



SHORELINE RESTORATION OUTDOOR LAB LESSON PLAN

Subject area: Shoreline restoration/reforestation

Grade level: Middle School

Seasonal timing: Spring

Instructional time: 45 minutes

A. Learning Goal: Learners will be able to determine how to restore/reforest the shoreline of a selected area of lake property.

B. Objectives:

- Learners will determine what plant types are appropriate for restoration/reforestation.
- Learners will be able to select and transplant vegetation to enhance the shoreline and littoral zone.

C. State Standards:

- SCI.CC7.m – Students explain stability and change in natural or designed systems by examining changes over time and considering forces at different scales, including the atomic scale. They understand changes in one part of a system might cause large changes in another part, systems in dynamic equilibrium are stable due to a balance of feedback mechanisms, and stability might be disturbed by either sudden events or gradual changes that accumulate over time.
- 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.
- SCI.ESS3.C.m – Human activities have altered the hydrosphere, atmosphere, and lithosphere which in turn has altered the biosphere. Changes to the biosphere can have different impacts for different living things. Activities and technologies can be engineered to reduce people’s impacts on Earth.

D. Setting/Area: Local lake, river, stream.

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

- String one meter long on a popsicle stick.
- Outdoor lab manual, clipboard, writing utensil.
- Local lake map for site.

- Shovels/trowels.
- Native plants for transplanting.
- Marker flags (like gas/electric company markers).
- Graph paper.
- Buckets to keep equipment together and to carry plants and water.
- Led by local expert (county/DNR/plant specialist), if available.

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

Introduction of Lesson:

- Review equipment care and maintenance
- Relate indoor map Activity
- Review the transplanting process

Safety Considerations:

- Learners should be advised of delicate plants in the area not to be disturbed
- Learners should stay with their groups at all times. Partner-up.
- First Aid kit should be available

Large Group: Go over introductory materials and hand out equipment.

Small Group: Each small groups goes to a designated area close where they can be monitored. Learners will:

- Make a circle 2 meters in diameter using the string and determine what plants are in the circle. They will mark their circle with a flag with their name on the flag.
- Determine what plants would be appropriate for the area by looking at the light and soil type.
- Learners will select appropriate plants from the instructor, plant, and water vegetation (3-4 plants) to the area. Learners encouraged to use ethical planting techniques.

G. Extended Student Options:

- Learner adopts a safe area near their home where they conduct a similar improvement project. Then write a summary of their findings.
- Learner formulates a photo essay of a restoration project.
- Learner researches (computer, etc.) what plants might be most effective in reducing erosion.

H. Assessment:

- Have *each group* write a short paragraph about their findings on the **Lab Sheet**.
- Have *each student* write a short essay on how this activity will affect their attitude towards using the shoreline and shoreline development.
- Have an informal class discussion (wrap-up) about the activity.



Travis Tulowitzky, Bayfield Co. Land and Water Conservation Dept., demonstrating native vegetation planting.