

Inquiry Lesson
Kindergarten
Living and Non Living

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This inquiry is written with the intention of being the first inquiry of the school year for kindergarteners who are new to the inquiry method. The inquiry can be conducted in small groups or whole group.

Topic: Living and Nonliving

Standard: K.2 Many different kinds of living things inhabit the Earth.

GLE:

1. Things in our environment can be classified based on whether they are alive, were once alive, or whether they were never alive.
2. Growth is an observable characteristic common to living things.

A INQ.

1. make observations and ask questions about objects, organisms, and the environment
3. make predictions on observed patterns
6. present information in words and drawings
9. Count order and sort objects by their properties

Process Skill: observing

Expected Performance: A.6 Describe the characteristics that distinguish living from nonliving things.

Summative Performance Assessment: distinguishing living, non living, & once living characteristics, applying them to every day objects in the world around them.

The summative assessment is to give the students the opportunity to reach level 6 of the Indicator of Science Content Ideas, as charted in phase 2 of this inquiry.













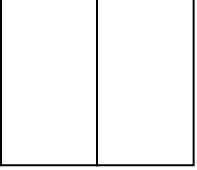
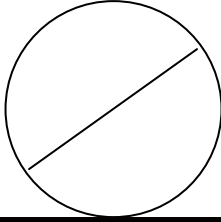








Summative Assessment Choices:

1. Act something out: in small group, one student acts out being a living object, another student acts out being non living object, a third student acts out being a once was living object; each student describes why he/she are living, non living, once living through the use of the descriptive characteristics
2. Draw pictures: paper divided in 2, one side living, other side non living, labeling pictures with characteristics, students can explain their understanding to the teacher who will write the students words down
3. Make a book: one book being living, the other non living, labeling the pictures' characteristics, students can explain their understanding to the teacher who will write the students words down
4. Collage: creating collage from nature walk and/or magazines, labeling pictures with characteristics, students can explain their understanding to the teacher who will write the students words down

Pre-Assessment:

- Work in a whole group, using four chart papers, (each with a heading of living, non living, once living, or undecided), a bag of pictures of living/non living/once living items, tape, and marker.
- students use the observing form below for recording their responses to the items they are observing
- Students are invited to select a picture out of the bag and place it on the chart paper that represents the picture.
- The teacher asks the students to comment on why they placed the picture on that chart paper with the specific heading.
- The teacher asks the class to give a thumbs up if they agree and a thumbs down if they disagree with the students' choice of placement of the picture on the specific chart paper.
- Continue with each student having a turn.
- The teacher is to record each student's verbal and picture placement response.
- Allow students to place his/her picture on the undecided chart if he/she does not know where to place his/her picture.
- Go back to these charts after each of the living, non living, and once living portions of the phase 2 inquiry investigation, allowing students to move his/her picture, and explain why he/she moved it.

Observing

		<p>How are things the same? How are things different?</p>	
		<p>Did you use:</p> <div style="display: flex; justify-content: center; gap: 10px;">      </div> <p>to explore the objects or materials?</p>	
		<p>Use your best words to describe the differences you see:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   </div> <div style="text-align: center;">   </div> <div style="text-align: center;">    </div> </div> <p>What can you do with it?</p>	
		<p>How are the objects the same?</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	
		<p>Used</p> <div style="display: flex; justify-content: center; gap: 10px;">      & </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 10px;">  or  </div>	
		<p>What details  are important to</p>	

		help solve the problem?	
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Embedded Questioning Formative Assessment:

What is it about that picture that makes you think it is _____ (living, non living, once living)?

How are these two the same/different?

Are there any thoughts about _____.

Process Skills Assessment Checklist:

Questions we want the students to ask.

- What is a living thing?
- What is a non living?
- why is it alive?
- why is it once was living?
- why is it not living?
- what makes it once living?
- what makes it living?
- what makes it not living?
- does it grow? (moves, taller, longer, wider...)
- Does it need food?
- Does it need water?
- Does it need air?
- Will it move?
- How does it move? (grows, taller, longer, wider....)

Phase I Inquiry Starter

Living, Non living,
Describing Different Objects

Materials: living: bugs/insects (of some kind), seeds (beans, peas, radishes), onion, potato, fish (class pet), plants (flowering, non flowering)

Non living: stone, lego, marble, top, doll, stuffed animal, toy car, watch

Magnifying glasses, pencils, science journals (or a recording page to be added to their science journals)

Enough Stations for the number of groups: each group has a bucket of objects of an equal number of living, non living, and objects; magnifying glasses, science journals, pencils

-Students observe the objects with the magnifying glass and draw what you see in their science journals

-each students brings one object back to the whole group meeting area

Formative Assessment:

-Each student has a turn to state one thing they observed about his/her object

-The teacher records the stated observings/noticings under the I Notice & I Wonder headings on the chart paper.

-The teacher may ask, Did anyone else notice something the same/different about their object?

Embedded Questioning Formative Assessment:

Did anyone notice something the same/different about their object?

What do you think is the same about _____?

What is different about _____?

How are they the same?

How are they different?

Changing the noticings and wonderings into investigable questions:

The teacher takes the noticing and wondering statements sorting them in to living, non living, once living categories. This can be done without the students. The teacher takes the noticing and wondering statements and changes them into investigable questions. This can be modeled for the students. The general questions to be created are: How do you think a living thing grows? How do you think a non living thing grows? How do you think a once living thing grows? Or Why do you think some things are non living?

Phase 2 Focused Investigation

-there will be two small investigations to address each of the categories living, non living.

-the students will be led to compare the information from one investigation to another to help them with their understanding of the concepts being addressed and to get to the understanding of once living.

-teacher will model each investigation for each of the categories: living, non living. The students will later conduct their own investigation comparing their investigation to that of the teacher's investigation for planning purposes.

Living Things focused investigation:

- Post and review the investigable question, "How do you think a living thing grows?"
- explain where the investigable question came from.

Thinking Tool: teacher models the investigation.

- The teacher states aloud, "I am going to do an investigation to explore How do I think living things grow?"
 - the teacher models planning and writing an investigation
 - The teacher sets up the investigation, by placing a worm in a clear container with soil, water, and small piece of lettuce, while verbalizing the thinking process.
 - The teacher models drawing & labeling the set-up in a science journal.
 - the teacher introduces the material available for the students investigation: clear containers, dirt, plastic bags, paper towels, water, seeds(pea, bean, radish, wheat-from health food store,), potato, onion, permanent marker, tape- all the items are organized and labeled
 - The students draw a plan for their investigation based on the investigable question and the teacher's model.
- The plan in general might be: The students are to select one of the seeds provided and plant it in a clear container with dirt and water, or in a plastic bag with a paper towel & some water.

- If the students are not working in small groups, the teacher guides the students in writing the class plan on the easel.

Formative Assessment:

Small Group-The teacher observes the students drawing and labeling their plans. The teacher may ask clarifying questions to help the students complete their plans.

Whole Group- The teacher observes students involvement with the teacher in writing the plan at the easel.

- students set up their investigations according to their plan.
- students draw & label their setup in their science journal
- students look at and state what they see and think, asking themselves & answering, "How do I know a living thing grows?"

Formative Assessment:

- the teacher records/teasing out the vocabulary for living things through their noticing and wonderings on the class noticing and wondering charts

Vocabulary to be addressed:

Living, breathing, air, eating, food, drinking, water, moving, growing,

Questions to be used to predict what evidence is going to be collected:

What does the worm/seed breathe?

How does the worm/seed breathe?

What is the plant/seeds food?

How does a plant/seed move?

How does a plant/seed drink?

How do I know a living thing is growing?

A few days later...

-The teacher models asking herself questions, recording/drawing her observations in her science journal, following the process skills questions for observing:

What do you notice is the same about the seeds?

What differences do you see now?

What do you see when you look at the seeds with the magnifying glass?

How are they the same?

How are they different?

-students return to their investigations observe and record in their journals

-have students bring in items from home (can even be a picture) to use for sorting into and explaining why it is living

-take students on a nature walk and record their findings of living things (these last two activities are to be done after the non living inquiry also)

Formative Assessment:

-students go in their small groups to observe and record their own observations of their investigations in their science journals

-teacher circulates and facilitates the above questions

Non Living Things focused investigation:

-post the investigable question, "What would happen if we planted another object?"

Materials: lego, block, pebble, soil, paintbrush, plastic bag, magnifying glass, water, clear plastic container, permanent marker, tape

Student makes the same plan as la

Thinking Tool: teacher models the investigation

-The teacher thinks aloud while setting up the investigation and recording in the science journal.

-Then set up the investigation, by placing a block in a clear container with soil, water, and small piece of lettuce,

-the teacher presents the different materials available for the investigation: clear containers, plastic bags, dirt, water, permanent pen, tape, blocks and other small non living items .

Small Groups- Students work in groups to draw and complete a plan. The teacher observes the students working in small groups and assists them in completing a plan. The plan needs to be the same as their living investigation but with a non-living object.

-students draw & label their investigation setup in their science journals

-encourage students to verbalize their thinking

-students set up their own investigations according to their plans. A few days later...

-The teacher models asking herself questions, recording/drawing her observations in her science journal, following the process skills questions for observing:

What do you notice is the same about the objects?

What differences do you see now?

What do you see when you look at the objects with the magnifying glass?

How are they the same?

How are they different?

Formative Assessment:

-students go in their small groups to observe and record their own observations of their investigations in their science journals

-teacher circulates and facilitates the above questions

Vocabulary to be addressed:

Non Living, breathing, air, eating, food, drinking, water, moving, growing,

Questions to tease out Formative Assessment:

How has _____ changed?

What is the same about your object today as compared to when you first planted it?

What is different about your object today as compared to when you first planted it?

Once Living Things-Guided Discussion

Whole Group discussion

Focus on comparing the characteristics between living and non living to form the third group, once living.

-Teacher facilitates the discussion, using two circles/hoops to be moved into a venn diagram. One hoop is labeled living and one is labeled non living.

-Review the the living and non living characteristic charts created by the whole class.

Have the vocabulary from the charts also on cards.

-With the students move the vocabulary for living into one hoop and the vocabulary for non living to the other hoop.

-next use the living and non living items from the inquiry starter
Once was living: skull, bone, stick, seedless grapes, crab shell,
drift wood, leaves, tooth pick, paper

Formative assessment:

Next, using the living and non living items from the inquiry starter have each child, one at a time, select one item and place the item in the proper hoop, explaining why they have placed the item in that hoop. If another student helps the student with the choice of hoop or the explanation, consider that also to be an assessment of both the students understanding.

Questions

What does the worm/seed breathe?

How does the worm/seed breathe?

What is the plant/seeds food?

How does a plant/seed move?

How does a plant/seed drink?

How do I know living thing is growing?

How has ____ changed?

Vocabulary: Non Living, breathing, air, eating, food, drinking, water, moving, growing,

Phase 3 Sharing Understandings-what they learned, comparing the living, non living, once living investigation

- Teacher models sharing out.
- Formative Assessment:
- Students practice sharing out in their small groups.
- Whole group meets and the small groups take turns sharing out to the whole group. The small groups can use the manipulative of choice, ie: investigative materials, journals, or venn diagram hoola hoops.

Synthesis: drawing upon the characteristics from the charts and the students' work, the teacher will synthesize the information to address the GLE's

1. Things in our environment can be classified based on whether they are alive, were once alive, or whether they were never alive.
2. Growth is an observable characteristic common to living things.

For use throughout the Inquiry:

Indicator of Content Ideas-

Generic indicators: when giving an explanation or making a prediction, do the students	Specific indicators: when giving an explanation or making prediction did the students:
1. Do no more than describe the situation, rather than explain it.	1. Name objects provided
2. Use their own preconceived ideas, rather than scientific ones	2. Sort provided objects by preconceived ideas, such as moving, growing, eating,
3. Refer to relevant ideas without showing how they apply	3. Sort provided objects by characteristics living, non living, once living, only
4. Apply the relevant ideas in situations different from those encountered before	4. Sort only provided items only items we already provided in our selection of items
5. Apply the relevant ideas in situations different from those encountered before	5. Sort different objects, not included in the objects we provided before
6. Bring several relevant ideas together to give a reasoned explanation or prediction?	6. To generalize the understanding of characteristics and explanation to everyday items

Next Steps

1. literature investigation using any book with pictures for students to observe and identify as living, non living, once living

Sample book list:

Diary of a Fly Doreen Cronin - A young fly discovers that there is a lot to learn about being an insect including the dangers of flyswatters and that heros come in all sizes and shapes.

The Tiny Seed Eric Carle - A simple description of a flowering plant's life cycle through the seasons...

The Very Hungry Caterpillar Eric Carle - A sequence book that relates all the things that a caterpillar eats to become a butterfly.

Flotsam David Wiesner - A picture book that features a young science minded boy who goes to the beach to collect and examine anything that has been washed ashore. He discovers an underwater camera that contains a collection of pictures.

Caps for Sale Esphyr Slobodkina - The tale of a peddler, some monkeys and their monkey business.

First the Egg Laura Vaccaro Seeger - Die-cut pages show the transformations of various animals and objects such as a seed to a flower, caterpillar to a butterfly etc.

Commotion in the Ocean Giles Andreae - A collection of poems about the many creatures beneath the sea, including the crab, dolphin and angel fish.

Flicker-Flash Jean Balford Graham - A collection celebrating light in it's various forms, from candles and lamps to lightning and fireflies.

Least Things Jane Yolen - Photographs and Haiku about small creatures in nature, such as the spider, snail, hummingbird, grasshopper, and crab.

My Five Senses Aliki - Very simple presentation of how we use our 5 senses.

Stop, Look & Listen Sarah Williamson - An activity book for teachers to use.

A Boy, a Dog and a Frog Mercer Meyer - Wordless picture book about a boy and his dog who go fishing and what happens.