MEGA:BITESS Lesson Plan

Lesson plans related to Medical Entomology & Geospatial Analyses:
Bringing Innovation To Teacher Education & Surveillance Studies
https://www.megabitess.org/

Lesson plan title:Designing an experiment and creating a hypothesis
Lesson plan author(s): Emily Butterfield and Lauren Waldron
Lesson plan school(s): Bearden Middle School

Required background
All needed materials will be housed within this website.
https://sites.google.com/view/clubbitess/home
Students can work their way through each lesson independently or as directed by an instructor as a part of a club, group, or organization.
Before leading this lesson, the instructor should become familiar with the basics of setting up a scientific experiment and writing a hypothesis. All needed information can be found in the google slide show on the above linked website.
It is recommended that the instructor work through lesson one on the website so that they are familiar with the materials and activities students will be completing.
There is a google form quiz to test understanding of the materials in the Google Slides. This is set up to give a score and automatic feedback.
There is also a Google form that students will use to submit a hypothesis. It will automatically send an email to those who fill out the form. You will want to create your own Google form or ask students to record their responses on paper.

Objectives
"I can…."

- Identify the parts of a controlled scientific experiment
- Write a hypothesis and a null hypothesis to direct my investigation.
- Describe how to conduct an experiment to get valid and reliable results.

Standards addressed

Tennessee Science Standards
7.ETS2: Links Among Engineering, Technology, and Applications of Science 1) Examine a problem from the medical field pertaining to biomaterials and design a solution taking into consideration the criteria, constraints, and relevant scientific principles of the problem that may limit possible solutions.

TN Science Practices

Planning and carrying out controlled investigations to collect data that is used to test existing theories and explanations, revise and develop new theories and explanations, or assess the effectiveness, efficiency, and durability of designs under various conditions.

Primary task

Students will work through a Google Slides presentation on the basics of setting up a controlled, scientific experiment. They will practice creating a hypothesis, and identifying controls and constants. Finally they will write a hypothesis and a null hypothesis for mosquito oviposition locations.

Other activities

Supporting video
Digital Quiz
Digital Breakout game at the end of the first series of lessons (covers all content)

Assessment

Creation of Hypothesis
Google Form quiz
Virtual breakout

Materials/links

https://sites.google.com/view/clubbitess/home

Potential limitations/issues to anticipate

Students may struggle with some of the concepts. It is normal for students to confuse controls and constants. Internet access may not be available for all students and they may need to access the content asynchronously.
Teachers may want to set up virtual meetings with their club members if they are unable to meet in person. When there are bandwidth issues, having students turn off their camera can help them hear and see others in the meeting.