

Where's Quack

Children listen to Quack's voice for clues to find where he's hiding.

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Focused DVD — Weeks 6-10 (8)

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Survey Chart
Colored tiles

Sid's Survey: Are you changing?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Are you changing?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Where's Quack?

(See this week, Day 3)

How did Quack's voice sound? What do you think made his voice sound like that? Where do you think he's hiding?

Kitchen Magician

(See Week 6, Day 3)

What do you think Grandma used to make that?

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bean plants
Bean seed

Transformation and Change

Over the last few weeks we have done some investigations and learned a lot about different kinds of changes. When we investigated pumpkins, we learned about DECAY. What is DECAY?

We planted some seeds in another investigation. What did we observe? How did the seeds change?

Show some of the bean plants and a bean seed.

We also investigated water and ice to learn about REVERSIBLE CHANGE.

What is REVERSIBLE CHANGE?

When we investigated apples and made applesauce, we learned about IRREVERSIBLE CHANGE? What is IRREVERSIBLE CHANGE?

Week 9:
Irreversible Change

Objectives:

CONTENT	○ Children will learn how heat changes different foods.
VOCABULARY	○ Children will be introduced to the term irreversible change.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.

See Episode DVD - Disc 2

EPISODE SYNOPSIS:

The Perfect Pancake

See Week 6

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Episode DVD - Disc 2

- We've helped Sid find answers to a few of his questions. When he thought his shoes were shrinking, what did we find out?

- When his banana turned brown and mushy, what did we find out?

- When Sid wanted to know what happened to his ice pop. What did we learn? What else did we learn about ice and water?

- Today, we're going to watch *The Perfect Pancake* again to learn more about IRREVERSIBLE CHANGE.

  Play *The Perfect Pancake* (Episode DVD - Disc 2) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary | Skills | Thinking

Materials:
Episode DVD - Disc 2

1. What kind of pancakes do you like to eat? What do you like to eat on your pancakes?

   Call on 3-4 volunteers.

2. How do you think you could make a perfect pancake that's not squishy and not hard?

3. What do you think heat does to things?

   It changes things.

4. Can we all say IRREVERSIBLE CHANGE? IRREVERSIBLE CHANGE means a change that can't go back to the way it was before.

5. What did they figure out? Why are Sid's mom's pancakes squishy and his dad's pancakes hard?

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Cinnamon sticks
- Sand paper
- Assorted shape manipulatives
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Cinnamon Drawings

(See Week 6, Day 1)

What observations are you making? What senses are you using? What are you using to smell the cinnamon? How does the sandpaper feel?

Sorting Shapes

(See Week 1, Day 1)

Observing Apples

(See Week 6, Day 1)

What observations can you make about the apples? How do they look, smell, feel?

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:

Focused DVD — Weeks 6-10 (9)

1. What does heat do to things?
2. Do you think applesauce can change back into apples? Why or Why not?
3. Have children to stand to play the melting/freezing game.
4. What did Sid learn about making perfect pancakes? Why are Sid's mom's pancakes squishy and his dad's pancakes hard?

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:

- 16 apples, peeled and cut into chunks
- 1/2 cup water
- pot
- hot plate, stove top or microwave
- plastic bowls
- plastic spoons
- wooden spoons
- potato mashers
- measuring cup
- measuring spoons

Making Applesauce

(See Week 6, Day 2)

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Memory Lane

(See Week 2, Day 3)

- What else do you remember from the walk?

Kitchen Magician

(See Week 6, Day 3)

- What do you think Grandma used to make that?

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Focused DVD — Weeks 6-10 (9)

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Survey Chart
Colored tiles

Sid's Survey: Did you like the applesauce we made?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Did you like the applesauce we made?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Memory Lane

(See Week 2, Day 3)

- What else do you remember from the walk?

Kitchen Magician

(See Week 6, Day 3)

- What do you think Grandma used to make that?

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bean Plants

Irreversible Change

- This week, Sid wanted to find out how to make the perfect pancake what did he learn? We investigated apples to make applesauce. What did we learn?

- Can applesauce change back into apples? What is something that can change back to what it was before?

- Let's take a look at our bean plants this week. How have they changed? How do you think they will look next week?

Show the children some of the bean plants.

Week 10:
Review of Change and Transformation

Objectives:

CONTENT	○ Children will review decay, growth, the relationship between water and ice, and the ways that heat changes foods.
VOCABULARY	○ Children will review the terms decay, transformation, reversible change and irreversible change.
SKILLS	○ Children will make observations. ○ Children will collect and sort objects. ○ Children will answer a survey question.
THINKING	○ Children will use words to describe their observations. ○ Children will compare their observations with others. ○ Children will contrast their observations with others.

See Episode DVD - Disc 2

EPISODE SYNOPSIS:

No More Changes

See Week 8

Day 1

Warm Up

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Episode DVD - Disc 2
- Bean plants
- Bean seed

- Over the last few weeks we have done some investigations and learned a lot about different kinds of changes. When we investigated pumpkins, we learned about DECAY. What is DECAY?

- We planted some seeds in another investigation. What did we observe? How did the seeds change?

  Show the children some of the bean plants and a bean seed.

- We also investigated water and ice to learn about REVERSIBLE CHANGE. What is REVERSIBLE CHANGE?

- When we investigated apples and made applesauce, we learned about IRREVERSIBLE CHANGE? What is IRREVERSIBLE CHANGE?

  Play *No More Changes* (Episode DVD - Disc 2) and follow Episode Viewing (next page).

Day 1

Episode Viewing

(35 minutes / Whole Class)

Content | Vocabulary | Skills | Thinking

Materials:
- Episode DVD - Disc 2
- Pointer

1. Does anyone remember what we heated up and how it changed?
2. When we made applesauce, what did the heat do to the apples?
3. What happened when we tried to mash the apples before we cooked them?
4. What did the heat do to the apples?
5. What does heat do to things?
6. Do you remember our ice pop investigation? What did we do to get to the fruit?
7. What did the warm water do to the ice?
8. How did the ice pop look?
9. How did it feel?
10. What do you think would happen if we put the melted ice water in the freezer?
11. What happened to the pumpkin? Why?
12. What's the word that describes what happened?
13. How did Gerald know the pumpkin smelled bad? What sense did he use to make that observation?
14. What will Sid use to touch the pumpkin? What sense will he use?
15. What did we observe about our plants? How long did it take for them to grow? What are some other things that grow?

Day 1

Hands-on Activities

(20 minutes / Small Group)

Content | Vocabulary
Skills | Thinking

Materials:

- Cheerios or other O cereal in plastic bowls
- Pipe cleaners
- Assorted shape manipulatives
- Bean plants
- Science journals
- Crayons
- Colored Pencils
- Markers
- Playdough

Listening Bracelets

(See Week 8, Day 1)

- What sense are we using to taste the cereal? How does the pipe cleaner feel? What other observations can you make?

Sorting Shapes

(See Week 1, Day 1)

Observing Bean Plants

(See Week 5, Day 2)

- What do the plants look/feel/smell like? How have they changed? Can you draw a picture of what you see?

Playdough/Clay

(See Week 1, Day 1)

Day 2

Focused Viewing

(25 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 6-10 (10)
- Pointer

1. What happened to the pumpkin?
2. How did the decayed pumpkin smell when we investigated it? What senses did we use to make observations about the pumpkins?
3. What does heat do to things?
4. Do you think applesauce can change back into apples? Why or Why not?

Hands-on Activities

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Magnifying glasses
- Art paper with tiny details

Magnification Observation

(See Week 8, Day 2)

Day 3

Computer Games

(10 minutes / Each child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Where's Quack?

(See Week 8, Day 3)

- How did Quack's voice sound? What do you think made his voice sound like that? Where do you think he's hiding?

Kitchen Magician

(See Week 6, Day 3)

- What do you think Grandma used to make that?

Day 4

Focused Viewing

(20 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Focused DVD — Weeks 6-10 (10)
- Pointer

(Repeat Day 2's Focused Viewing exercise)

Hands-on Activities

(10 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
- Survey Chart
- Colored tiles

Sid's Survey: Does everything change?

(Use this week's Sid's Survey question and see Instructions in Week 1, Day 4)

Does everything change?

Day 5

Computer Games

(10 minutes / Each Child)

Content | Vocabulary
Skills | Thinking

Materials:
Games DVD

Where's Quack?

(See Week 8, Day 3)

- How did Quack's voice sound? What do you think made his voice sound like that? Where do you think he's hiding?

Kitchen Magician

(See Week 6, Day 3)

- What do you think Grandma used to make that?

Quick Review

(5 minutes / Whole Class)

Content | Vocabulary
Skills | Thinking

Materials:
Bean Plants
Bean seed

Transformation and Change

- Over the last few weeks we have done some investigations and learned a lot about different kinds of changes. When we investigated pumpkins, we learned about DECAY. What is DECAY?

- We planted some seeds in another investigation. What did we observe? How did the seeds change?

  Show the children the bean plants and a bean seed.

- We also investigated water and ice to learn about REVERSIBLE CHANGE. What is REVERSIBLE CHANGE?

- When we investigated apples and made applesauce, we learned about IRREVERSIBLE CHANGE? What is IRREVERSIBLE CHANGE?

PBS Kids

Project Rationale:

Preschool Science

Introduction

This project is part of the U.S. Department of Education's Ready to Learn Initiative, which has funded many projects that look at how PBS television programming, computer games and other media can be used to prepare children for the learning they will do in school. As part of this project, we examine how PBS TV programs and computer games can be used in preschool classrooms to help children get ready to read. To do this, we used the latest research on literacy to design a 10-week curriculum for preschool teachers to use. Good, scientifically-based research requires us to compare the early reading scores of children who receive the literacy curriculum to children who receive a non-literacy curriculum. Therefore, we created a high-quality 10-week science curriculum that focuses on promoting early science knowledge and skills but that does not focus on reading. After the project is complete, classes that use the science curriculum will be given the Teacher's Guide to conduct the literacy curriculum, and classes that use the literacy curriculum will receive the Teacher's Guide to conduct the science curriculum.

We have crafted a preschool science curriculum that is full of interesting activities and based on the latest research for your students. The following is a quick introduction to preschool science and the research that shaped our science curriculum.

Early Science Instruction

Recent research suggests teachers can take steps to provide engaging and exciting science instruction, such as using students' prior knowledge, encouraging hands-on exploration, having students reflect on their experiences, helping children develop memory, making observations, and more. Some researchers suggest integrating science with other content areas and even play time. We use these strategies to support children's learning with four instructional themes: science content, science vocabulary, science skills, and scientific thinking (see below for descriptions of each).

Science Content

For preschoolers to benefit from science instruction, research suggests science content should be concrete, relying on easily observable events and hands-on activities. Content can be from a specific kind of science (biology, for example), or can cover a range of topics that are conceptually

linked (the concept of transformation can be taught using information from biology, physics, and chemistry). Activities often build on what preschoolers already know from their life experiences, which in turn will deepen their background knowledge about the topic. Researchers also believe using prior knowledge to teach is important because it is easier to learn more about something already known than it is to learn something completely new. In our curriculum, children explore science content that is conceptually linked to transformation and change. Activities and instructional content are based on everyday experiences that are easily observable with the five senses. Although children will learn new information, they are likely to already have some prior knowledge about transformation and change.

Science Vocabulary

Science experiences and content introduce rich new vocabulary words to children. Hands-on activities allow children to explore and share their observations, which helps to grow their descriptive vocabulary as they describe what they are seeing, touching, or hearing. In our curriculum, preschoolers are taught vocabulary words related to science content, such as "transformation" and "decay." They also learn vocabulary for science skills, such as "observation" and "investigation."

Science Skills

Scientists use many different skills to do their work. As she goes about her day, a scientist will make predictions, conduct observations, make comparisons, create descriptions, sort items, and use tools. Researchers believe four-year olds can distinguish between how something appears and what it actually is, an important skill when making observations. Preschoolers can learn how to use their senses to make observations and record them with drawings. They can also make predictions based on their prior knowledge and check to see if their predictions are correct. Teachers can encourage children to express their curiosity and formulate questions about their observations. Instruction can include long-term activities that promote deeper exploration of a topic and allow preschoolers to reflect upon and document their experiences. In our curriculum, children learn to make observations using their senses, especially sight, hearing, and touch. They record their observations by drawing them and teachers help them chart survey information. Long-term activities allow children to make predictions and check them over time.

Scientific Thinking

Scientists are trained to think scientifically and their training takes many years. However, scientific thinking can begin in early childhood. At around the age of four, children begin to understand that different people can have different beliefs and perspectives. They also notice that some of these perspectives may be different than their own, and even false. Researchers call this "false belief understanding" and suggest it is crucial for scientific thinking because scientists test theories and observations to see if they are false.

Memory is also important for false belief understanding. In order to recognize that their beliefs and observations are different than someone else's, preschoolers must remember both their own beliefs and those of their peers. In our curriculum, children share their observations and predictions with their peers. Teachers help students compare their beliefs and observations with those of their classmates. Children also play games that test their memory.

Conclusion

We hope this overview answers many of your questions about the science curriculum and explains why we use particular activities. Your participation in the project will help us learn more about literacy and media and will expose children to many fun, interactive, and research-based activities designed to promote their learning. Thank you for your help!

Notes

SCIENTIFIC INVESTIGATIONS REVERSIBLE CHANGE

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