

Lorain County Community College
Social Science Human Service Division
ECED 261 Math and Science for Young Children

Lorain County Community College

ECED 261 Math and Science for the Young Child

Science

OBSERVATION #1

Please call the director of the school you wish to visit to schedule a time that is convenient and appropriate to answer the following questions.

Make sure you dress appropriately and have all of the required paperwork.

Introductory paragraph:

When writing your introductory paragraph include the following information:

Class size

Age of the children being observed

Teacher/child ratio

Type of center (preschool, daycare, co-op, employer)

Geographical setting (suburb, urban, rural)

Write a statement about the cultural diversity or lack of.

1. Skills of observation are very important in any scientific process. Observe all areas of the classroom for ways in which a **child's interest and ability to observe** are encouraged by materials, arrangement of the classroom, examples and the teacher (minimum of three examples).
2. **Problem-solving** is an important learning process. Children often set up their own problems and work to find ways to solve them. Observe the classroom and find areas where children are posing their own problems and attempting to find solutions. Be specific.
3. Note any activities you observe in the classroom that are specific examples of **science** concept learning examples: naturalistic, informal and structured. Compare the differences in the numbers of each type observed in the classroom.

Name _____ Date _____

School/Facility _____

Time observed _____

Supervisor/teacher signature _____

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OBSERVATION #2

Please call the director of the school you wish to visit to schedule a time that is convenient and appropriate to answer the following questions.

Make sure you dress appropriately and have all of the required paperwork.

Introductory paragraph:

When writing your introductory paragraph include the following information:

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Teacher/child ratio

Type of center (preschool, daycare, co-op, employer)

Geographical setting (suburb, urban, rural)

Write a statement about the cultural diversity or lack of

1. Look for a **science table** in the classroom. What objects are available for the children to interact with? What is the theme for the science table? If the classroom does not have one indicate what materials, posters, and activities are available in the four science areas (earth, life, physical, and nutrition). Describe.
2. Below are the ECE Content Standards for **Physical Science**.

List examples of all of the materials activities and/or instruction you observe that for each indicator.

Nature of Matter Forces and Motion Nature of Energy

1. Explore and identify parts and wholes of familiar objects (e.g., books, toys, furniture).
2. Explore and compare materials that provide many different sensory experiences (e.g., sand, water, wood).
3. Sort familiar objects by one or more property (e.g., size, shape, function).
4. Demonstrate understanding of motion related words (e.g., up, down, fast, slow, rolling, jumping, backward, forward).
5. Explore ways of moving objects in different ways (e.g., pushing, pulling, kicking, rolling, throwing, dropping).
6. Explore musical instruments and objects and manipulate one's own voice to recognize the changes

in the quality of sound (e.g., talks about loud, soft, high, low, fast, slow).

Name _____ Date _____

School/Facility _____

Time observed _____

Supervisor/teacher signature _____

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OBSERVATION #3

Please call the director of the school you wish to visit to schedule a time that is convenient and appropriate to answer the following questions.

Make sure you dress appropriately and have all of the required paperwork.

Introductory paragraph:

When writing your introductory paragraph include the following information:

Class size

Age of the children being observed

Teacher/child ratio

Type of center (preschool, daycare, co-op, employer)

Geographical setting (suburb, urban, rural)

Write a statement about the cultural diversity or lack of.

1. Observe young children using each of the following **science processing skills**, describing them in detail.

Classifying

Measuring

Communicating

Inferring

Predicting

2. On this your third visit, develop and **perform a developmentally appropriate lesson plan** in science. Make sure the teacher approves the lesson and also uses the rubric to evaluate the lesson. Attach the completed rubric to this observation.

Name _____ Date _____

School/Facility _____

Time observed _____

Supervisor/teacher signature _____

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Math

OBSERVATION # 4

Please call the director of the school you wish to visit to schedule a time that is convenient and appropriate to answer the following questions. Make sure you dress appropriately and have all of the required paperwork.

Introductory paragraph:

When writing your introductory paragraph include the following information:

Class size

Age of the children being observed

Teacher/child ratio

Type of center (preschool, daycare, co-op, employer)

Geographical setting (suburb, urban, rural)

Write a statement about the cultural diversity or lack of.

For observation # 4, 5, and 6 you will be focusing on **Math assessments** and will choose 2 children to work with (preferably different ages). For observation # 4 you will answer the questions below and begin the process of deciding which children you will be assessing on future visits. Please make sure the teacher is aware of your interaction with children on visits # 5 and #6.

1. Focus on the math materials in the classroom environment. Complete the list below:

Classification	Sorting	Patterning	Shapes	Numbers

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2. List the titles and authors of children's literature that focuses on math concepts-minimum of five (5) found in the classroom.

3. Note any activities you observe in the classroom that are specific examples of math concept learning examples: naturalistic, informal and structured. Compare the differences in the numbers of each type observed in the classroom.

Name _____ Date _____

School/Facility _____

Time observed _____

Supervisor/teacher signature _____

Lorain County Community College

ECED 261 Math and Science for the Young Child

Math

OBSERVATION # 5 and 6

Please call the director of the school you wish to visit to schedule a time that is convenient and appropriate to answer the following questions. Make sure you dress appropriately and have all of the required paperwork.

Introductory paragraph:

When writing your introductory paragraph include the following information:

Class size

Age of the children being observed

Teacher/child ratio

Type of center (preschool, daycare, co-op, employer)

Geographical setting (suburb, urban, rural)

Write a statement about the cultural diversity or lack of.

1. Appendix A in your text has specific developmental math activities to do with young children. On your previous visit you were to choose 2 children to assess on this visit. Before you go on this visit you must choose the assessments, write them on index cards and obtain the materials necessary to administer two to three tasks to each child
2. Meet with each child individually. Begin by talking to the child to make them feel comfortable. **Do not tell them you are going to assess their math abilities** but that you are going to play math games.
3. Write up this experience (one page per child) detailing age of the child, what activity you did the child's responses and any suggestions you might have to aid the child. Include the copy of assessments you performed.
4. Plan follow up activities for these children for observation # 6 that relate to these assessments. If the children were able to complete the assessment successfully plan math activities to progress to the next higher level. If they had difficulty completing the math tasks plan an activity to help them achieve success.

Name _____ Date _____

School/Facility _____

Time observed _____

Supervisor/teacher signature _____

Science Lab # 1

Life Science

Materials you will need:

- Seeds
- Water
- Sun Light
- Potting Soil
- Dark Cupboard
- Two small flower pots

Steps:

1. Take the two flower pots and fill them with the potting soil - leaving about an inch from the top of the pots unfilled.
2. Make a hole in the center of the potting soil with your thumb (this is where you will place the seeds) in both pots.
3. Drop a few seeds in the hole in each pot and cover the hole with the soil.
4. Water one of the flower pots with some water (careful not to over water) and place this flower pot in a warm sunny spot.
5. Do not water the second flower pot and place it in a cool dark cupboard.
6. Leave the flower pots for a few days and watch to see what happens to both pots.

Viewing Growth

Materials needed:

Paper towels
Lima beans
Sponges
Zip lock bags
tape

1. Place grass seeds on a damp sponge. Keep the sponge damp. Grass will grow on the sponge.
2. Wet paper towels and place lima beans on the towel. Place it in the zip lock bag and seal it. Tape the bag to the window or put in a sunny spot.

Color Changes

Materials needed:

White carnation with stem

Food coloring

Water

Container

Fill the container with water and a few drops of food coloring. Place the carnation in the water. Let it sit for a couple of days and see what happens.

The carnation turns the color of the food coloring because it is absorbing the water (drinking). Living things need water to survive.

Lab # 2

Earth/Space

Constellation Box

Materials you will need:

Lid of a shoe box
Flashlight
Map of constellation

Using a dull pencil punch holes in the lid in the form of a constellation. In a dark room shine the flashlight through the lid unto the ceiling.

Volcano

Materials needed:

¼ cup dawn
¼ cup baking soda

½ cup vinegar
Red food coloring
Tray for spills
Empty can or cup
Dirt/clay

Place juice can or cup on a tray surrounded by dirt to form a mountain. Make sure to leave an opening at the top. Pour ½ cup of the baking soda in the can/cup. Mix the vinegar Dawn and food coloring in a separate bowl. Pour 1/2 of the vinegar mixture into the juice can. Watch as it “erupts”.

Lab # 3

Physical

Pulling and Pushing

Materials you will need:

- Water
- A Bowl
- Two Needle-Magnets
- Small Pieces of Paper or Flat Pieces of Cork

Magnets behave in surprising ways when you put them together. To see how magnets react together; rest two needle-magnets (see Make Needle-Magnets Experiment) on small pieces of paper in a bowl of water. Watch how they pull and push.

Steps:

- 1. Place each needle on a piece of paper and float them side by side (with one point and one eye next to each other. What happened to the needles?**
- 2. Next, place the needles so that both eyes are side by side. What happened this time?**

Magnets have two ends (or poles). If you put the poles of two magnets together, they will either pull together or push apart. Magnets will pull (attract) each other if the poles are different. This invisible pull is called a magnetic force. Magnets will push (repel) each other if the poles are the same. This magnetic force pulls against you.

Float or Sink Experiment

Which water will the egg float in?

Materials you will need:

- Table Salt
- Two Bowls
- A Tablespoon
- Warm Tap Water
- Two Eggs

Steps:

1. Fill both bowls with warm tap water.
2. Add a few tablespoons of salt to one of the bowls of water and stir it really well, until the salt has dissolved in the water.
3. Carefully place an egg in each bowl.
4. One egg will float and the other will sink.

Which egg floats? _____. Do you know why?

The salt water is heavier than the plain tap water, so the weight of the egg does not have to push away as much water to make space for itself and therefore it floats.

Exploding (Magic) Milk

Materials needed:

Vitamin D milk
Food coloring
Dawn liquid soap
Eye dropper
Pie tin

Fill the pie tin ½ full with milk. Use the food coloring to drop colors all around the milk. The more colors you use the more the milk will explode (move). Squeeze a few drops of Dawn liquid on the milk. The Dawn soap is a degreaser and the whole milk has fat particles in it.

Dancing Kernels/Raisins

Materials needed:

Two clear containers with lids
Raw popcorn kernels or raisins
Water
7-up

Fill one container with soda and the other one with water. Drop kernels or raisins in each container. Watch what happens.

Have children predict what will happen.

Run-away Pepper

Materials needed:

Black pepper

Liquid soap

Water

Bowl

Fill the container with some water. Sprinkle black pepper on top of the water. Drop one drop of liquid soap in the center of the bowl. The reaction is quick so watch as you drop in the soap.

Lab # 4

Nutrition

Fruity Pastry Pizzas

Preparation Time: **10 minutes**

Total Time: **15 minutes**

Servings: **4**

Ingredients

2 ounces reduced-fat cream cheese, softened

1 tablespoon sugar

1/8 teaspoon vanilla

4 Kellogg's® Pop-Tarts® Frosted Blueberry Muffin

1 cup cut-up assorted cut-up fresh fruits

2 tablespoons apple jelly or red currant jelly, melted

Directions

1. In small bowl stir together cream cheese, sugar and vanilla. Spread on tops of KELLOGG'S POP TARTS BLUEBERRY MUFFIN toaster pastries.

2. Arrange fruit pieces on top of toaster pastries. Drizzle with jelly. Let stand for 5 minutes.

Cheddar-Ranch Snack Mix

Preparation Time: **10 minutes**

Total Time: **10 minutes**

Servings: **18**

Ingredients

5 cups Crackers *Sunshine*[®] *Cheez-It*[®] White Cheddar

2 cups *Crispix*[®]

2 cups small pretzel twists

3 tablespoons vegetable oil

1 package (1 oz.) dry ranch dip mix

1/2 teaspoon lemon and herb seasoning

1/4 teaspoon garlic powder

1/4 teaspoon dill weed

Directions

1. In large microwave safe bowl combine SUNSHINE CHEEZ-IT WHITE CHEDDAR crackers, KELLOGG'S CRISPIX cereal and pretzels. Set aside.

2. Stir together remaining ingredients. Drizzle over cereal mixture. Stir until evenly coated.

3. Microwave at high for 4 minute, stirring every minute. Spread on paper towels. Cool completely. Store in airtight container.

Bugs on a Log

Make "logs" from any of these foods:

- celery stalks (cut to about 3 inches long)
- apples (cut in halves or quarters with cores removed)
- carrot sticks (cut to about 3 inches long)

Top the logs with a spread:

- cream cheese and pineapple
- cheese and pimento
- peanut butter
- egg salad

Sprinkle "bugs" on the spread:

- raisins

- **unsweetened cereal**
- **sunflower seeds**
- **golden raisins**
- **chopped peanuts**

Honey Milk Balls

1/2 cup honey or corn syrup
1 cup dry milk solids (powdered milk)
1/2 cup peanut butter
1/2 cup raisins

Combine all ingredients in a bowl. Mix well; then knead by hand until blended. Shape into small balls. Makes two dozen balls.

WARNING: Do not use honey in beverages and uncooked foods for infants under the age of one year. Honey may contain botulism toxins.

Jello

3 envelopes unflavored gelatin
3/4 cup boiling water
1 12-oz. can frozen apple, orange, grape, or other juice concentrate

Dissolve gelatin in boiling water. Add juice and stir until mixed. Pour into a lightly greased 9 x 13 inch cake pan. Chill in the refrigerator about 2 hours until firm. Cut into squares or use cookie cutters to make shapes. Store in an airtight container in the refrigerator.

Crunchy Bananas:

Put some pizzazz into your 'nanners by peeling and cutting them in half, dipping them in orange juice then rolling them in a baking pan filled with crushed cornflakes or another whole-grain cereal. The kids will love to participate in this project

These Little Piggies: For a bit of protein in a fun little package, spread low-fat, plain cream cheese onto a lean deli meat, like turkey, and roll up. You can put green peppers, carrot sticks or pickles in the middle as well for some added flavor and crunch. Cut them into 1-inch pieces-- and the kids will love picking them up with toothpicks to eat.