



Do You Have What it Takes to Survive? A Lesson on Natural Selection and Evolution

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Lesson # 15

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<http://www.apsarchive.org/resource.cfm?submissionID=3719>.

Editor's notes:

Website URLs listed in this resource were current as of publication, but may now be obsolete. If you know of a replacement URL, please suggest it in the resource's "Comments" section <http://www.apsarchive.org/resource.cfm?submissionID=3719>.

The APS encourages teachers to give students a copy of the "ABC" (Appropriate, Beneficial, Caring) rules for use of animals in the classroom, to discuss the rules, and to ask students to sign the "ABC" rules contract (see References). Also, teachers should have a plan for short term care of the animals (with supporting references for appropriate care guidelines) and for disposal or long-term care of all classroom organisms.

Teachers should carefully review any stimulus or environmental change for an animal being used in experiments or observations before students are allowed to use that stimulus. This is especially important if the stimulus could cause pain or distress to the organism. Teachers may be able to identify a less stressful stimulus for the students to use in their experiment.

Although mammals provide excellent opportunities for observational studies, they require particular care in terms of handling and may cause allergic reactions in some students. The teacher should check local and state guidelines before using mammals in the classroom.

Disclaimer:

This activity was created by the author and reviewed by the American Physiological Society. Any interpretations, statements, or conclusions in this publication are those of the author and do not necessarily represent the views of either the American Physiological Society or the funding agencies supporting the professional development program in which the author participated.

PURPOSE	The purpose of this activity is to develop a model of an ocean organism's feeding apparatus (beak) and see if the organism can survive/adapt if environmental conditions change.
OBJECTIVES	Upon completion of this activity, students will be able to: <ul style="list-style-type: none">• investigate how an organism can adapt to a particular environment or it will become extinct.• describe that through sexual reproduction and natural selection the species can survive environmental changes.• explain that diversity of species is developed through a gradual process over time, evolution.
GRADE LEVEL	This lab is designed for students in grades 6-8 but can be adapted for higher-grade levels.
PRIOR KNOWLEDGE	Students should be familiar with inquiry labs, Internet research, and experimental design. They should have previously been taught that organisms do not live forever, reproduction is necessary for a species to survive, and traits are inherited. They also need to have background knowledge about environmental changes that occur quickly (forest fires) and those that occur more slowly (succession). Students should have also been exposed to earth's history as far as the age of the earth, the diversity of the organisms during the history of the earth and what happens when and how extinctions occur. <i>Teacher Tip: You want some of the feeding apparatuses to fail. These organisms then become extinct, especially after the environment in which they are living, experiences a change. These organisms die off while the others are able to flourish because of more food availability (their energy) and more of the same type of organism to mate with to carry on the traits of survival.</i>
TIME REQUIRED	This lab activity is estimated to take between three and five class periods.
INCLUDING ALL STUDENTS	<ul style="list-style-type: none">• All students will participate in this activity. Students will work in pairs as described below. Students will complete the activities at school but will be encouraged to find information on their own on the Internet or through the community library.• Students will be placed into pairs by the teacher so that students with learning disabilities will be with a student who does not have a disability. (This is completely at teacher discretion).• This lesson includes tactile, visual, auditory and written modalities to address all learning styles found in the classroom.
QUESTIONS TO ASK ALONG THE WAY	<ul style="list-style-type: none">• A key piece of this lab is to show how natural selection works. Ask your students along the way what is happening to the different types of beaks and why some are dying off (take time to explain extinction here).• Bring in real life examples like the length of giraffe's necks and how they got so long. Make students predict why giraffes with longer necks would survive.

**QUESTIONS
TO ASK
ALONG THE
WAY**

- Adaptation is another key idea in this lesson...could the organism survive if it could adapt to the food type available and how would that occur?
- How long does this process take “in the real world?”
- Make sure evolution gets defined during this lab as a “change over time.”
- What happens during reproduction as far as traits being passed from parent to offspring?

**NATIONAL
SCIENCE
EDUCATION
STANDARDS**

K-12 Unifying Concepts and Processes
Systems, order, and organization
Evidence, models, and explanation
Change, constancy, and measurement
Evolution and equilibrium
Form and function

Grades 5-8

Science as Inquiry

Abilities necessary to do scientific inquiry
Understanding about scientific inquiry

Life Science

Reproduction and heredity
Populations and ecosystems
Diversity and adaptations of organisms

Earth and Space Science

Earth's history

MATERIALS

Per class

- 4 roped off sections of “ocean” on the school campus
- meter sticks
- sticks
- dowel rods
- string
- 25 of each of the following in four separate bags:
 - ✓ starlight (peppermints) mints
 - ✓ bobby pins
 - ✓ pinto beans
 - ✓ LEGOS®
 - ✓ water bottle caps
 - ✓ marbles

LEGOS® is a registered trademark of the LEGO Group.

Per group

- poster board for presentation
- overhead sheets
- markers
- colored pencils
- glue
- scissors

Per pair of students

- KWL student worksheet
- Internet Treasure Hunt worksheet
- Internet access
- organism scenario
- clipboard
- a beak (*clothespins, nut crackers, flat or pointed tweezers, plastic knives, spoons and forks, pipe cleaners, toothpicks, ice pop sticks, hot glue guns, tape, etc.*) *Students may ask for other items as well.*
- 3 oz. paper cup (*the mouth that the food will go into once it is captured by the feeding apparatus*)

SAFETY

- When students are allowed to choose their beak, the teacher should make sure that the students get them off the table in an orderly fashion. Stress to them that you have plenty to choose from and they don't have to rush to "grab" a beak!
- Once you take them outside to allow them to eat using their beak, keep an eye on the students pushing and shoving so they don't fight, punch, hit, etc. each other.

PREPARATION II. Explore

Double check the websites on the Internet Treasure Hunt to be sure they are up and running still.

III. Extend

There should be a variety of materials to use for students to construct their "beaks". These can include but are not limited to pipe cleaners, ice pop sticks, toothpicks, clothespins, nutcrackers, tweezers (flat or pointed), plastic knives, spoons and forks, hot glue guns, tape, etc.

The teacher also needs to get the organisms' food ready. In four separate bags (for each class) place 25 of each of the following: starlight (peppermints) mints, bobby pins, pinto beans, LEGOS®, and marbles.

Teacher Tip: *Don't expect to get all of these items back! These are just suggestions; you may find other items that are more environmentally friendly in case they are left outside!*

On the day of the Extend Activity, the teacher will need to rope off several areas outside in the grass on the school's campus. The number of areas roped off depends upon how many classes are taught (for each class, two areas will need to be roped off).

PROCEDURE I. Engage

- A. Teacher will pass out the KWL worksheet and allow students several minutes to complete the "What I Know" section of the chart.
- B. Students will then be placed in a group and they will share the ideas they wrote, circling those that they know to be true.
- C. Teacher will show a video or read a children's book that deals with natural selection or evolution. Some examples are listed in the R section of this lesson (your district media center, library or public library may have these titles available for you to check out).
- D. Then students should work independently again to fill out the "What I Want to Learn" column.
- E. Groups get back together again to discuss this column.

II. Explore

- A. Students will complete an Internet Treasure Hunt worksheet to learn more about evolution and natural selection as it relates to the history of the earth.
- B. Students will then create a poster to share the information they found with the rest of the class.

PROCEDURE III. Extend

A. Develop a Hypothesis

1. Students will be paired off to complete this section of the activity.
2. Teacher will present the students with a scenario so that the students become an ocean organism and they need to be able to maintain their population so that the species can survive. (See attached scenario)
3. Students need to decide what the important factors are for species survival. Basically, reproduction is going to pass along the best traits from parents to offspring and then the species will continue to survive.
4. Discuss as a class what these factors are based on their new knowledge about natural selection. The teacher may need to lead them to figuring out that if the animal can stay alive and mate, then it will help the species continue on!
5. The teacher will show the students the variety of food available to them that they will be able to eat. For this first time around, the students will be allowed to eat any type of food (see extension activity for another idea about this).
6. Students need to develop a hypothesis about the type of beak their organism has in order to capture and eat food so that it has the energy to mate and carry on its genes.
7. The teacher will show the students the materials available to make their beak. Have pipe cleaners, ice pop sticks, toothpicks, clothespins, nutcrackers, tweezers (flat or pointed), plastic knives, spoons and forks, hot glue guns, tape, etc available for the students to use and tell them if they need something else to ask the teacher, it may be in available.
8. Check for understanding as to how the organism is to obtain energy in order to mate...in one hand, the student will hold their "mouth", the paper cup and with the other hand the student is to use their "beak" to pick up the food and place it in their mouth. Only food in the mouth will be counted as "consumed (eaten) food."

B. Design and Test the Experimental Model

1. Once students make their hypothesis, draw a sketch of their organism's beak and it is checked by the teacher, they are allowed to get the materials and their beak. Since they are working in groups of two, each pair of students will have to build two beaks. Students will also need their mouth, a 3 oz. paper cup.
2. This is a trial for your students...they don't know it yet, though!!!
3. Students are taken outside to a "roped off" area that the teacher has determined to be "the ocean" or the feeding ground.
4. At this point, the teacher "throws out" food into the ocean and tells the organisms they have 60 seconds to eat as much as they can.
5. All the organisms scurry into the ocean to get as much food as they can with their feeding apparatus into their mouth.

PROCEDURE

6. Teacher calls time after 60 seconds and organisms should run off and tally their food.
7. Teacher announces that any individual organism that did not get 5 food pieces, needs to return their mouth, food and beak give it to the teacher and then sit down. These organisms have died.
8. For every organism that has eaten 5 pieces of food, they have enough energy to reproduce...but they can only reproduce with an organism of the SAME beak type.
9. This is when you can tell the students that this was a trial run and no one is extinct yet!
10. Students will be able to revise their beak in order to get more food. Allow students time to tweak their beaks and get ready to feed again. You may also suggest that a pair of students work with another pair in order to make several of the same types of beaks and join two “good beak ideas” into one “great beak idea.”
11. They need to come up with a name for their beak. Use ideas according to what their beak looks like or what materials were used. For example, if a plastic knife was used, you could call it “flat beak,” if clothespins were used it could be called “pinchy beak.”

C. Collect Data

1. Students record the beak names and the number of those types of beaks there are on “Data Table # 1” on their “Organism Scenario” sheet.
2. Use another one of the roped off sections and repeat the feeding as before. Students with five or more pieces of food would be able to reproduce.
3. Students share information about the amount and type of food that was consumed for each beak type.
4. Teacher announces that any individual organism that did not get 5 food pieces, needs to return their mouth, food and beak give it to the teacher and then sit down. These organisms have died.
5. Students record the beak names and the number of those types of beaks that have survived on the table on their “Organism Scenario” sheet in Data Table #2.
6. Move to the next roped off section.
7. Explain that a disaster has struck and two of the food sources have died off.
8. The organisms now have 60 seconds to find food, get it into their mouth so they can reproduce and can the species can survive.
9. The teacher throws the other bag into another of the roped off area with only 25 of the bobby pins, marbles and LEGOS® available this time.
10. When time is called the organisms again tally their food intake and this time the organisms that have 5 pieces of food can reproduce.
11. Students need to record the amount and type of food consumed on their “Organism Scenario” sheet in Data Table #2.
12. Go back into the classroom and work on the explain section.

PROCEDURE IV. Explain

Students will answer the questions on their paper and design a poster to share with the class. The last three questions are those that will be graded during this poster presentation and the evidence to support their answers **MUST** be present.

V. Extension

There are a variety of ideas for the extension that can be done with this activity.

- A. After two rounds are completed, you could have your students do a third round but make them have 10 pieces of food in order to reproduce because the disaster that occurred in round 2 also caused a climate change and now they need more food to maintain energy.
- B. You could have students look at the different times that animals eat, daytime versus nighttime and how this might change the results.
- C. Also allow some beak types to eat only one type of food, thus if that one type of food dies off that species automatically becomes extinct.
- D. The food could have certain energy values...LEGOS® could be worth 1 piece of energy because they are big and easy to see but marbles are worth 3 pieces of energy because they are more difficult to obtain.
- E. After round two (or three if you'd like to do another round to show the students how far this could go) allow them to make changes to their beak as an adaptation thus allowing them to live a little longer.
- F. Allow the organisms to really "reproduce." Have extinct animals make a beak like those still alive and compete for the same types of food.
- G. Speaking of competing and the ages of your students, it's "okay" if the organisms "fight" over food or steals food away from another organism! This can get a little dangerous however!

VI. Evaluate

Teacher Tip: *The teacher can give the student the question and do a variety of things with it. It can be a take home evaluation so that the student has several days to think about how they want to answer the question, it can be completed as a group/team evaluation or it can be an independent evaluation. These last two options can be completed in as much or as little time that your students can handle it! When grading this assessment piece, use the rubric attached. As always, it is a good idea to allow your students to have a copy of the rubric as they are writing their paper so they know how it will be graded.*

Consumer groups are urging the FDA to ban the administration of antibiotics to livestock. Farmers are currently using these antibiotics to produce healthier, larger livestock; however, some bacteria that the antibiotics are designed to kill are evolving into "superbugs" that have a resistance to the antibiotics. Assume the role of either a representative of a consumer group or a farmer who uses these antibiotics. Prepare a persuasive speech to present to the FDA defending your viewpoint. The FDA is not quite clear on how these "superbugs" came to exist, so begin your speech by explaining how the "superbugs" evolved and reproduced in the environmental conditions created by the farmers. If you side with

PROCEDURE

the consumer groups, identify the risks of continuing to use antibiotic technology in the raising of livestock, as well as the financial and social costs and who bears them. If you assume the role of the farmer, consider the risks and costs (social and financial) of discontinuing the use of the antibiotics. Words that you learned during this activity should be used as well such as natural selection, evolution, reproduction, traits, and extinction.

WHERE TO GO FROM HERE

- Students could improve their “beak” or adapt it during the trials. Perhaps they could also change their mouth size (use a bigger cup) in order to get more food.
- During the trials, food could be given energy values. For example, the LEGOS® are big but only worth one energy point whereas the marbles are more nutritious so they are worth 10 energy points. Then students have to have 25 energy points in order to reproduce.
- Allow students to explore other types of animals where evolution has occurred. Have them present their findings in class but make sure they have evidence to support their presentation and that these are reliable sources.
- Complete the “Ant Population Activity” in the *Women Life Scientists* book (see References).

SUGGESTIONS FOR ASSESSMENT

- Collect the completed KWL and grade the “What I Learned” section making sure the students learned the objectives.
- Grade students for participating in the group work and as a partner.
- Grade posters and presentations.
- Check written hypothesis to see that students provided evidence why they believe they are picking a successful eating apparatus.
- Grade persuasive essay for content; the Language Arts teacher may want to grade it also for grammar, spelling, etc.

**REFERENCES
AND
RESOURCES**

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2. Bailey, J. (2001). *The Day of the Dinosaurs (A Cartoon History of the Earth, 3)*. Toronto: Kids Can Press, Ltd.
3. Bailey, J. (2001). *The Dawn of Life (Cartoon History of the Earth, 2)*. Toronto: Kids Can Press, Ltd.
4. *Charles Darwin: Evolution's Voice*. (2005) [Television series episode available on DVD]. In A&E BIOGRAPHY series. United States: A & E Television Networks.
5. Espar, D. (Producer and Director), and Lewis, S.K. (Director). (2001). *Evolution: Darwin's Dangerous Idea* [Television Series available on VHS videotapes or DVDs]. Boston: WGBH.
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8. Jenkins, S. (2002). *Life on Earth: The Story of Evolution*. New York: Houghton Mifflin Co.
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10. Liebes, S., Sahtouris, E., and Swimme, B. (1998). *A Walk Through Time: From Stardust to Us—The Evolution of Life on Earth*. New York: John Wiley & Sons.
11. *Mid-continent Research for Education and Learning*
<http://www.mcrel.org/lesson-plans/science/sciencelessons.asp>
This website is a great resource for science lesson plans in a variety of topics. This is where I obtained my final assessment questions for the students to answer.
12. Morgan, J. (2003). *From Lava to Life: The Universe Tells Our Earth's Story*. Nevada City: Dawn Publications.
13. Morgan, J. (2006). *Mammals Who Morph: The Universe Tells Our Evolution Story*. Nevada City: Dawn Publications.
14. Peters, L. W. (2003). *Our Family Tree: An Evolution Story*. Orlando: Harcourt Books.
15. Sis, P. (2003). *The Tree of Life: Charles Darwin*. New York: Farrar, Straus & Giroux (BYR).

**REFERENCES
AND
RESOURCES**

16. *Understanding Evolution: Your One Stop Source for Information on Evolution*
http://evolution.berkeley.edu/evolibrary/article/sneakermale_01
This site is actually one page of an “evolution 101” site that has quite a bit of information that can be used in the classroom. This specific page is a comic and specifically targets natural selection for the Internet Treasure Hunt.
17. *Understanding Evolution: Your One Stop Source for Information on Evolution*
http://evolution.berkeley.edu/evolibrary/article/0_0_0/evo_02
This site is actually one page of an “Evolution 101” site that has quite a bit of information that can be used in the classroom. This specific page is an introduction and explanation of evolution and is used for the Internet Treasure Hunt.
18. *Dr. George Johnson ON SCIENCE*
<http://www.txtwriter.com/Onscience/Tpage2.html>
These ON SCIENCE columns by George Johnson were originally published in the St. Louis Post Dispatch. They are only as current as 2003.
19. Permission given to adapt from a lesson by A. Cady, Miami University, Oxford, Ohio. Summer 2002, BOT 698.L: Genetics, Evolution and Ecology.

Organism Scenario

Name: _____ Date: _____

Period: _____

You are an organism that lives happily in the ocean. You have many friends that you hang out with all day long, and live a rather relaxing life...of course, you have to keep an eye out for predators!

As an organism part of your responsibility is to pass along your genes! List some of the important factors needed for species survival.

As discussed, sexual reproduction is key for species survival. In order to mate and for your species to continue living on the planet, you need energy. The types of food available in the ocean are shown on the table at the front of the classroom. You and your partner need to develop a hypothesis and design for a beak that will allow you to eat and get energy for mating.

Questions

How are you going survive in order to mate if you have to catch your food with your beak and put it in your mouth? Explain your hypothesis.

Hypothesis, Design, and Materials needed (in order to test hypothesis)

Data Table #1

Beak Type	#	Amount/Type of Food Consumed

Data Table #2

Beak Type	#	Amount/Type of Food Consumed

1. Look at the data you have collected and analyze what happened in the first two trials.
2. Predict what would happen during the third trial.
3. Explain what could happen with the food sources available.
4. What other characteristics could play a role in natural selection?
5. How does this activity explain natural selection and evolution?

Final Assessment
to complete independently

Name: _____ Date: _____

Complete this on your own notebook paper or type. See the attached rubric for how this assessment will be graded.

Consumer groups are urging the Food and Drug Administration (FDA) to ban the administration of antibiotics to livestock. Farmers are currently using these antibiotics to produce healthier, larger livestock; however, some bacteria that the antibiotics are designed to kill are evolving into "superbugs" that have a resistance to the antibiotics. Assume the role of either a representative of a consumer group or a farmer who uses these antibiotics.

Prepare a persuasive speech to present to the FDA defending your viewpoint. The FDA is not quite clear on how these "superbugs" came to exist, so begin your speech by explaining how the "superbugs" evolved and reproduced in the environmental conditions created by the farmers.

If you side with the consumer groups, identify the risks of continuing to use antibiotic technology in the raising of livestock, as well as the financial and social costs and who bears them.

If you assume the role of the farmer, consider the risks and costs (social and financial) of discontinuing the use of the antibiotics. Words that you learned during this activity should be used as well such as natural selection, evolution, reproduction, traits, and extinction.

Natural Selection/Evolution Essay Rubric

CATEGORY	4 Above Standards	3 Meets Standards	2 Approaching Standards	1 Below Standards
Position Statement	The position statement provides a clear, strong statement of the author's position on the topic.	The position statement provides a clear statement of the author's position on the topic.	A position statement is present, but does not make the the author's position clear.	There is no position statement.
Support for Position	Includes 3 or more pieces of evidence (facts, statistics, examples, real-life experiences) that support the position statement. The writer anticipates the reader's concerns, biases or arguments and has provided at least 1 counter-argument.	Includes 3 or more pieces of evidence (facts, statistics, examples, real-life experiences) that support the position statement.	Includes 2 pieces of evidence (facts, statistics, examples, real-life experiences) that support the position statement.	Includes 1 or fewer pieces of evidence (facts, statistics, examples, real-life experiences).
Evidence and Examples	All of the evidence and examples are specific, relevant and explanations are given that show how each piece of evidence supports the author's position.	Most of the evidence and examples are specific, relevant and explanations are given that show how each piece of evidence supports the author's position.	At least one of the pieces of evidence and examples is relevant and has an explanation that shows how that piece of evidence supports the author's position.	Evidence and examples are NOT relevant AND/OR are not explained.
Sequencing	Arguments and support are provided in a logical order that makes it easy and interesting to follow the author's train of thought.	Arguments and support are provided in a fairly logical order that makes it reasonably easy to follow the author's train of thought.	A few of the support details or arguments are not in an expected or logical order, distracting the reader and making the essay seem a little confusing.	Many of the support details or arguments are not in an expected or logical order, distracting the reader and making the essay seem very confusing.
Closing paragraph	The conclusion is strong and leaves the reader solidly understanding the writer's position. Effective restatement of the position statement begins the closing paragraph.	The conclusion is recognizable. The author's position is restated within the first two sentences of the closing paragraph.	The author's position is restated within the closing paragraph, but not near the beginning.	There is no conclusion - the paper just ends.
Grammar & Spelling	Author makes no errors in grammar or spelling that distract the reader from the content.	Author makes 1-2 errors in grammar or spelling that distract the reader from the content.	Author makes 3-4 errors in grammar or spelling that distract the reader from the content.	Author makes more than 4 errors in grammar or spelling that distract the reader from the content.
Capitalization & Punctuation	Author makes no errors in capitalization or punctuation, so the essay is exceptionally easy to read.	Author makes 1-2 errors in capitalization or punctuation, but the essay is still easy to read.	Author makes a few errors in capitalization and/or punctuation that catch the reader's attention and interrupt the flow.	Author makes several errors in capitalization and/or punctuation that catch the reader's attention and interrupt the flow.

Internet Treasure Hunt

Name: _____ Date: _____

This web info search will help you find information about natural selection and evolution. You will be looking at pre-selected web sites to answer each question. It is important to not only find the information at the site, but also to consider who wrote the site, what their purpose is in writing it, and how credible (accurate) you think the information is.

Question 1: What is natural selection? Provide an example.		
	Site 1 <i>Learning About Science: Evolution</i> http://www.txtwriter.com/Onscience/Tpage2.html	Site 2 <i>Survival of the Sneakiest</i> http://evolution.berkeley.edu/evolibrary/article/sneakermales_01
Who created this web site (organization, etc.)?		
Why did they create it? (check all that apply)	<input type="checkbox"/> To provide factual information <input type="checkbox"/> To influence the reader's opinion <input type="checkbox"/> To sell a product or service <input type="checkbox"/> I'm not sure	<input type="checkbox"/> To provide factual information <input type="checkbox"/> To influence the reader's opinion <input type="checkbox"/> To sell a product or service <input type="checkbox"/> I'm not sure
How credible (accurate) do you think the info is?	<input type="checkbox"/> Very accurate <input type="checkbox"/> Somewhat accurate <input type="checkbox"/> Not very accurate <input type="checkbox"/> I'm not sure	<input type="checkbox"/> Very accurate <input type="checkbox"/> Somewhat accurate <input type="checkbox"/> Not very accurate <input type="checkbox"/> I'm not sure
What did you learn?		

Internet Treasure Hunt

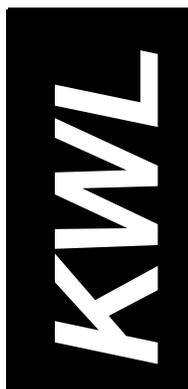
Name: _____ Date: _____

This web info search will help you find information about natural selection and evolution. You will be looking at pre-selected web sites to answer each question. It is important to not only find the information at the site, but also to consider who wrote the site, what their purpose is in writing it, and how credible (accurate) you think the information is.

Question 2: What is evolution? Provide an example.		
	Site 1 <i>An Introduction to Evolution</i> http://evolution.berkeley.edu/evo_library/article/0_0_0/evo_02	Site 2 <i>Learning about Science: Evolution</i> http://www.txtwriter.com/Onscience/Tpage2.html
Who created this web site (organization, etc.)?		
Why did they create it? (check all that apply)	<input type="checkbox"/> To provide factual information <input type="checkbox"/> To influence the reader's opinion <input type="checkbox"/> To sell a product or service <input type="checkbox"/> I'm not sure	<input type="checkbox"/> To provide factual information <input type="checkbox"/> To influence the reader's opinion <input type="checkbox"/> To sell a product or service <input type="checkbox"/> I'm not sure
How credible (accurate) do you think the info is?	<input type="checkbox"/> Very accurate <input type="checkbox"/> Somewhat accurate <input type="checkbox"/> Not very accurate <input type="checkbox"/> I'm not sure	<input type="checkbox"/> Very accurate <input type="checkbox"/> Somewhat accurate <input type="checkbox"/> Not very accurate <input type="checkbox"/> I'm not sure
What did you learn?		

Name _____
 Period _____

What I Know
 What I Want to Know
 What I Learned



Topic of Discussion:		
Why do living things change?		
What I <i>Know</i> about this topic/question	What I <i>Want</i> to know about this topic/question	What I <i>Learned</i> about this topic/question

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