



Genetics and Heredity

Collaborative Inquiry Project

Grade Levels

Grades 7-8

Engage and Explore

This activity is designed to build confidence in your students recognizing themselves as scientists and thinking critically about problem-solving. The goal is to teach concepts through discovery and to encourage using scientific thought processes. As with all lessons provided, please feel free to adapt them according to your students' abilities. You may find it more successful to lead activities and discussions as a whole group as opposed to having your students' work in small groups. Certain scientific vocabulary may or may not be appropriate for your students' level of understanding. Take these ideas, make them your own and your students will have a greater chance at success.

How difficult or easy would it be for a Zoo to choose which animals to breed?

1. Begin this lesson by asking your students if they remember the breeding activity they completed at the Zoo during their visit? The activity used black rhinoceroses with various traits to better explain factors contributing to breeding programs at Zoos.
2. Working in groups, inform your students that they will portray the part of a Zoo General Curator. General Curators are responsible for the animal collection at a Zoo, including making animal breeding decisions. Many considerations come into play when deciding whether an animal should or should not breed.
3. Ask each group to try and come up with a list of considerations they would need to use for making breeding decisions. (Examples may include age of animals, lack of space, health of animals, or interest of particular animals in each other.)
4. Once compiling their list, students should be given the following list of animals:
 - moon jellies
 - red kangaroos
 - Andean condors
 - elkhorn coral
 - snow leopards
5. Have students work on computers or tablets in their groups, if possible. Ask them to visit the Zoo's Online Resource Library at resourcelibrary.clemetzoo.com to look for more information on these species. Students may access any information they feel is important to know about each species.
6. Students will need to identify which animals reproduce sexually, asexually, or both. They will also need to identify which animals are the most endangered and managed by a Species Survival Plan. (If they recall from their Zoo visit, Species Survival Plans or SSPs, are scientifically-

managed breeding and conservation programs that match and mate zoo animals to produce healthy offspring.)

Explain

7. After compiling all necessary information, each group will be asked to decide which one (1) species they would breed if they were the Zoo's General Curator.
8. Groups should again compile a list of reasons they have discovered to support their decision.
9. Each group should present their findings and breeding recommendation to the class, and other groups should take note of any differences they notice between their recommendation and other groups' recommendations.

Expand

10. After each group has completed their presentation, ask each group to again meet to discuss if they feel their recommendation should be changed based on what they learned from the other groups' presentations.
11. Again, working on computers or tablets in their groups, have students create a document listing their research, findings, and recommendations on breeding based on the activity. This document can be created in any format they prefer, although Word documents or PowerPoint presentations are preferable.

Assess

12. Once all groups have completed their documents, ask them a few questions to determine what they learned. What changes, if any, did they make after hearing each groups' presentation? Did they notice any differences in breeding programs of asexual species, as opposed to sexually reproductive species?
13. Share your work! When you and your class have completed this activity, we'd love to see what you came up with! Click the "Share Resources" button at the top of the Zoo's Online Resource Library at resourcelibrary.clemetzoo.com. From the dropdown menu, select "Document". Attach your file and complete the form on the page. Please include your school's name and the grade that you teach. When you're done, click "Submit". When we receive your submission, we'll share your class' work!

Standards

Ohio Academic Content Standards
Grade 8 Life Science Topic: Species and Reproduction Reproduction is necessary for the continuation of every species

Next Generation Science Standards
Engineering Design MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions



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Supplemental Materials

My Research Plan

1. Questioning
State the problem.
Make a hypothesis.

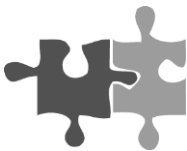


How difficult or easy would it be for a Zoo to choose which animals to breed?

2. Planning
Make a plan by asking
these questions
(think, talk, write)



3. Implementing
Gather the materials.
Follow the
procedures.
Observe and
record the results.



4. Concluding
Draw a conclusion.



5. Reporting
Share my results
(informal)
Produce a report
(formal)

