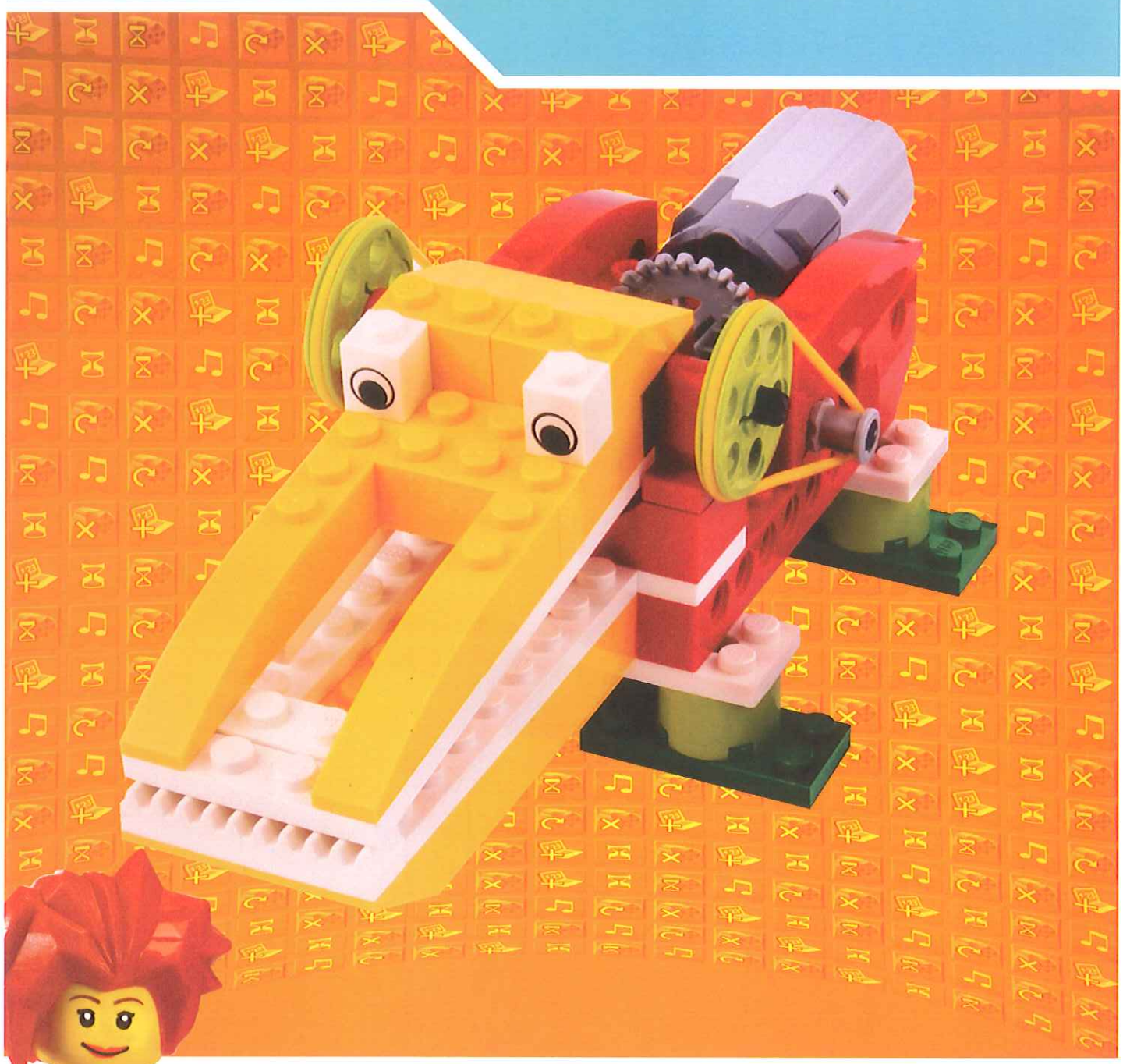


Hungry Alligator: Science

Lesson At-A-Glance

Lesson Overview

The students will gather information about cold-blooded animals and how they interact with the environment in which they live. They will act as a zookeeper and set up a habitat suitable for an alligator or another cold-blooded animal. The students will also use the **We**Do™ software to create an interactive zoo display, illustrating three facts about what this cold-blooded animal needs. They will use LEGO® elements to alter the Hungry Alligator model or create objects for a cold-blooded animal's habitat.

Learning Outcomes

- Demonstrate an understanding of the characteristics of cold-blooded animal behavior and needs.
- Demonstrate the behavior patterns of cold-blooded animals related to factors in the environment in which they live.
- Highlight some of the positive or negative ways humans can affect cold-blooded animals.

LEGO® Education WeDo™ Materials

- Completed Hungry Alligator model
- "At the Zoo" worksheet
- Hungry Alligator Science Rubric
- "Hungry Alligator Elements Inventory" tracking sheet
- "My Program" tracking sheet
- LEGO Education **We**Do Software

Cross-Curricular Connections

- Visual Arts
- Literacy
- Social Studies
- Dramatic Arts
- Mathematics

Suggested Other Materials

- Print and online resources about hot- and cold-blooded animals
- Poster paper
- Markers
- Colored pencils, crayons
- Blank 8-1/2" x 11" paper
- Pencils

Suggested LEGO Elements

- LEGO Education **We**Do Construction Set 979580
- LEGO Sceneries Set 779385 (optional)
- Assorted LEGO bricks (optional)

Suggested Programming Blocks Used

- Start On Key Press
- Start
- Display
- Text input
- Play Sound
- Display Background
- Motor Power
- Motor On For
- Motor This Way
- Motor That Way
- Repeat
- Any Tilt input

Estimated Completion Time

(2.75 hours + Extension)

- Part 1: 30 minutes
- Part 2: 45 minutes
- Part 3: 60 minutes
- Part 4: 30 minutes

Student Organization

- Part 1: Small Groups, Class
- Part 2: Class, Partners,
- Part 3: Partners, Individual
- Part 4: Partners, Individual

Assessment Suggestions

- Completed "At the Zoo" worksheet
- Zookeeper presentation and program
- Reflective journal entry

Vocabulary

- habitat
- feature
- zookeeper
- healthy
- happy
- environment
- temperature
- shelter
- display
- diet

Connect (Part 1 – 30 minutes)

Divide the class into groups of three to four students. Provide each group with a sheet of poster paper and markers and show them how to create a T-chart on the poster paper. Students should write "Happy" at the top of one column and "Healthy" at the top of the other column.

Prompt the groups using the Guiding Questions below and give students five to 10 minutes to write their ideas about what it means to be happy and healthy in each column. Examples might include having a loving family, good friends, food to eat, and a safe place to live.

Guiding Questions:

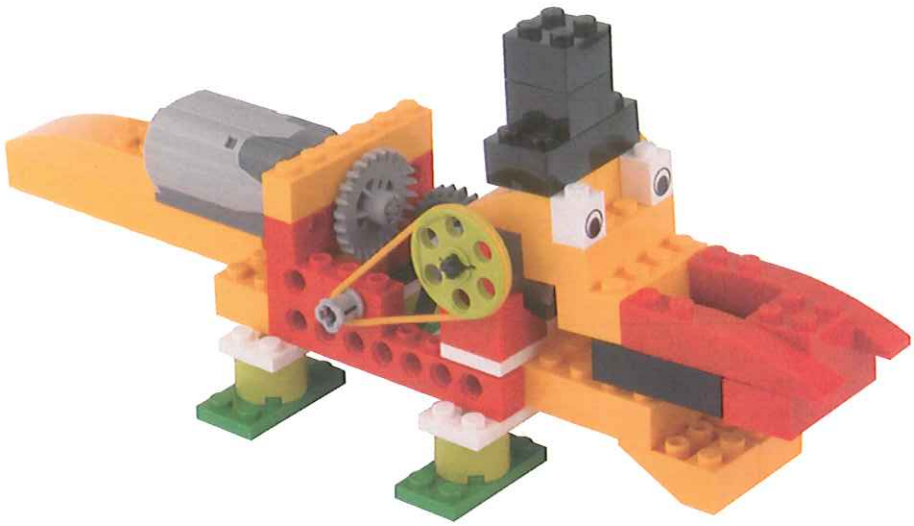
- What does it mean to be happy?
- What does it mean to be healthy?
- What is the difference between something we need and something we want? Can you give an example of each?
- What things does a person need to be happy or healthy?
- What feelings does a person have when he or she is happy or healthy?
- Are you a happy and healthy person?
- What are some things that we have in our lives that are "extras"?
- Do we really need them to be happy and healthy?
- What are some of the things that make us unhappy or unhealthy?

Instruct students to post their paper in a visible area and share their ideas with the class. Ask the class if the same things listed on their poster paper would make another kind of animal happy. Show the class the Hungry Alligator model.

Guiding Questions:

- Would the Hungry Alligator need the same things as you do in order to be happy?
- What would a reptile need to be happy?
- What would a reptile need to be healthy?

Have each group return to their poster paper and circle all of the things that they think the Hungry Alligator would need in order to be happy and healthy. Have students draw a single line through the extras that they don't think the alligator would need.



Hints:

- Review the definition of the terms *happy* and *healthy* before asking students to provide examples.
- Post visual aids and show video clips of people and animals being happy and healthy (e.g., exercising, sleeping comfortably, eating healthy food, laughing with friends).
- Opinions about happiness and good health differ among cultures, genders, and age groups. Recognize and appreciate these differences throughout the lesson.

Construct (Part 2 – 45 minutes)

Ask students to describe their experiences visiting a zoo, including the animals they saw and their impressions of how an animal in a zoo might feel. Use the Guiding Questions below to help students describe the duties of a zookeeper, such as taking care of animals, making sure animals are happy and healthy, setting up enclosures, and working with veterinarians. Use images and videos to help students brainstorm. Write their comments on the board or a sheet of poster paper.

Guiding Questions:

- How is living in a zoo different from living in the wild?
- What do zoo animals need to be happy?
- What do zoo animals need to be healthy?
- What kinds of things can a zookeeper do to make an animal feel at home in the zoo? (e.g., Orangutans are provided with fruit as food and tires to swing on for exercise and fun. Penguins are provided cold water, fish to eat, and slides for exercise.)

Show students a few images of different animals and have volunteers share a few ideas about what would make that animal happy and healthy.

Divide students into partners and instruct each pair to think about reptiles. Have each pair write a list of what a reptile (in general) needs to be happy and healthy, keeping in mind what they know about cold-blooded animals. For example, cold-blooded animals require a warm habitat with a few cool areas for rest. Encourage students to refer back to their group lists of Happy and Healthy that were created in Part 1 Connect.

As a class, discuss the term *habitat* and the importance of having a suitable habitat in a zoo for animals. Explain that an animal's habitat can vary in size (e.g., a small tank or a very large field).

Describe different types of reptiles and the types of habitats they require. Discuss the differences in habitats based on the type of reptile. Use images to illustrate the differences (e.g., the habitat needs of an alligator as compared to those of a salamander).

Assign a species of reptile to each pair or ask them to choose one. Instruct students to use classroom resources for research and create a list of things that their particular reptile needs to be happy and healthy. The list of general reptile needs created earlier can be used as a starting point. Students should identify the physical features of their reptile, such as its size, and then students should make connections to the needs they have identified for that animal.

Guiding Questions:

- How large is this reptile and how much space does it need?
- Where does this reptile sleep?
- What does this reptile eat? How does it catch its food?
- Does this reptile need a special type of exercise?
- What is the climate like where this reptile usually lives?
- Does this reptile like to live alone or in a group?
- Does this reptile need to live near other kinds of animals?
- Does there need to be something special about the habitat to make the animal feel safe or comfortable?

Hints:

- Define the term *habitat*. Use examples and images of pets at home, animals at the zoo, and animals in the wild to explain and illustrate the term.
- Some students may not have personal experience visiting a zoo. Watching video clips or documentaries or reading books about zoos can help create a common understanding about zoo life for animals and the people who work at a zoo. This lesson can also be a great opportunity to take the class on a field trip to a local zoo or animal sanctuary.

Contemplate (Part 3 – 60 minutes)

Hand out the "At the Zoo" worksheet to each student and give them time to research materials (online or print) to learn about the needs of their animal.

With their partners, have students discuss what their animal habitat should include in order to keep their reptile happy and healthy. Students should then complete the worksheet independently, using the information they have gathered about their reptile.

Research may be done in small groups or with the partner from Part 2 Construct, but worksheets should be completed independently.

Demonstrate a sample interactive zoo display. Explain how students can run three or more programs at one time by using the Start On Key Press block. Indicate that each program reflects the animal's habitat and its needs.

Instruct each pair to create an interactive display about their reptile's habitat using the Interactive Display program and the **We**Do™ Construction Set or LEGO® Sceneries Set.

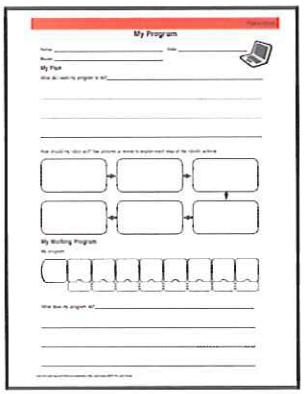
Students may build features from their habitat design for their reptile using the **We**Do Construction Set or LEGO Sceneries Set. For example, students can include a rock as a sleeping/basking location for their reptile, a tree for the reptile to climb, or a bug for the reptile to eat.

Students may also build and modify the Hungry Alligator model to more accurately represent the reptile they are studying.

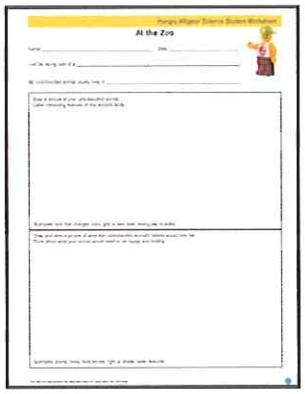
Hints:

- On a separate "My Program" tracking sheet, have students record each mini-program for the Museum Display program that is used for this activity.
- Provide students with sufficient time to experiment with the Museum Display program, including sound effects and background images.
- If possible, post images of zoo enclosures around the room.

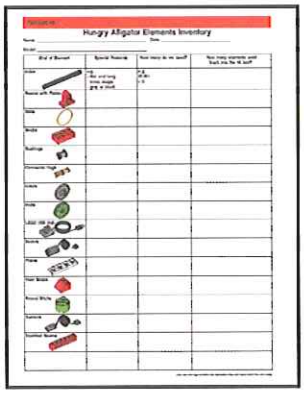
Resources:



"My Program" tracking sheet



"At the Zoo" worksheet



"Hungry Alligator Elements Inventory" tracking sheet

Continue (Part 4 – 30 minutes)

Instruct partners to prepare to present their programs and models. Students should display the picture that they drew of their reptile's habitat for the "At the Zoo" worksheet.

Students should present their habitat images, programs, and models to the class in two rounds. In each round, one partner circulates around the room to see other presentations, while the other partner remains with the models and program to answer any questions the viewers may have. In this way, the classroom becomes a kind of zoo, and each presenter becomes the knowledgeable zookeeper teaching others about their animal's needs and life at the zoo.

Instruct students to write a reflective journal entry using the Guiding Questions below.

Guiding Questions:

- Which habitat is your favorite?
- What makes this habitat so interesting?
- Does the habitat suit the reptile for which it is designed?
- What would you add to the habitat to make the reptile even more happy or healthy?
- After seeing the habitats that other students created, is there anything you would add to your habitat?

Extension Activities:

- Use the LEGO® Sceneries Set to build another animal that can share the habitat with an alligator, or build a model of another animal that an alligator might eat. (15 minutes)
- Add a Tilt sensor to the program and set it to trigger a noise or motion response if the animal is handled roughly. Include sound effects, such as crunching noises, in the program. (30 minutes)
- Research the work that zoologists or veterinarians do in a zoo. Think about how they use science every day to perform their work. Have students complete a reflective journal entry that explains why they would or would not want to perform this work. (30 minutes)
- Complete an illustrated storyboard or comic strip about a day in the life of a student who is cold-blooded. What would a cold-blooded student do differently from a warm-blooded human student? (60 minutes)

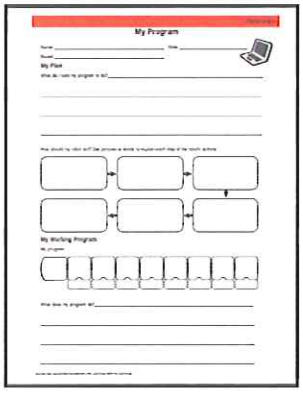
Portfolio Suggestion:

Compile the completed versions of the "At the Zoo" worksheet and "My Program" tracking sheet and include a picture of the interactive zoo display.

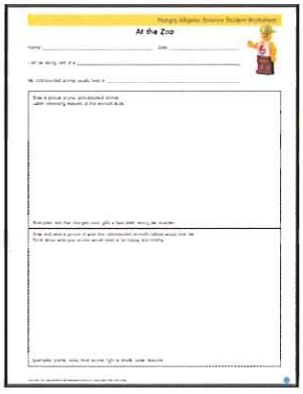
Hints:

- Keep all students actively involved during presentations by having a piece of paper and a pencil by each interactive display. Before they move on to the next, have students note their favorite habitat feature or something they really liked about each presentation. This way presenters have a list of positive points about their great ideas to take home.

Resources:



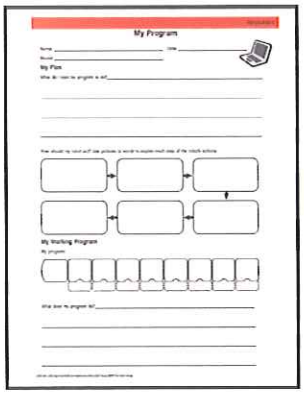
"My Program" tracking sheet



"At the Zoo" worksheet

Science – Suggested Programming

Resources:



The "My Program" tracking sheet is a helpful tool for students to organize their program before actually going to the computer.

"My Program" tracking sheet

Creating an Interactive Display About Cold-Blooded Animals

We can create an interactive presentation with three informative texts about cold-blooded animals using the **We**Do™ software. Reaction-based sound effects can also be generated to enhance the presentation.

Using the Start On Key Press block, we can display facts with the press of a key on our keyboard. The Start On Key Press block is shown in Figure 1

Figure 1

When the A key is pressed on the keyboard, whichever blocks are attached to the Start On Key Press block will execute. We can change the Start On Key Press block to different letters or numbers by hovering over the block and typing the letter or number on our keyboard.

We can use the Display block to show our facts on the Display tab. The Display block is shown in Figure 2.

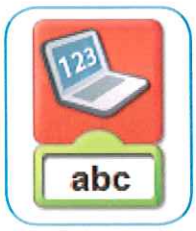


Figure 2

We can hover over the Text input until our cursor turns into a T and type in the fact we want to show in the Display tab.

We can start by placing a Start On Key Press block on the canvas, followed by a Display block. We can hover over the Start On Key Press block and press the key we want to use to display this fact. Next, we can hover over the Text input of the Display block and type in our fact. The program thus far should look like the one in Figure 3.

Figure 3

If we want to add a background image and some sound effects to the fact, we can do so by adding a Play Sound block and a Display Background block. We can set the inputs of these two blocks to play an appropriate sound and display an appropriate background image for our fact, as shown in Figure 4.

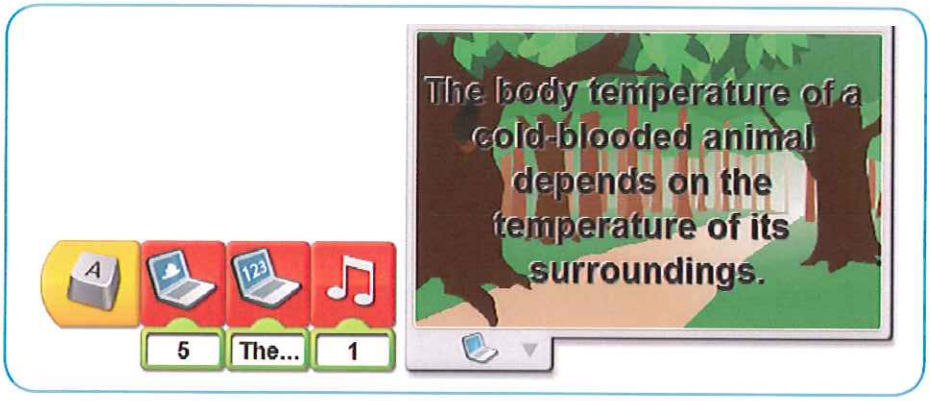


Figure 4

We can create two more informative texts like the first one, as shown in Figure 5.

Figure 5

With these three informative texts, we can easily present information about cold-blooded animals.

Making the Hungry Alligator Chew Its Prey

We can create a program that will cause the Hungry Alligator to chew its prey a few times and then stop.

We begin by placing a Start block on the canvas. Next, we place a Motor Power block beside it and set the Number input to 10 so that the Hungry Alligator will chew its prey quickly. Now, we can add a Motor This Way block to the program, followed by a Motor On For block. Set the Number input to 5, then add a Motor That Way block, followed by another Motor On For block with a Number input of 5. We place these blocks into a Repeat block.

The Hungry Alligator doesn't need to chew forever. Create a Number input for the Repeat block and set the Number input to 3 so that the Hungry Alligator chews its prey three times before stopping and waiting for his next meal. The program should look like the one in Figure 6.

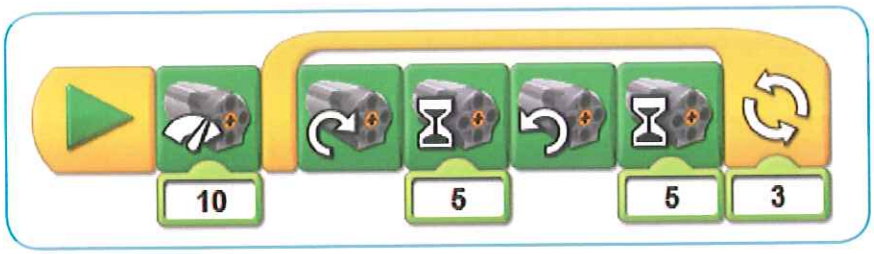


Figure 6

This program will cause the Hungry Alligator to chew its prey three times at a fast speed and then stop.

Programming the Hungry Alligator to Make a Noise if Handled Roughly
To create the experience of being a zookeeper more realistic, we can add and program a Tilt sensor to trigger a noise or motion response if the animal is handled roughly while being moved.

Place a Wait For block onto the canvas and replace its Number input with a Tilt Sensor input. This will make the program wait for the Tilt sensor to move before being activated.

Next, place a Motor Power block beside the Wait For block and set its Number input to 3. This will make the Hungry Alligator move slowly when the Tilt sensor detects movement.

Now, place a Motor This Way block next to the Motor Power block and then place a Motor On For block after it and set its Number input to 6. Place a Play Sound block next to the Motor On For block and set its Number input to 14. This portion of the code will create the roaring sound effect that lets us know if the Hungry Alligator is being handled too roughly.

Place a Motor That Way block next to the Play Sound block and then a Motor On For block after it, with a Number input of 2. Place a Repeat block around all of these blocks so that the Hungry Alligator responds each time you are not handling it gently enough. The complete program is shown in Figure 7.

Figure 7

Science – Suggested Building

Creating a Habitat for a Cold-Blooded Animal

We can use the LEGO® elements from the **We**Do™ Construction Set, LEGO Sceneries Set, or assorted LEGO bricks to create visual representations of features in the life of a cold-blooded animal. As an example, Figure 8 illustrates an environment showcasing features that would be found in a desert, such as a cactus or a rock.

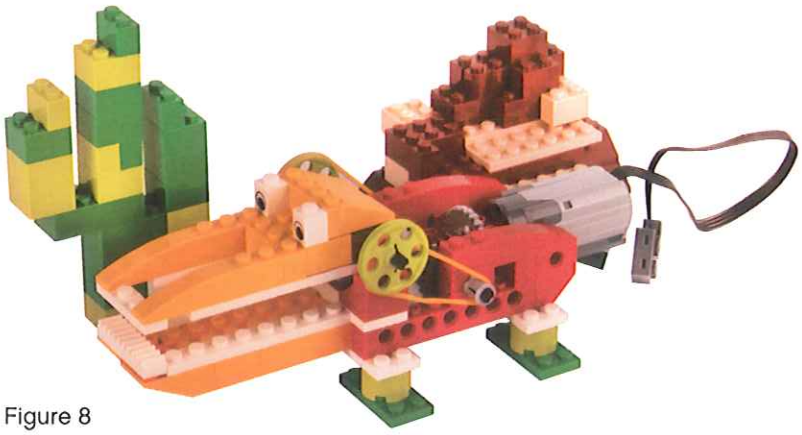


Figure 8

Modifying the Hungry Alligator Model

The Hungry Alligator can be modified with the addition of a Tilt sensor, as shown in Figure 9. This allows us to detect whether the animal is being handled too roughly.

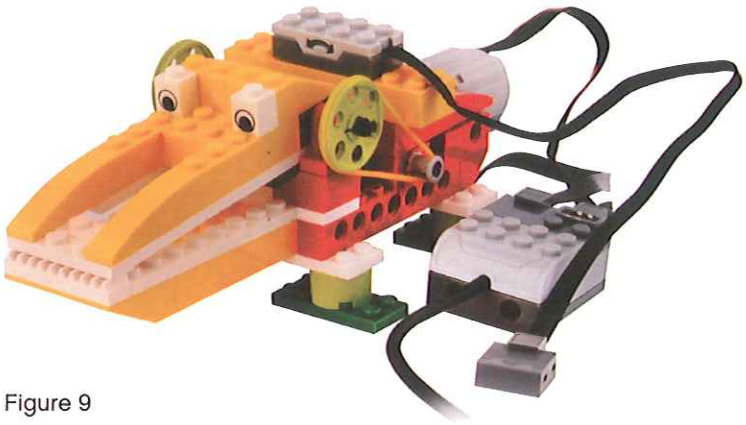


Figure 9

The LEGO elements from the **We**Do Construction Set, LEGO Sceneries Set, or assorted LEGO bricks can also be used to modify the Hungry Alligator model to represent another organism. For example, by shortening the snout and elongating the body, Garry the Gecko is created and shown in Figure 10.

Figure 10

habitat	feature
zookeeper	healthy
happy	environment
temperature	shelter
display	diet

At the Zoo

Name: _____ Date: _____

I will be taking care of a _____.

My cold-blooded animal usually lives in _____.

Draw a picture of your cold-blooded animal.
Label interesting features of this animal's body.

Examples: skin that changes color, gills, a hard shell, strong jaw muscles

Draw and label a picture of what this cold-blooded animal's habitat would look like.
Think about what your animal would need to be happy and healthy.

Examples: plants, rocks, food source, light or shade, water features

Hungry Alligator Science Rubric

Name: _____ Date: _____

Hungry Alligator Science Rubric				
Expectation:	**Needs Improvement**	**Fair**	**Good**	**Excellent**
	5 ---------- 10	11 ---------- 15	16 ---------- 20	21 ---------- 25
Demonstrates an understanding of cold-blooded animal characteristics, behavior, and needs. **/25**	Demonstrates a limited understanding of cold-blooded animal characteristics, behavior, and needs.	Demonstrates some understanding of cold-blooded animal characteristics, behavior, and needs.	Demonstrates a considerable understanding of cold-blooded animal characteristics, behavior, and needs.	Demonstrates a thorough understanding of cold-blooded animal characteristics, behavior, and needs.
Uses critical and creative thinking to make connections between cold-blooded animal behavior and environmental factors. **/25**	Uses critical and creative thinking to make connections between cold-blooded animal behavior and environmental factors with limited effectiveness.	Uses critical and creative thinking to make connections between cold-blooded animal behavior and environmental factors with some effectiveness.	Uses critical and creative thinking to make connections between cold-blooded animal behavior and environmental factors with considerable effectiveness.	Uses critical and creative thinking to make connections between cold-blooded animal behavior and environmental factors with a high degree of effectiveness.
Expresses and organizes ideas, comparing humans and reptiles clearly and logically. **/25**	Expresses and organizes ideas, comparing humans and reptiles clearly and logically with limited effectiveness.	Expresses and organizes ideas, comparing humans and reptiles clearly and logically with some effectiveness.	Expresses and organizes ideas, comparing humans and reptiles clearly and logically with considerable effectiveness.	Expresses and organizes ideas, comparing humans and reptiles clearly and logically with a high degree of effectiveness.
Applies knowledge and skills in familiar contexts. **/25**	Applies knowledge and skills in familiar contexts with limited effectiveness.	Applies knowledge and skills in familiar contexts with some effectiveness.	Applies knowledge and skills in familiar contexts with considerable effectiveness.	Applies knowledge and skills in familiar contexts with a high degree of effectiveness.
Comments: **/100**				