Science 5 E's Lesson Plan

Instructor: 3rd Grade Science Teacher	**Big Idea(s): Organization and Development of Living Organisms**	**Date(s):** at least two weeks

Essential Question and Learning Outcome: How Plants Grow?

- Plants grow from seeds
- Seeds sprout under the right conditions
- Parts of a seed and their functions
- Seeds germinate and become seedlings
- Gravity pulls the root from the seed down
- The stem of the plant grows toward the light
- Raise questions that can be tested by doing an investigation
- Make inferences to explain observations
- Keep records of investigations conducted

NGSSS Benchmarks:

SC.3.N.1.1 Raise questions about the natural world.
SC.3.N.1.2 Compare the observations made by different groups using the same tools, and seek reasons to explain the differences.
SC.3.N.1.3 Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.
SC.3.N.1.5 Recognize that scientists question, discuss, and check others' evidence and explanations.
SC.3.N.1.6 Infer based on observation.
SC.3.N.1.7 Explain that empirical evidence is information, such as observations or measurements, which is used to help validate explanations of natural phenomena.

Instructional Activities***
ALL 5 Es WILL NOT BE DONE IN ONE CLASS PERIOD.
However, an informal assessment must be completed at the end of each class period.

Engage: Ask: *Where do plants come from? Why would seeds be important to plants and people? Predict what would happen if seeds were not saved?*
Ask students to describe what they know about seeds already-
Begin with a K-W-L (See attached)

Opening (I do)

- Begin with a discussion about seeds being important throughout history. "Many early peoples used seeds as money, jewelry, dyes, spices, ornaments, and to barter for things they needed also for eating and planting." (Project Foods, Land and People)
- About 2,000 years ago Native North Americans introduced maize(corn), beans, squash and other plants by preparing the ground for planting and keeping the seeds of the healthiest plants to grow the following year. Once the Europeans began to settle in North America they began to trade seeds with the natives; lettuce, watermelon, onions, wheat, coffee, and bananas. Pilgrims shared new ways of planting, growing, harvesting, and storing. Travelers took the new seeds of North America with them to Europe. Then seeds became a good business. (Project Foods, Land and People)
- *Ask: How do squash plants make a new seed?*
- Show squash, ask for students to explain what they think is inside, if it is a fruit or vegetable, what are seeds, what are they used for. Ask students to explain what the squash might look like or taste like if they have tried it before
- Explain that the types of squash we eat was being grown by the Timucuan Native Americans much longer before North Floridian land was later "discovered" as America. Today it grows all over the world because of seeds
- Explain that we will be learning about the seeds of a plant and how it is important to the growth of more plants and how it was important to the Native America people the Timucua.

Explore (Investigation):
(You do) Provide each student with materials to begin growing a seed. The teacher may choose to use seeds gathered from inside the squash or bean plants or use seeds from a packet. (see materials list below) Each student will be asked to hypothesize or predict what will happen to the squash (or bean) seed. Ask, What needs to be the same in everyone's cup? What could we change for the cup to see if the plant will still grow the same way? Discuss the terms control and variables; chart them with a working definition for your class. Model how to set up a data chart. Before they start students should decide on all of the

Learning Strategies

- ☒ KWL or Anticipation Guide
- ☐ Vocabulary Strategy (Frayer Model or Concept of Definition or _____)
- ☐ Reciprocal Reading
- ☐ Other reading strategy _____
- ☐ QAR
- ☐ Graphic Organizer/Concept Map
- ☐ Cornell Notes/Two Column Notes
- ☐ Expository Writing
- ☒ Higher Order Questioning
- ☐ Think-Aloud
- ☒ Modeling
- ☐ Cooperative/Collaborative Learning Groups
- ☐ Think, Pair, Share
- ☐ _____

ESOL Strategies

- ☒ Paraphrase; simplify grammatical structure of sentences; summarize sections; highlight or underline key words
- ☐ Pronounce words clearly; explain meanings; model key or difficult words in lesson
- ☐ Teach study skills, use of textbook structure, scanning technique
- ☐ Ask students to perform simple tasks and observe their understanding
- ☐ Use manipulative materials, hands-on activities, and multimedia materials to support content
- ☐ Provide alternative instruction via computer-assisted instruction or tutoring
- ☐ Provide alternative assessment such as drawing diagrams or demonstrating

and words over *at least* 5 days or until the seeds have sprouted.
Have students create inferences or conclusions based on their observations.
How I will informally assess the Explore: The teacher will check to be sure that the student is keeping correct records of data of seed growth in their science journal. They are to write down observations and use a table or chart (see attached) to display measured growth in metric units. After seeds have sprouted have students change the position of the roots or stems in one cup to see if it effects the growth of the plant. Record observations for one week.

Explain:
Visit http://www.mbgnet.net/bioplants/main.html to teach students about how plants grow, parts of a seed and plant reproduction. Have students complete the Webquest at http://urbanext.illinois.edu/gpe/index.html. While the plants are growing for two weeks teach Unit A Chapter 1 from the Scott Foresman Science Textbook.
Lesson 1: "What are the main parts of a plant?"
Lesson 2: "Why do plants needs roots and stems?"
Lesson 4: "How do new plants grow?"
Use Gizmos from www.explorelearning.com
On the following topics: Germination, Growing Plants, Flower Pollination, and Measuring Trees
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=637
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=615
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=635
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=666

How I will informally assess the Explain: Students should be able to choose appropriate metric units for measuring length and volume, describe what plants need to grow, describe how plants respond to light and gravity, describe structures of plants, and explain why food is needed for plants to stay alive and grow. Students will also be given copies of short answer exit tickets # 1 and # 2 to complete (see additional resources)

Extend: Since seeds are very valuable seed banks were created to keep from having crop disasters. Have students research the creation of seed banks and the serious problem of corn blight that happened in 1970. Students can also be introduced to hybrid seeds and hydroponic growing.

How I will informally assess the Extend: Students can answer the following questions with a written answer, research or presentation style of their choice:
Why are seed banks needed?
What would happen if seeds of a particular plant were not kept?
How are hydroponics used for making food?
What do you feel are some positives to using food banks or hydroponics? Any possible negatives?

Evaluate (Method): Students will conduct research on the Timucuan people of Northeast Florida. The following websites can be used for research:
http://pelotes.jea.com/kidtimuc.htm
http://www.nps.gov/timu/historyculture/timucua.htm
Students will design a skit or a one act play that highlights how the Timucuan may have traded with French or Spanish explorers/settlers. Their play will have the Timucuan teaching the explorers how to plant a squash or bean seed, how to recognize the parts of the plant, and what the plant requires for growing and developing new plants. The student will be assessed using a content and participation checklist.

Vocabulary: Seed, seedling, stored food, seed coat, sprout, germinate, grow, root, gravity, light, infer, leaf, stem, flower, stimuli, hypothesis, predict, infer, conclusions, control, variable

Materials Needed: A couple of squash , 2 clear plastic cups with student name labeled per child, potting soil, soaked bean or squash seeds, metric measuring cup, paper towels, plastic bags, tape for labeling, copies of exit tickets #1 and #2 one per student, checklist for Timucuan Play

Homework: Students may bring in a seed or plant from their home and label the parts. Students may also choose to begin two seeds at home as well, observing and recording them.

ESE

- ☐ Provide accommodations per IEPs
- ☐ _____

Response to Intervention (RtI) and Florida Continuous Improvement Model (FCIM)

- ☐ Assess individual student progress daily
- ☐ Provide remediation or enrichment

Teacher's Notes/Reflections:

How Plants Grow Lesson Plan
Resources

Informational Credit:
Duval County 2010-2011 3rd Grade Learning Schedule

http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=637
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=615
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=635
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=666
http://pelotes.jea.com/kidtimuc.htm
http://www.nps.gov/timu/historyculture/timucua.htm

KWL chart: http://www.eduplace.com/graphicorganizer/pdf/kwl.pdf

Banking on Seeds, Project Food, Land & People, 1998

Student Name:
Date:

Directions:
Use your research on the Timucuan Indians to create a play showing how the Timucuan might have traded the French or Spanish settlers for seeds. Use the checklist below to for the information that needs to be included in your play.

1. Work in your group only
2. Have one person write down your script as the group is coming up with it
3. Treat everyone in the group with respect by listening to each other and making comprises
4. Take turns giving ideas
5. Everyone is responsible for making their own copy of the play to practice from
6. Create visuals to help explain the parts of the plants
7. Use what you have learned about the Indians and settlers to make it believable
8. Practice the play until every group member knows it

How Plants Grow Checklist for Timucuan Play

Play Objectives	Self Assessment: Check if completed	Teacher Comments
Explain the parts of a plant (Must use at least one visual)		
Explain the how each part of the plant is used		
Explain the needs of plant (must include 4 needs)		
Explain how a squash or bean reproduces		
Identifies how the plant gets its food		
Act out at least 3 ways that the Timucuan used seeds		
Act out a scene where a there is trade for seeds		
Explain why a person should plant more than one seed		
I worked with group members respectfully by listening and giving ideas while taking turns		
I used what I learned about the Timucuan and settlers to make the play believable		
		Total Points: Final Grade:

How Plants Grow Sample Data Sheet

Squash Plant Growth

Measurements	Date	Date	Date	Date	Date	Date	Date	Date
Stem (cm)								
Roots (cm)								
Number of Leaves								
Amount of Water (mL)								