Ada Lace and Ham Radio Exploration Chapter 6

Objectives:

Students will:

- Identify and discuss the significance of the California Academy of Sciences.
- Define and understand the concept of a "living roof."
- Explore the genetic condition of albinism using Claude the albino alligator as an example.
- Learn about blue morpho butterflies and their unique characteristics.
- Investigate how ham radio can connect people to NASA and astronauts.
- Analyze how differing interests can impact friendships.

Suggested Grade Levels:

3rd-8th Grade

Subject Areas:

- Science
- Technology
- Engineering
- Reading Comprehension
- Social Studies

Time Allotment:

1-2 class periods (45-60 minutes each)

Next Generation Science Standards:

- **3-LS4-3**: Construct an argument with evidence that in a particular habitat, some organisms can survive well, some survive less well, and some cannot survive at all.
- **MS-LS3-1**: Develop and use a model to describe why structural changes to genes (mutations) may affect proteins and may result in harmful, beneficial, or neutral effects on the structure and function of the organism.
- **MS-ESS3-3**: Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.

Background Information:

- The California Academy of Sciences is a research and educational institution with exhibits that include a rainforest, aquarium, and planetarium. The girls in the story visit this location and have a personal connection with Mr. Peebles, who volunteers there. The Academy's "living roof" is an example of sustainable architecture. Claude, the albino alligator, provides an opportunity to discuss albinism, and Frank, the blue morpho butterfly, introduces students to the fascinating world of butterflies. The introduction of ham radio in the story ties into real-world STEM applications and communications with NASA astronauts.

- Suggested resources:
  - California Academy of Sciences
  - Who is in Space Right Now?
  - NASA ISS Information

Vocabulary:

- **Living Roof** – A roof covered with plants that help with insulation and sustainability.
- **Albinism** – A genetic condition where an organism lacks pigmentation in the skin, hair, and eyes.

Materials:

- Copies of *Ada Lace, Take Me to Your Leader*
- Ada Lace, Take Me to Your Leader Part 2 of 3 (12:10-18:23)
- A ham radio (if available)
- Paper bags and craft materials for the astronaut puppet project

Lesson Procedures:

1. **Before Reading Discussion**:
   - Review Chapter 5
2. **Reading Chapter 6:**
   - What connection do the girls have at the California Academy of Sciences? (Mr. Peebles volunteers there)
   - Define “living roof” from page 54.
   - Who is Claude? (Albino alligator) Discuss the genetic condition of albinism briefly.
   - Who is Frank? (Blue morpho butterfly)
   - What surprises Ada about NASA and ham radio? (She can listen to NASA and might talk to astronauts)
   - How is the ham radio causing trouble in the friendship between the girls? (Different interests)
3. **Hands-on Activities:**
   - **Astronaut Research:** Students look up biographical information about the current crew aboard the International Space Station. (Who Is in Space?)
   - **Astronaut Puppet Project:** Students create paper bag puppets of an astronaut they researched and present a short biography using their puppet. These could be displayed.

Differentiated Instruction:

a. **Visual Learners:** Videos, diagrams, and hands-on crafts.
b. **Auditory Learners:** Listening to ham radio transmissions and astronaut research presentations.
c. **Kinesthetic Learners:** Hands-on puppet-making activity and role-playing presentations.
d. **ESL Students:** Provide vocabulary lists with translations and visual aids.
e. **At-risk Students:** Assign peer partners and provide structured guidance. Offer sentence frames.
f. **Advanced Learners:** Research deeper into NASA’s use of ham radio in space missions.

Extensions:

- Invite a local ham radio operator to discuss NASA’s ham radio connections.
- Research and discuss how astronauts communicate with Earth.
- Explore the genetics of albinism and its effects on different species.