Doing the Activity

Bat Blitz

Activity Overview:

Guide: Adapted from *Project WILD K-12 Curriculum & Activity Guide* (4th edition) (Hereafter referred to as the *Project WILD Guide*).
Suggested Grade: Upper Elementary, Middle School
Setting: Indoors
Theme: Population, Health, Limiting Factors, Disease
Subject Areas: Science, Math, Language Arts, Environmental Education
Adaptation Time: 1 hour 15 minutes

Recommendations for Using this Activity:

- *Online Project WILD Professional Development for Educators*:
  Conduct synchronously for a cohort using an online meeting platform.

- *Online Instruction for Students*: Options include . . .

  - Conduct synchronously;

    OR

  - Conduct asynchronously--slides 2-3 may need to be supplemented so that students receive more background information about bats and white-nose syndrome. Working independently or in small groups, students can complete the simulation of bat survival by answering questions about bats in a scavenger hunt style Flippity.net quiz. Students then submit responses to the questions found in the Google Slide presentation as well as responses to any other discussion questions selected by the educator. For additional discussion questions, see the question prompts within the *Procedures*, *Variations*, *Extensions*, *Assessment* sections (see pp. 140-143) in the *Project WILD Guide*;

    OR

  - Conduct both synchronously and asynchronously--The simulation of bat survival can first be conducted with the whole group. Then, working independently or in small groups, students can complete questions from the Google Slide presentation and respond to any other questions from the Bat Blitz activity (see the *Procedures*, *Variations*, *Extensions* and *Assessment* sections--pp 140-143) in the *Project WILD Guide*.

- *Grade Level Modifications:* If using this activity with elementary students the simulation of bat survival can be done as an educator-led whole group activity instead of dividing into small groups.

Getting Ready:

- Review the activity Background and Material from the *Project WILD Guide*.

Technology tools, set up, and tutorials:

- *Little Brown Bat Survival Simulation* Google Sheets - Year 1, Year 2, Year 3 **It will only be necessary to access the Google Sheets if you (the educator) would like to edit/alter the bat survival simulation.** These Google Sheets are linked to the Flippity Scavenger Hunt, and they provide the data for populating this Flippity with questions for students to answer.
- Flippity - **It will only be necessary to access this if you (the educator) would like to edit/alter the bat survival simulation.** This is the online tool that turns the Google Sheets listed above into a scavenger hunt (quiz) format. This activity utilizes three different scavenger hunts that are each used as **bat survival** simulations. Use the Flippity Scavenger Hunt Instructions for tips on editing the existing *Little Brown Bat Survival Simulation Simulation* Google Sheets - Year 1, Year 2, Year 3. In step one on the Flippity instructions you will not click on and copy the link provided that says "this template." You will instead make copies of Year 1, Year 2, Year 3 Google Sheets. Once you have made copies you can edit/alter each of the survival simulations using the frequently asked questions section on the Flippity Scavenger Hunt Instructions and when you are done you will follow steps 2-4 to complete and share.
- Bat Blitz Google Slides Presentation
- Using Google Docs, Sheets, and Slides Tutorial

Conducting the Activity:

1. For this activity you will first need to create a copy of the Google Slides. See Using Google Docs, Sheets, and Slides Tutorial for instructions on how to make a copy.
2. During instruction in a live, synchronous virtual setting, use slides 1-3 in the Google Slides to introduce the topic of bats. (Estimated 10 Minutes)
3. Use the instructions on slide 4 to explain to students that they will be dividing into groups to complete little brown bat survival simulations. (Estimated 5 Minutes)
4. Divide the students into small groups and share with them a link to the Google Slides. Explain that each group has their own color-coded set of five slides that they will use. They will need to follow the instructions for completing the little brown bat survival simulation and record their data. Remind students to be sure and only record on their group's slides. (Estimated 5 Minutes)

5. The small groups can now begin the little brown bats survival simulation by following the instructions on the Google Slides. (Estimated 40 Minutes)
6. Wrapping Up: Bring the whole group back together and show students the survival simulation Google Sheets - Year 1, Year 2, Year 3 and review the answers to any questions that they were not able to answer correctly. Next have each of the small groups share the data from the table on their final slide showing their little brown bat population numbers over 3 Years. Compare the numbers from each of the groups' tables and discuss the reflection questions as a whole group. (Estimated 15 Minutes)

Assessment:

- Have each student record and submit the answers to the following questions:
    - Describe the roles little brown bats play in an ecosystem. In what ways do they benefit humans?
    - Predict what might happen to an ecosystem if there were a major decline in the number of bats.

Additional Options and Extensions:

- Combine data from each small group into one table and graph.
- Graph data from each small group and then compare the survival of different bat populations.
- Calculate the percentage of bats that survived from year to year. That is, if the starting number of bats at the beginning of each year was eight, what percentage of the eight bats survived each year? Research the average size of a little brown bat population and discuss that each of the eight bats in the survival simulation could more accurately each represent several bats (they could choose to have 1 bat represent 10, 50, 100, etc. bats based on the average bat population numbers they find during their research). Students can then adjust their numbers accordingly to get a more realistic representation of the survival rate from the imaginary population of little brown bats. How does the survival rate in this Bat Blitz simulation compare with survival rates of actual bat colonies impacted by white-nosed syndrome?
- Use proportional reasoning to compare the number of insects that different bats can eat in one night. Challenge upper elementary and middle school students in calculating rates, percentages, and unit conversions with the *Bat Math Challenge* student page at Project WILD's *WILD About Bats* page.
- For all ages, including lower elementary students, take the "Great Bat Migration Challenge." See the Google Slide presentation at Project WILD's *WILD About Bats* page.

Getting Outdoors

Flowering plants help bats by attracting insect pollinators that can serve as a food source for bats. Plants that flower at night can be especially beneficial. Native tree species help bats by providing roosting sites. Research plants that are native to your area and involve students and other community members to conserve local bat populations by planting near homes, school yards, and local parks.

Keep safety precautions in mind and follow guidelines for #ResponsibleRecreation. See https://www.fishwildlife.org/responsible-recreation.

Virtual Field Trip:

- Students can view live bat cams, such as at https://batworld.org/bat-cams/

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