

Title

Sea Urchin Lab Mini Lesson

Grade Level

Kindergarten & First

Student Target

Kindergarten Science Benchmarks

- SC.K.N.1.1 Collaborate with a partner to collect information
- SC.K.N.1.2 Make observations of the natural world and know that they are descriptors collected using the five senses.
- SC.K.N.1.3 Keep records as appropriate – such as pictorial records – of investigations conducted
- SC.K.N.1.4 Observe and create a visual representation of an object which includes its major features.
- SC.K.N.1.5 Recognize that learning can come from careful observation
- SC.K.P.12.1 Investigate that things move in different ways, such as fast, slow, etc.
- SC.K.L.14.1 Recognize the five senses and related body parts

First Grade Science Benchmarks

- SC.1.N.1.1 Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations
- SC.1.N.1.2 Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, motion, and compare their observations with others
- SC.1.N.1.3 Keep records as appropriate – such as pictorial and written records – of investigations conducted
- SC.1.N.1.4 Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.
- SC.1.P.8.1 Sort objects by observable properties, such as size, shape, color, temperature, weight, texture, and whether objects sink or float.
- SC.1.P.12.1 Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow
- SC.1.L.14.1 Make observations of living things and their environment using the five senses
- SC.1.L.14.3 Difference between living and nonliving things.
- SC.1.L.17.1 Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.

Kindergarten Florida Core Standards Language Arts

- LAFS.K.L.3
- LAFS.K.RI.3
- LAFS.K.SL.1
- LAFS.K.SL.2

Kindergarten Florida Core Standards Math

- MAFS.K.CC.1
- MAFS.K.G.1
- MAFS.K.G.2
- MAFS.K.MD.1
- MAFS.K.MD.2

First Grade Florida Core Standards Language Arts

- LAFS.1.L.3
- LAFS.1.RI.1
- LAFS.1.RI.3
- LAFS.1.RF.1
- LAFS.1.RF.3

LAFS.1.SL.1
LAFS.1.SL.2
LAFS.1.W.3

First Grade Florida Core Standards Math

MAFS.1.G.1
MAFS.1.OA.1

Materials

Teacher

- A book about oceans. Suggested list below:
 - *A swim through the Sea* by Kristin Joy Pratt
 - *Starfish* by Edith Thacher Hurd
 - *Archie: The Conch Who Wouldn't Sing* by Constance Frankenberg
 - *Over in the Ocean: In a Coral Reef* by Marianne Berkes

Student

- Pencil
- Paper

Warm-up

1. Read one of the books from the suggested list in teacher's materials or any book about ocean animals or adaptations
2. Select a site on your schoolyard with many similar microhabitats
3. Discuss with students that they will use their senses to perceive the environment, and become aware that the way humans perceive the environment differs from the way other organisms perceive the environment.
4. Review the five senses with your students. Ask students to give examples of how the information we perceive using our senses helps us survive in the world (smelling smoke warns us of fire, hearing thunder warns us of lightening, etc.)

Main Lesson

1. Have the students form a large circle around your chosen site and ask them to use their senses to make as many observations as they can about the site. Allow 2-3 minutes of silence to complete this observation activity.
2. Next, have the students sit away from the site and ask them to share their observations about the site (what they smell, see, hear, etc.). Then, ask them what their observations told them about the site (ex. Would they want to be there on a hot sunny day? A rainy day? A cold windy day? Why or why not?)
3. Have the student turn around and re-observe the site, see if new observations were experienced and anything new.
4. Each student will role-play as an organism, divide the class into smaller groups, and place them throughout the site.
5. Each student should describe to their small group what it would be like to be their "organism", how does it move, find food and water, avoids danger, etc. Encourage students to get down in their roles...act out their role and view the environment from the perspective of their role playing organism.

Reflection

1. Ask individual students to describe what the environment was like from their organism's perspective and have other students try to guess what their organism was.
2. Conduct a whole-class discussion comparing and contrasting the perspectives different organisms can have the same environment. Be sure to stress the fact that different people (or organisms) might have different perceptions of an environment based on their own observations, but there is no right and wrong.

Assessment

1. Participation in the activity
2. Draw a picture of an animal in a suitable habitat. Identify and describe what the animal needs to survive and show where and how its needs are met in the habitat based on the exercise and observations seen outside.

Attachments

- Information packet about the Loxahatchee River Center
- Map of the Loxahatchee River
- Sea Urchin Lab Main Regular Lesson

Title

Sea Urchin Lab Regular Lesson

Grade Level

Kindergarten & First

Student Target

Kindergarten Science Benchmarks

- SC.K.N.1.1 Collaborate with a partner to collect information
- SC.K.N.1.2 Make observations of the natural world and know that they are descriptors collected using the five senses.
- SC.K.N.1.3 Keep records as appropriate – such as pictorial records – of investigations conducted
- SC.K.N.1.4 Observe and create a visual representation of an object which includes its major features.
- SC.K.N.1.5 Recognize that learning can come from careful observation
- SC.K.P.12.1 Investigate that things move in different ways, such as fast, slow, etc.
- SC.K.L.14.1 Recognize the five senses and related body parts

First Grade Science Benchmarks

- SC.1.N.1.1 Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations
- SC.1.N.1.2 Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, motion, and compare their observations with others
- SC.1.N.1.3 Keep records as appropriate – such as pictorial and written records – of investigations conducted
- SC.1.N.1.4 Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.
- SC.1.P.8.1 Sort objects by observable properties, such as size, shape, color, temperature, weight, texture, and whether objects sink or float.
- SC.1.P.12.1 Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow
- SC.1.L.14.1 Make observations of living things and their environment using the five senses
- SC.1.L.14.3 Difference between living and nonliving things.
- SC.1.L.17.1 Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.

Kindergarten Florida Core Standards Language Arts

- LAFS.K.L.3
- LAFS.K.RI.3
- LAFS.K.SL.1
- LAFS.K.SL.2

Kindergarten Florida Core Standards Math

- MAFS.K.CC.1
- MAFS.K.G.1
- MAFS.K.G.2
- MAFS.K.MD.1
- MAFS.K.MD.2

First Grade Florida Core Standards Language Arts

- LAFS.1.L.3
- LAFS.1.RI.1
- LAFS.1.RI.3
- LAFS.1.RF.1
- LAFS.1.RF.3

LAFS.1.SL.1
LAFS.1.SL.2
LAFS.1.W.3

First Grade Florida Core Standards Math

MAFS.1.G.1
MAFS.1.OA.1

Materials for Pre & Post Lessons

Teacher

- River Center Packet
- Sea Urchin Lab Mini Lesson
- Warm water
- 1/3 cup of salt
- Blue food coloring
- Container
- Paint brushes

Student

- White paper
- Crayons

Pre-Visit Warm-up Lesson (Completed in classroom before visiting)

- Review the information in the Loxahatchee River Center packet with your students.
- Complete the optional mini lesson provided by River Center education staff upon field trip registration confirmation
- Interactive website activity: <http://loxahatcheeriver.org/rivercenterflash/index.html>

Main Lesson (Completed during visit with River Center staff)

1. Welcome, Introduction to the River Center, overview of today's field trip, and safety/rules talk
2. Divide the students into 2 groups to rotate through 3 different activities
 - a. Lovin' the Loxahatchee River Tour – focusing on fish species, adaptations, and habitats
 - b. Sea Urchin Lab hands-on activity (See below)
 - c. Water resources discussion – Where our water comes from, how we use water, where it goes once it's down the drain, water conservation
3. Touch tank demonstration

Sea Urchin Main Lesson (Completed during visit with River Center staff)

1. Students will participate in an activity to learn how sea urchins survive in their environment, compare them to other echinoderms and aquatic species, the adaptations necessary for their survival, as well as introducing them to the scientific method.
2. Students will be divided into teams of 4 or 5, one group per table with a glass bowl of salt water and a variegated sea urchin, paper/worksheet and pencils
3. Students will be scientists making hypothesis, performing experiments, exploring, making observations, recording their findings, and sharing their findings with other teams.

Post-Visit Reflection Lesson (completed in classroom after visiting)

1. Have your students draw an ocean scene using crayons on white paper. Create a solution of 1 cup warm water, 1/3 cup of table salt, and blue food coloring. Have children use it to paint a wash over the completed drawings. The water will evaporate, leaving a blue background and sparkly salt crystals.
2. Draw a picture about your favorite animal at the River Center, include what aquarium looked like, its food, water, and shelter

Assessment

Participation in the activity

Attachments

- Loxahatchee River Center packet

Creating STEM Connections—Sea Urchin Lab Kindergarten and 1st Grade

Science

- See standards above

Technology

•

Engineering

•

Mathematics

- See standards above

Title

Sea Urchin Lab Mini Lesson

Grade Level

Seventh

Materials

Teacher

- A book about oceans, animal adaptations, or unique animal characteristics.

Student

- Pencil
- Paper

Warm-up

1. Read one of the books from the suggested list in teacher's materials or any book about ocean animals or adaptations
2. Select a site on your schoolyard with many similar microhabitats
3. Discuss with students that they will use their senses to perceive the environment, and become aware that the way humans perceive the environment differs from the way other organisms perceive the environment.
4. Review the five senses with your students. Ask students to give examples of how the information we perceive using our senses helps us survive in the world (smelling smoke warns us of fire, hearing thunder warns us of lightening, etc.)

Main Lesson

1. Have the students form a large circle around your chosen site and ask them to use their senses to make as many observations as they can about the site. Allow 2-3 minutes of silence to complete this observation activity.
2. Next, have the students sit away from the site and ask them to share their observations about the site (what they smell, see, hear, etc.). Then, ask them what their observations told them about the site (ex. Would they want to be there on a hot sunny day? A rainy day? A cold windy day? Why or why not?)
3. Have the student turn around and re-observe the site, see if new observations were experienced and anything new.
4. Each student will role-play as an organism, divide the class into smaller groups, and place them throughout the site.
5. Each student should describe to their small group what it would be like to be their "organism", how does it move, find food and water, avoids danger, etc. Encourage students to get down in their roles...act out their role and view the environment from the perspective of their role playing organism.

Reflection

1. Ask individual students to describe what the environment was like from their organism's perspective and have other students try to guess what their organism was.
2. Conduct a whole-class discussion comparing and contrasting the perspectives different organisms can have the same environment. Be sure to stress the fact that different people (or organisms) might have different perceptions of an environment based on their own observations, but there is no right and wrong.

Assessment

1. Participation in the activity

2. Draw a picture of an animal in a suitable habitat. Identify and describe what the animal needs to survive and show where and how its needs are met in the habitat based on the exercise and observations seen outside.

Attachments

- Information packet about the Loxahatchee River Center
- Map of the Loxahatchee River
- Sea Urchin Lab Main Regular Lesson

Title

Sea Urchin Lab Regular Lesson

Grade Level

Seventh Grade

Student Target

7th Grade Benchmarks

- SC7.E.6.6 Identify the impact that humans have had on the Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.
- SC.7.L.15.3 Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.
- SC.7.L.17.1 Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.
- SC.7.L.17.2 Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.
- SC.7.L.17.3 Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.
- SC.7.N.1.6 Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.

Materials for Pre & Post Lessons

Teacher

- River Center Packet
- Sea Urchin Lab Mini Lesson
- Warm water
- 1/3 cup of salt
- Blue food coloring
- Container
- Paint brushes

Student

- White paper
- Crayons

Pre-Visit Warm-up Lesson (Completed in classroom before visiting)

- Review the information in the Loxahatchee River Center packet with your students.
- Complete the optional mini lesson provided by River Center education staff upon field trip registration confirmation
- Interactive website activity: <http://loxahatcheeriver.org/rivercenterflash/index.html>

Main Lesson (Completed during visit with River Center staff)

1. Welcome, Introduction to the River Center, overview of today's field trip, and safety/rules talk
2. Divide the students into 2 groups to rotate through 3 different activities
 - a. Lovin' the Loxahatchee River Tour – focusing on fish species, adaptations, and habitats
 - b. Sea Urchin Lab hands-on activity (See below)
 - c. Water resources discussion – Where our water comes from, how we use water, where it goes once it's down the drain, water conservation
3. Touch tank demonstration

Sea Urchin Main Lesson (Completed during visit with River Center staff)

1. Students will participate in an activity to learn how sea urchins survive in their environment, compare them to other echinoderms and aquatic species, the adaptations necessary for their survival, as well as introducing them to the scientific method.
2. Students will be divided into teams of 4 or 5, one group per table with a glass bowl of salt water and a variegated sea urchin, paper/worksheet and pencils
3. Students will be scientists making hypothesis, performing experiments, exploring, making observations, recording their findings, and sharing their findings with other teams.

Post-Visit Reflection Lesson (completed in classroom after visiting)

1. Have your students draw an ocean scene using crayons on white paper. Create a solution of 1 cup warm water, 1/3 cup of table salt, and blue food coloring. Have children use it to paint a wash over the completed drawings. The water will evaporate, leaving a blue background and sparkly salt crystals.
2. Research about a particular ecosystem that interests you during our visit at the River Center; include the hydrology, ecology, human impacts, conservation and restoration efforts being made. Present to your class and create discussions about students' presentations.

Assessment

Participation in the activity

Attachments

- Loxahatchee River Center packet