**Module 1 Instructional Plan**

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| **General Information** | | | |
| **Lesson Title:** Discovering Your Botanical History | | | |
| **Overview:** We all know that understanding family history is important to understanding our place in the world. To help students learn to appreciate plants, this activity will connect family memories to specific plants that were important to them or to their ancestors. This is referred to as “botanical history.” Students will interview family members to identify a specific plant they will use for the remaining nine modules. The plant the students choose is ideally one that holds historical significance to their family (e.g., an apple tree that has provided fruits for many generations, or a houseplant that has been divided or shared on special occasions). The students will then share their stories with the class and compare the plants they have chosen with their classmates. | | | |
| **Subject(s):** Biology, Botany | | | |
| **Grade Level/Setting:**  Grades 9-12/Biology or Ecology Science Classroom | | | |
| **Prerequisite Skills/Prior Knowledge:**  Students should have a background understanding of plants and be able to identify the characteristics that distinguish them from animals. | | | |
| **Three Dimensions** | | | |
| **Disciplinary Core Ideas:**  Life Sciences: LS4 - Biological Evolution: Unity and Diversity | | | |
| **Science & Engineering Practices:**  Analyzing and Interpreting Data  Obtaining, Evaluating, and Communicating Information | | | |
| **Crosscutting Concepts:**  Patterns | | | |
| **Integration:**  Through guided questions, students will think about the importance and relevance of plants to their lives as they document their botanical history. Students will share their stories through presentations/creative projects and collect data about the types of plants the class will be using. They will analyze and interpret the data they collect to determine if some families are more commonly represented in the class sample and why that might be. Additionally, students will generate graphs to display the distribution of these chosen families as well as the roles they have played in their lives. This module will help students see how important plants are in the lives of all people and that they are integral to ecosystems and society. | | | |
| **Standards and Objectives** | | | |
| **NGSS Performance Expectations:**  Not applicable | | | |
| **Tennessee Science Standards:**  BIO2.LS4.13 - Interpret data supporting current plant classification schemes. Use a dichotomous key to identify plants based on variations in characteristics | | | |
| **Learning Objective(s):**  **The learner will:**   1. Describe interactions between humans and plants. 2. Identify “hidden plants” and plant products that may go unnoticed in day-to-day life. 3. Compile classroom data for plants identified and aspects of family histories shared with classmates. 4. Generate and analyze a graphic representation of the data collected.   **Guiding Question:**  How do plants help to shape human lives? | | | |
| **Materials/Resources** | | **Technology** | |
| * Paper, pencils, coloring/drawing supplies * Visual Guide to Important Plant Families * Botanical Histories Google Form * Discovering Your Botanical History **(Handout 1.1)** * My Botanical History **(Handout 1.2)** * Economically Important Plant Families list **(Handout 1.3)** * Introduction Video **(Video 1.1)** | | Internet access (e.g. computer or cell phone) | |
| **Safety Concerns** | | | |
| There are no safety concerns for this activity. | | | |
| **Academic Language** | | | |
| **Vocabulary:**  Taxonomic terms: family, genus, species, colloquial names, common plant names | | | |
| **Other Language Demands:**  Syntax:taxonomic hierarchy (division is used instead of phylum), binomial nomenclature, graphing variables  Discourse: interview protocols, essay writing, discussion, and public speaking. Students may have plants with common names in different languages. | | | |
| **5E Instructional Strategies and Learning Tasks** | | | |
| **Activity Description** | | | **Notes and suppl. documents** |
| **Engagement** | **Questions for discussion:**   * Can you identify a plant that played an important role in your family’s history? * How have plants impacted your family’s life or that of your ancestors? | | *Have students spend some time brainstorming these questions individually and expand into a classroom discussion if time permits.* |
| **Exploration** | First, students will build off of the previous discussion questions by answering the “memory probe” questions in part 1 of **Handout 1.1**.   * These questions are meant to guide the students’ thinking towards choosing at least 3 different plants that hold meaning to them and their family. Ask the students to answer these questions with as much detail as possible.   Then for homework, the students will conduct interviews with family members to find examples of plants that are significant with respect to their family history using the second part of **Handout 1.1**.   * “Significant” examples could include plants that were important economically, used as a source of food, shelter, clothing, or as part of hobbies such as gardening, hunting, or other outdoor activities. * *During discussions with family, the student should narrow their selections down to about three plants that will then be narrowed down to* ***one*** *that will be used for the remaining nine modules.* * *Encourage the students to be realistic (i.e., no illegal plants, nothing endangered or unlikely to obtain) and to be as specific as possible so that they can construct a meaningful story with their plant. They* ***do not*** *need to know the scientific name yet.*   **NOTE**: It is **essential** that students be able to obtain living material for the plant they choose to use. In later modules, they will work with these plants to create herbarium specimens, so access to living material is imperative.  Ideally, all students will choose a plant that was significant to their family either in their recent or more distant history. Possible alternatives for students that don’t have access to family members to interview:   1. The student can choose a plant that is significant from their own childhood 2. The student can choose a plant that they feel represents their family symbolically   The students must bring these interview questions back the next day (and any pictures they may have) to begin the next part of the module. | | **Handout 1.1: Discovering Your Botanical History** |
| **Explanation:** | Next, the students will briefly summarize their interviews using **Handout 1.2** and present what they learned**.**   * Using the interview questions, the students will complete the handout and share their information with the class. * During the presentation day, a collaborating herbarium staff member will visit to listen to their presentations and plant choices in order to assist with picking the plant the students will use and with plant identification (finding the scientific name of their plants based on photos, the internet, and other information). * A list of examples can be found in **handout 1.3** along with a **visual guide** in the teacher resources tab.   **NOTE:** This may easily extend into a second class period and will require extra time for the students to identify their plants.  The herbarium staff member will discuss the use of common names with students and the importance of using the correct scientific names to identify plants. | | ***Coordinate***  ***with herbarium staff to schedule day(s) they will visit***  **Handout 1.2: My Botanical History**  **Handout 1.3: Economically Important Plant Families**  **Handout 1.4: Visual Guide to Important Plant Families** |
| **Elaboration:** | Now that presentations are complete, students should make note of any trends in the plants chosen by the class (e.g., many families related to plants through food, gardening was a common theme, etc.).   * ***If time permits:*** *Calculate how many plant families and unique species are represented in their class. Indicate which families have the greatest representation.*   Graphically summarize (bar graph, pie chart, etc.) the trends of common plant families in the class as well as students’ shared experiences with plants. What new insights are gained from examining the class data? | |  |
| **Evaluation:** | Looking at the graphs created by the class (if completed), examine/discuss why some families/types of plants are more frequent in the class sample than others. See **Handout 1.2** for a list of economically important plant families.   * *Discuss how these trends may reflect certain kinds of plants being important to humans throughout our history to the present.*   A Google form link will also be provided to document the individual students’ plant and botanical history to be eventually shared with the community. | | **Botanical Histories Google Form**  <https://forms.gle/c5wV1czr6iVT37J39> |