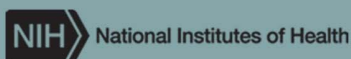


# How We Grow



The Partnership in Education

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# How We Grow

# Lesson Plan

Grades 3-4

Day 1 – Time 40 minutes

## Overview

For the first day the students will look for evidence that growth is occurring in living organisms. They will use a group of pictures of an animal at different stages of life to find evidence of changes that occur throughout life. These features include body size, behaviors, type of food, type of habitat, and mental abilities.

## Standards – (PA Standards and NGSS)

- \* S3.B.1.1.3: Describe the basic needs of plants and animals and their dependence on light, food, air, water, and shelter.
- \*S3.B.2.1.2: Identify and describe plant and animal characteristics that are necessary for survival.
- \*S4.B.1.1.1: Identify life processes of living things (e.g., growth, digestion, respiration).
- \*S4.B.1.1.2: Compare similar functions of external characteristics of organisms (e.g., anatomical characteristics: appendages, type of covering, body segments).
- \*S4.B.2.1.2: Explain how specific adaptations can help a living organism survive (e.g., protective coloration, mimicry, leaf sizes and shapes, ability to catch or retain water).
- \*S5.B.2.1.3: Explain how certain behaviors help organisms survive and reproduce in different environments.
- \*S5.B.2.1.4: Identify changes in environmental conditions that can affect the survival of populations and entire species.
- \*4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- \*4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

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### Learning Objectives

- \*Students will be able to identify features that change as a result of growth occurring in living things.
- \*Students will be able to differentiate between the terms growth and development.
- \*Students will be able to infer from the evidence gathered that all living things grow and develop.

### Materials

\*Packet of pictures of an animal at different stages of life. Packet should contain the pictures 1 to 6. (Pictures are included at the end of this lesson plan)

\*Two pictures of each student; which should be collected by the teacher prior to this lesson. One photograph should be of when the student was 1 year old, and the other at 7 years old.

\*Whiteboard and markers

\*Construction paper or big sticky note paper

\*Colored pens

\*Tape

\*Two bowls for anticipatory set

### Preparations

1. Before the lesson, the teacher should ask all the students to bring in two photographs of themselves. One should be of when they were 1 year old and the other at 7 years old.

2. The teacher should put all the 1 year old photos in a bowl and the 7 year old photos in a second bowl.

3. Prepare packets containing the following.

- \* Pictures 1 through 6 of the animals (provided at the end of this lesson plan).
- \* A piece of construction paper or a big sticky note.
- \*Several colored markers.
- \*Each group, for the main activity, should get one packet each.

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### Anticipatory Set – 9 minutes

1. Ask each student to pick one photo from each bowl. The students should be instructed to choose a picture without looking into the bowl.
2. Students should be instructed not to share the pictures with anyone else.
3. Each student will have to guess who each picture belongs to.
4. Once the students have guessed the owners of photographs, engage them in a discussion about which photograph was easier to identify and why. Examples of the questions are given below.
  - a. Which photograph was easier to identify?
  - b. Why do think it was harder to identify the similarities between the baby photo and the student now?
  - c. What are some changes you noticed between the pictures?
  - d. What physical processes took place for these changes to occur?

**The students should arrive at the idea that growth caused these changes.**

### Instructional Procedures– 25 minutes

1. Group the students. Each group should have between 3 to 5 students each.
2. Pass out the packets containing the seven pictures, construction paper, and markers to each group.
3. Instruct the students to put the pictures in order. Each picture will have a number on it.
4. Explain to the students that they must write down the features that are different from picture to picture. Ask them to use the construction paper to write on. Instruct them to write using a big font as the papers will be displayed in the classroom later.
5. As the students are conducting this activity, the teacher should walk around the classroom prompting students with questions. Some examples of questions are
  - a. Look at their surroundings, is it different?
  - b. What are they eating?
  - c. Look at the size of the body, is it different?
  - d. Are they by themselves, or in groups?
  - e. What do you think is happening in this picture?
  - f. Look at its coloration, is it the same in all pictures or is it changing?
  - g. Do any new features appear or do some disappear?

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6. Once the students have compiled their lists, get the students to choose two speakers for each group. Put up the construction paper the students wrote on using tape.
7. The speakers of the group will have to share with the class the features they found to be different amongst the pictures.
8. As the students are explaining, the teacher will be writing the common features that come up on the whiteboard. Examples include; change in body size, change in type of food, change in behavior etc.
9. Once the students have finished sharing the teacher should pose the following question to the students. "Look at the list we have compiled on the whiteboard, do all these changes take place throughout the deer's life or will it stop after a certain age? The discussion should arrive at the conclusion that **some features such as growing bigger and bigger will stop after the deer reaches its prime age but mental development will continue throughout life.**



# Lesson Plan

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## How We Grow



# Lesson Plan

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How We  
Grow



# How We Grow

# Lesson Plan

## Grades 3-4

Day 2 - 40 minutes

### Overview

All living things undergo growth and development. Growth is the enlargement of a part of the body. For example, the liver will grow larger and larger, by increasing the number of cells. As the number of cells increase, the cells specialize to carry out different functions all within the liver. Thus, the liver cells are developing. Once an organism has reached its prime age, it stops growing, but will continue to develop. During this lesson students will learn to distinguish between the terms growth and development.

### Learning Objectives

- Students will be able to define the words “growth” and “development.”
- Students will be able to distinguish the difference between the terms growth and development.
- Students will be able to identify the 2 features in a living organism that grows and 2 features in a living organism that develops.

### Materials

- What Do You Think worksheet. (One for each student)
- Dictionaries or access to a virtual dictionary.
- The video How We Grow.
- A method of showing the video. (i.e. using a projector and screen or a TV)
- The Viewing Guide for How We Grow. (One for each student)

### Preparations

1. The video should be set up.

### Anticipatory Set -7 Minutes

1. Remind the students the main points learned during the previous lesson.

**Growth causes changes in physical, mental, and social characteristics of organisms.**

2. Pass out the What Do you Think worksheet to each of the students.



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3. Give them 3 minutes to complete the worksheet. Instruct the students that they are allowed to use the dictionaries to find the meaning of the words growth and development. Also remind them to use their knowledge from the previous lesson.
4. Once they have completed the worksheet, allow one minute for the students to discuss their answers with a partner. Then allocate another 2 minutes to discuss the answers with another pair of students.
5. Hold a class discussion about the answers to the worksheet. The teacher should write down the various explanations provided by the students on the whiteboard.

\*\*These points will be used for the closure of this lesson.

### Instructional Procedures – 30 minutes

1. Have the students watch the video How We Grow.
2. As the students are watching the video have them answer the Viewing Guide for the video.
3. Once the video has finished have the students look at their What Do You Think worksheet. Allow them to make changes on their sheets using the knowledge they gained from the video.
4. In groups of four, have the students discuss their changes, and the reasons for making these changes.
5. Hold a classroom discussion about what changes were made on the student's worksheet. Refer to the points written on the whiteboard from the anticipatory set when the students are explaining any changes. Use examples from the video to define the words growth and development.

### Closure- 3 Minutes

1. Ask the students the following question "do you think the environment affects the growth and development of living organisms?"
2. Instruct them to write down a paragraph explaining their answer to this question for homework. Remind the students to use all examples from the previous lesson or the video to write their paragraph.

# How We Grow

## What Do You Think? Worksheet

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Instructions:

- 1). Write down what you think the meaning of the word growth.
- 2). In a living organism, state two features that grow.

**Meaning of the word**


**Two examples from living things that grow.**

1)

2)

### Instructions:

- 1). Write down what you think the meaning of the word development.
- 2). In a living organism, state two features that develops.

**Meaning of the word**


**Two examples from living things that develop.**

1)

2)

# How We Grow

# Lesson Plan

## Grades 3-4

Day Three – Time 40 Minutes

### Overview

The environment has a great effect on the way living things grow and develop. For example, competing for food directly affects the growth and the survival rates of a living organism. In this lesson, students will be introduced into the idea that all living things face environmental stresses; such as the competition for food, that have an effect on growth and development.

### Objectives

- Students will be able to justify the environment has an effect on the growth of a living thing.
- Students will be able to infer the effect of the environment on living things from the main activity of the lesson.

### Materials

- Whiteboard
- Packets for each student group. The packet should contain the following items.
  - \*3 cutouts of the same animal (included in the lesson plan).
  - \* 3 Paperclips.
- A bowl containing the “food blocks” (included in this lesson plan).
- A roll of visible tape.

### Preparations

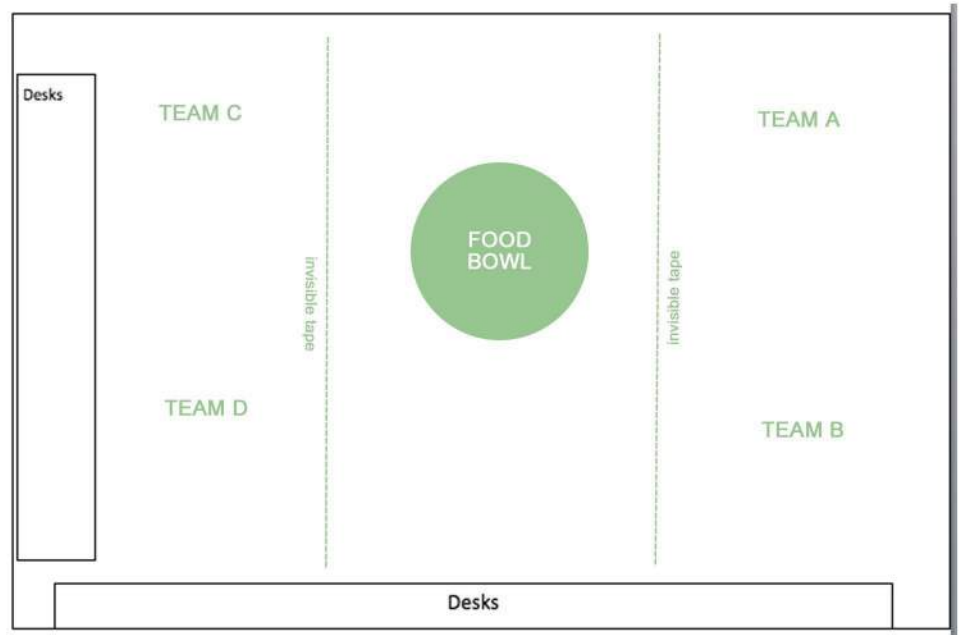
1. Prepare the packets for each group. Each packet should have three cutouts of Animal 1, 2, and 3. It should also have three paperclips.
2. One bowl containing food blocks (included in this lesson plan) for the game.
  - The total number of food blocks for each team is 117 blocks. The food bowl should contain enough food blocks for all teams but with 50 blocks less.
  - For example, if your class has five groups, then the food bowl should have 535 blocks of food. This way the groups will experience the environmental stress of competition.

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3. Set up the classroom according to the following chart. Create a large space in the classroom for the main activity to take place. Place the food bowl at one end of the classroom and paste the visible tape, in a line, about three quarters away from the food bowl. (Refer the chart given below on how to set up the classroom).



**\* Students will be moving around in this space, therefore make sure all classroom equipment have been moved to prevent any accidents.**

### Anticipatory Set

1. Remind the students about what they have learned so far.
  - All living things grow and develop.
  - Growth is the enlargement of an organism while development is the specialization of cells.
2. Ask the students to present their answers for the homework question from the previous day; "do you think the environment has an effect on the growth and development of an organism?"
3. The teacher should prompt the students to give an example during their presentation.

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### Instructional Procedures

1. Group the students in groups of six or more.
2. Set up the classroom according to the plan given in this lesson plan.
3. Have each group line up one behind the other, behind the line on the floor made using visible tape. The students should be facing the food bowl.
4. Give the leader of each group, one packet containing three cutout animals and three paperclips.
5. The teacher should give the following instructions to the groups.
  - a. The leader of the group should takeout Animal 1 from the packet with a paperclip.
  - b. On the teachers mark, the leader must pass Animal 1 down the line to the last member.
  - c. The last member will run with Animal 1 to the food bowl and clip on 5 food blocks from the food bowl.
  - d. He/she will run back to the front of the line. Animal 1 is passed down again and the last member will run and collect 5 more food blocks.
  - e. This is repeated once more.
  - f. When Animal 1 has 15 blocks of food, the 1st person in line will switch Animal 1 for Animal 2 and pass it down the line to the last member who will run to the food bowl for 10 blocks of food.
  - g. This is repeated two more times.
  - h. Once Animal 2 has 30 blocks of food, it will be switched for Animal 3. The activity is repeated but for Animal 3 12 blocks of food must be collected each time.
  - i. This is repeated five more times.
  - j. The teacher should inform the students they must do it fast because the food will run out.
  - k. The first team to finish with all the food blocks wins the game or the game continues until all the food blocks run out.
6. Once the activity is complete, pass out the Lets Think About It handout. Instruct the students to answer the questions about the game by themselves.

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7. Then ask them to discuss the answers with their group members.
8. As a class, discuss the answers to the questions.
9. The teacher should direct the class towards the idea that **organisms keep growing and developing even after birth. Growth and development is affected by many environmental factors such as competition for food. The teacher can refer back to the video shown on day two for examples of this phenomenon.**

# How We Grow

## Let's Think About It

1. Was your team able to complete all three rounds? Explain why you did not or why the other team did not and yours did.
2. Which animal cutout 1,2, or 3 has the most damage to it? Explain why you think that is.
3. Now imagine the cutouts represent various ages of the same animal and you and your group members were the environmental effects on that animal. Explain in terms of growth the answer to the first question.
4. Do you think organisms can live forever? Explain your answer.

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## How We Grow

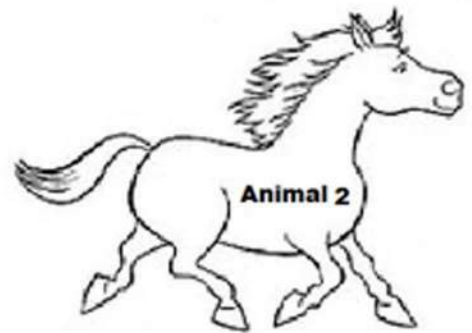
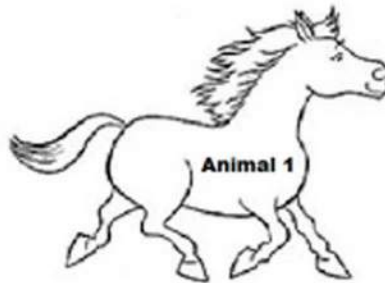
### Extension

For more advance students, day three lesson can be extended for them to learn about the importance of reproduction, the two types of reproduction, and the advantages and disadvantages of both.

### Evaluation

Have the students imagine they are biologists who are trying to explain to the layman the difference between growth and development. Ask them to write a letter to the newspaper describing the differences and similarities. Inform the students they can use credible outside sources; such as encyclopedias, to write their letter.

### Pictures of the main activity

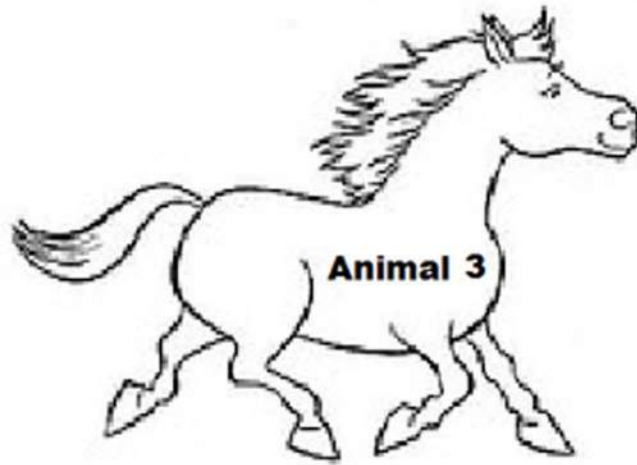




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## How We Grow



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