



AQUATIC PLANTS AND INVASIVE SPECIES INDOOR LAB LESSON PLAN

Subject area: Aquatic Plants and Invasive Species

Grade level: Middle School

Seasonal timing: Fall before outdoor water studies

Instructional time: 45 minutes

A. Learning Goal: Learners will be able to use aquatic plant materials to identify native and invasive species and the value of aquatic plants.

B. Objectives:

- Discern emergent, free floating, submerged, floating leaf aquatic plants.
- Determine the benefits and value of aquatic plants and life cycles.
- Differentiate between native and invasive aquatic plants.

C. State Standards:

- SCI.LS1.C.m – Plants use the energy from light to make sugars through photosynthesis. Within individual organisms, food is broken down through a series of chemical reactions that rearrange molecules and release energy.
- SCI.LS2.A.m – Organisms and populations are dependent on their environmental interactions both with other living things and with nonliving factors, any of which can limit their growth. Competitive, predatory, and mutually beneficial interactions vary across ecosystems but the patterns are shared.
- SCI.LS2.C.m – Ecosystem characteristics vary over time. Disruptions to any part of an ecosystem can lead to shifts in all of its populations. The completeness or integrity of an ecosystem’s biodiversity is often used as a measure of its health.
- SCI.LS2.D.m – Changes in biodiversity can influence humans’ resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on — for example, water purification and recycling.
- SCI.LS4.D.m – Changes in biodiversity can influence humans’ resources and ecosystem services they rely on.

D. Setting: Indoor classroom.

E. Materials and Resources: Students divided into small groups of 3-5

- LEEP aquatic plants lab packets to compare and record “collected” aquatic plants.
- Pencils.
- Resource texts: *Through the Looking Glass* and *Lake Plants You Should Know*.
- Samples of native aquatic plants.
- Invasive species examples/display.
- Trays to hold samples.
- Ink stamps and ink pad (optional for validating extra credit).

F. General delivery, see teacher guide for detailed implementation suggestions:

Introduction of Lesson

1. Discuss aquatic green plants and their benefits:
 - Habitat for animals
 - Spawning areas
 - Absorb nutrients such as phosphorous and nitrogen
 - Food for mammals, waterfowl, insects, and fish
 - Roots stabilize sediments at shoreline
 - Cover for near shore animals (e.g. ducklings)
 - Oxygen for animals in littoral zone
 - Nesting areas for marsh birds, songbirds, and waterfowl
2. Show examples of aquatic plant types: Emergent, Free Floating, Submerged, Floating Leaf.
3. Discuss destructive nature of aquatic invasive species.
4. Discuss invasive species targeted in our area: Eurasian Water-milfoil, Curly-leaf pondweed, and their destructive nature to over-take native species.
5. Review laws about transport of aquatic plants and prevention of spread.

Large Group: Go over introductory materials and hand out equipment

Small Group: Each small group goes to a lab or desk station. Learners will identify the aquatic plants on the sheet according to their types and record them. The learners will then identify the plants using resource materials.

G. Assessment:

- Have *each group* write a short paragraph about their findings.
- Have an informal class discussion (wrap-up) about aquatic plants and invasive species.
- Have an informal discussion about their personal actions around water resources and what they can do to curb the spread of invasive species.



Left: Jeremy Bates, discussing aquatic plants and aquatic invasive species.

Right: Students examining and identifying aquatic plant samples.