PROPOSED TEACHING OUTLINE

Different teachers approach the teaching of a complete unit on plants differently. What is suggested below is only one way of teaching the proposed plant unit. Teachers should feel free to include additional activities and exercises based on their experience and the needs of their students. Additionally, some of the activities presented here maybe omitted or modified as the teacher deems necessary.

• Opening Activity: “Plant in a Jar”
  -discussion of what can be measured on a plant
  -discussion of phenotypes: What are they?

• Arabidopsis Research Activity:
  -Brainstorm what we know about plants
  -Develop a question: write a research question and rationale, peer edit and revise the question based on comments
  -Present and defend the research question to the class
  -Choose partners/groups and choose the question to be investigated
  -Develop a plan of how the investigation will proceed:
    *materials
    *methods
    *hypothesis
    *timeline of events
  -Groups present their project plans to the class
  -Research begins: (after teacher approves research)
    *planting
    *information searches

•**Lessons on measuring growth, recording in and using data tables, writing descriptions, and making solutions and dilutions

NOTE: As the research proceeds, the class could investigate the structure and functions of plants.

• General overview of what students know about: the purpose of roots, stems, leaves, flowers and seeds.

• Specific information on the structure and function of a plant
  -Structure and function of seeds (see Chapter 5)
    *Water Requirements (teacher demonstration)
    *Watching Germination
    *Seed Dissection
  -Structure and function of roots (see Chapter 5)
    *Why Have Roots?
    *Root Dissection
-Structure and function of stems (see Chapter 5)
  *Water Through the Stem
  *Stem Dissection
  *Tree Ring Science

-Structure and function of leaves (see Chapter 5)
  *Transpiring Plants
  *Observing Stomata
  *Leaf Identification

-Structure and function of flowers (see Chapter 5 and 5a)
  *What’s in a Flower
  *Plant Life Cycle
  *Seed Dispersal Mechanisms

• Basic statistics including mean, median, and mode (possibly determining statistical differences)
• Preparation of final group presentations
• Reintroduction to the “Plant in a Jar”
  -Revision of students’ original predictions
• Preparation of the final written report
• Possible preparation for a second round of research