



Science Objectives

- Students will analyze and describe how organisms are classified according to shared characteristics.
- Students will identify how organisms are organized into a hierarchy of classification.
- Students will isolate specific characteristics of organisms, such as having chlorophyll and reproduces by seeds, so they are easier to study.



Vocabulary

- | | |
|------------------|-----------|
| • Taxonomy | • Order |
| • Taxonomist | • Family |
| • Classification | • Kingdom |
| • Species | • Phylum |
| • Class | • Genus |

About the Lesson

- This lesson will have the students partake in three different activities ranging from understanding key vocabulary, to classifying organisms and sorting.
- As a result, students will:
 - Understand the different “levels” of taxonomy and their order from Kingdom to Species.
 - Provide reasons to “defend” why an animal is or is not part of a specific classification group.
 - Classify organisms by different distinguishing characteristics.



TI-Nspire™ Navigator™

- Send out the .tns file.
- Monitor student progress using Class Capture.
- Use Live Presenter to spotlight student answers.
- Enter items as appropriate for use of TI-Navigator.

Activity Materials

- Compatible TI Technologies: TI-Nspire™ CX Handhelds, TI-Nspire™ Apps for iPad®, TI-Nspire™ Software

Tech Tips:

- This activity includes screen captures taken from the TI-Nspire CX handheld. It is also appropriate for use with the TI-Nspire family of products including TI-Nspire software and TI-Nspire App. Slight variations to these directions may be required if using other technologies besides the handheld.
- Watch for additional Tech Tips throughout the activity for the specific technology you are using.
- Access free tutorials at <http://education.ti.com/calculators/pd/US/Online-Learning/Tutorials>

Lesson Files:

Student Activity

- Classification_Challenge_Student.doc
- Classification_Challenge_Student.pdf

TI-Nspire document

- Classification_Challenge.tns



Discussion Points and Possible Answers

Move to pages 1.2 – 1.3.

1. Have students read through pages 1.2 and 1.3 in the .tns file as well as the background information stated on their activity sheet

Activity 1: Key Vocabulary

Move to page 1.4.

2. This activity reviews some key vocabulary in classification. On the right side of page 1.4 students will see a list of vocabulary words. Each word represents one of the seven major taxonomic ranks. The students' job will be to drag and drop the words onto the left side of the page in order from the **largest** group of organisms to the **smallest** group of organisms.



Tech Tip: The text will drag to the right of your finger as you slide it across the screen. Be sure that students drag the text all the way to the correct position so that they do not drop it in the incorrect position by accident.

Once completed, the students will then be given either a **smiley face** or a **“no” face** depending upon whether or not their answers are correct.

They can select the **Reset** button on the screen in the file to try again.



TI-Nspire Navigator Opportunities

Use the class capture feature to see if all students have the correct answer for the table on page 1.4 as a means of formative assessment.

Move to pages 1.5 and 1.6.

Have students answer questions 1 and 2 in the .tns file, the activity sheet, or both.

Q1. Which taxonomic rank has the *largest* amount of organisms placed in it?

Answer: D. Kingdom



Q2. Which taxonomic rank has the smallest amount of organisms placed in it?

Answer: B. Species

Q3. Fill in the table with all of the seven major taxonomy classifications ranked in order from Largest to Smallest.

Answers:

Kingdom
Phylum
Class
Order
Family
Genus
Species

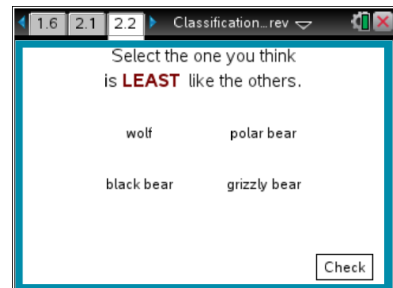
Activity 2: If It Doesn't Fit...

Move to page 2.1.

3. Have students read the descriptions and instructions on page 2.1 for the simulation on page 2.2.

Move to page 2.2

4. In this simulation, students will select the organism they feel least belongs with the others. Once they make their selection, they select , and it will let the students know if they got the answer correct.



After they go through all 12 scenarios, (by selecting the Next button), they will be able to go back and see their answers; however they will not be able to change their answer after they select the Check button. At the very end, it will tell the students how many answers they got correct.



TI-Nspire Navigator Opportunities

Have your students go through and answer all 12 scenarios for Activity 2. Once completed, have all of the students go back to their very first question. Choose either a student for live presenter or do a class capture and display all of their choices up on the projector. Have students defend their choices (this can be either a written assignment or a class discussion). The responses in this simulation are not able to be saved to the portfolio and are meant to drive a class discussion.



Within Activity 2, there are 12 different questions. Below are the justifications for the correct answers. Remember, there are many reasons/debates you can have in the classroom as to why one may not “fit” with the others!

Q4. Circle your selection for each scenario on the next page and then record your justification for your selection.

1.	grizzly bear	polar bear	wolf	black bear
Answer: Wolf; It is not a bear.				
2.	oak Tree	maple tree	pine tree	birch tree
Answer: Pine Tree; It is a coniferous tree while the others are deciduous trees.				
3.	black lab	Felis catus	beagle	Australian shepherd
Answer: Felis catus; It is not a dog.				
4.	mushroom	mold	yeast	moss
Answer: Moss; It is not a fungi.				
5.	segmented worms	roundworms	insects	flatworms
Answer: Insects; They are not worms.				
6.	sea turtle	green tree frog	American toad	tiger salamander
Answer: Sea turtle; It is a reptile while the others are amphibians.				
7.	lizard	alligator	frog	
Answer: Frog; It is an amphibian while the others are reptiles.				
8.	box turtle	frog	snake	
Answer: Frog; It is an amphibian while the others are reptiles.				
9.	yeast	worms	sponges	insects
Answer: Yeast; The others are part of the animal kingdom.				
10.	kangaroo	panda	brown bear	black bear
Answer: Kangaroo; It is a marsupial mammal, so it has a pouch, while the other do not.				



11.	shark	trout	penguin	minnow
Answer: Penguin; It is a bird while the others are fish.				
12.	whale	human	dolphin	trout
Answer: Trout; The others are mammals.				

Activity 3: Sorting Challenge

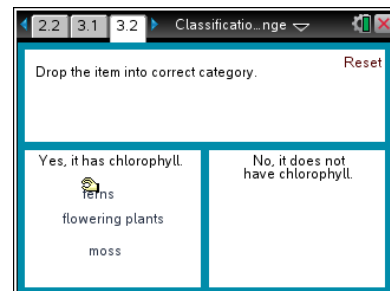
Move to page 3.1.

- Have students read the descriptions and instructions on page 3.1 for the simulations on pages 3.2 and 4.1.

Move to pages 3.2 and 4.1.

- On the top of page 3.2, students will see a specific organism that they will have to "drag and drop" into one of the correct categories below.

This activity will have them sort specific organisms into isolated categories. If a student makes a mistake, they can select the reset button on the top right corner of your screen. Once completed correctly, a **smiley face** will appear. If their answer is incorrect, a **"no" face** will appear. Page 3.2 and page 4.1 each have a sorting challenge.



- As you go through the simulation, circle the organisms that have chlorophyll in the table below.

Page 3.2	algae	ferns	flowering plants	fungi	moss
Answer: All but fungi should be circled.					

- As you go through the simulation, circle the organisms that reproduce by seeds in the table below.

Page 4.1	algae	ferns	flowering plants	moss	fungi
Answer: Only flowering plants should be circled.					

Move to pages 5.1 and 5.2.

Have students answer questions 7 and 8 in the .tns file, the activity sheet, or both.

- Which organism (of the ones listed on pages 3.2 and 4.1) has chlorophyll AND reproduces by seeds?



Answer: D. flowering plants

Q8. In this activity, you used characteristics like chlorophyll and seeds to classify plants. What characteristics do you think scientists use to classify animals?

Sample Answer: Answers may include but are not limited to: their physical appearance and environment/habitat. More specific answers could include whether or not they have fur, lay eggs, method of locomotion, and body temperature regulation.

Extension

Go back to page 2.2. Look and see if you got any of the questions incorrect. On a separate sheet of paper write a valid argument explaining why you feel the organism you chose does not belong in that grouping. Be sure to give the grouping, your response, and the one the file says is correct.

Wrap Up

When students are finished with the activity, retrieve the .tns file using TI-Nspire Navigator. Save grades to Portfolio. Discuss activity questions using Slide Show.

Assessment

- Formative assessment will consist of questions embedded in the .tns file. The questions will be graded when the .tns file is retrieved. The Slide Show will be utilized to give students immediate feedback on their assessment.
- Summative assessment will consist of questions/problems on the chapter test.