

## Rebuilding Safe Forests 8-Step PBLP (Grades 7-12)

**Objective:** Students will explore the impact of forestry and develop solutions for wildfire prevention and reforestation. Through a STEAMS (Science, Technology, Engineering, Arts, Mathematics, and Social Studies) approach, students will engage in hands-on learning to understand how communities can protect forests, restore ecosystems, and build resilience against wildfires.

### Round Table

- ❖ **Opening Discussion:**
  - Why is forestry important for a healthy ecological and local economic environment, especially in the context of preventing wildfire risks?
- ❖ **Purpose:** Introduce students to the risks of wildfires and deforestation along with solutions for rebuilding safe forests.
- ❖ **Materials:** Case studies on wildfire disasters, videos on fire-resistant forests, and news reports on extraordinary weather and forest conservation.

### Reflection Point

- ❖ **Discussion Questions:**
  - How can sustainable forestry practices be developed and implemented to balance the economic needs of local communities with the ecological health of forest ecosystems?
- ❖ **Materials:**
  - Historical wildfire case studies
  - Articles on indigenous forest management techniques
  - Journal for personal reflections

## Knowledge Setting

<b>Science (S): The Science of Wildfires &amp; Climate Resilience</b>	<ul style="list-style-type: none"><li>❖ <b>Objective:</b> Understand the ecological role of wildfires and how forests can be restored after fires.</li><li>❖ <b>Activity:</b> Research fire-adapted ecosystems and how tree species survive or regenerate after fires.</li></ul>
<b>Technology (T): Fire Prevention &amp; Early Detection Systems</b>	<ul style="list-style-type: none"><li>❖ <b>Objective:</b> Explore how technology is used to prevent, monitor, and respond to wildfires.</li><li>❖ <b>Activity:</b> Research drones and satellite imaging that employ warning systems for wildfire detection.</li></ul>
<b>Engineering (E): Fire-Resistant Forest Design &amp; Sustainable Rebuilding</b>	<ul style="list-style-type: none"><li>❖ <b>Objective:</b> Understand how forests and infrastructure can be designed to be more resilient to wildfires.</li><li>❖ <b>Activity:</b> Study a firebreak system for a forested community.</li></ul>
<b>Arts (A): Storytelling Through Environmental Awareness</b>	<ul style="list-style-type: none"><li>❖ <b>Objective:</b> Understand how visual storytelling can highlight the impact of wildfires and the importance of forest restoration.</li><li>❖ <b>Activity:</b> Research a government or private infographic that explains wildfire prevention and reforestation.</li></ul>

<b>Mathematics (M): Carbon Sequestration &amp; Fire Impact Analysis</b>	<ul style="list-style-type: none"> <li>❖ <b>Objective:</b> Understand the carbon loss due to wildfires and the carbon sequestration potential of reforestation.</li> <li>❖ <b>Activity:</b> Research real-world wildfire data to model how much carbon is released and how much can be recovered through replanting efforts.</li> </ul>
<b>Social Justice (SS): Forestry Policies, Land Management, &amp; Community Impact</b>	<ul style="list-style-type: none"> <li>❖ <b>Objective:</b> Analyze laws and policies regarding wildfire prevention, logging regulations, and community forest management.</li> <li>❖ <b>Activity:</b> Research how governments and environmental organizations manage forests and prevent wildfires.</li> </ul>

## Project

<b>Progress Map for Project Delivery</b>	<ul style="list-style-type: none"><li>❖ <b>Week 1: Project Proposal</b><ul style="list-style-type: none"><li>● Students create a written proposal outlining the focus of their project and community benefit.</li></ul></li><li>❖ <b>Week 2: Project Approval and Community Engagement Plan</b><ul style="list-style-type: none"><li>● Students submit their proposals and outline how their work will positively impact the community, ensuring alignment with the project's learning objectives and addressing real-world needs.</li></ul></li><li>❖ <b>Week 3: Research Progress Update</b><ul style="list-style-type: none"><li>● Students conduct research and gather data related to their chosen focus area.</li></ul></li><li>❖ <b>Week 4: Draft of Final Project</b><ul style="list-style-type: none"><li>● Students compile their findings into a draft report or presentation.</li></ul></li><li>❖ <b>Week 5: Final Project Refinement and Approval for Implementation</b><ul style="list-style-type: none"><li>● Final feedback is provided, and the projects are presented at a community event involving local leaders and stakeholders.</li></ul></li></ul>
--	--

<b>Science (S): The Science of Wildfires &amp; Climate Resilience</b>	<ul style="list-style-type: none"><li>❖ <b>Project Example:</b> Conduct small-scale experiments to test soil moisture levels in fire-prone areas and analyze how different soil conditions impact fire severity. Gather and formalize findings for community involvement project.</li></ul>
---	---

<p><b>Technology (T): Fire Prevention &amp; Early Detection Systems</b></p>	<p>❖ <b>Project Example:</b> Create a fire detection map that finds areas where wildfires happen the most. It should highlight common trends, such as the time of year fires occur, weather conditions, and how close they are to communities. Gather and formalize findings for community involvement project.</p>
<p><b>Engineering (E): Fire-Resistant Forest Design &amp; Sustainable Rebuilding</b></p>	<p>❖ <b>Project Example:</b> Design a wildfire-resistant community layout utilizing fire-resistant materials and sustainable water sources. Gather and formalize findings to enhance community involvement and resilience against wildfires.</p>
<p><b>Arts (A): Visualizing Wildfire Recovery &amp; Conservation Awareness</b></p>	<p>❖ <b>Project Example:</b> Develop a safety hazard infographic illustrating the life cycle of a forest after a wildfire, showing the destruction, regrowth, and conservation efforts. Gather and formalize findings for community involvement project.</p>
<p><b>Mathematics (M): Carbon &amp; Fire Impact Analysis</b></p>	<p>❖ <b>Project Example:</b> Design a model that predicts the long-term effects of deforestation due to fires. Gather and formalize findings for community involvement project.</p>

### **Social Justice (SS): Forestry Policies, Land Management, & Community Impact**

- ❖ **Project Example:** Draft a policy proposal advocating for equitable wildfire prevention funding or create a community action plan ensuring fair access to reforestation and disaster aid programs. Submit your policy idea to a local leader or environmental group to help improve wildfire safety and prevention in your community.

### **Community Involvement**

- ❖ **Objective:** Organize a community tree-planting event focused on fire-resistant species.
- ❖ **Activity:** Work with local environmental groups or officials to choose safe planting locations. Use this experience to create educational materials explaining how these trees help prevent wildfires.

### **Assessment**

- ❖ **Objective:** Evaluate students' understanding and application of forest conservation strategies.
- ❖ **Methods:** Peer, community, and teacher evaluations on outcome of their findings.

### **Feedback Loop**

- ❖ **Activity:** Reflect on the ways in which forest conservation can continue to prevent the dangers of natural disasters and extraordinary events.
- ❖ **Journal Prompt:**
  - What was the most surprising thing you learned about wildfire prevention?
  - What are the biggest obstacles to implementing wildfire prevention policies?

## Resume Integration

- ❖ Survey interest in careers in forestry, climate science, environmental law, and wildfire prevention. Add the project to their resume to showcase skills in research, problem-solving, and advocacy.

For more 8-Step Project-Based Lesson Plans check out our website at [www.steamsinitiative.org](http://www.steamsinitiative.org)

For all inquiries, please email [info@steamsinitiative.org](mailto:info@steamsinitiative.org)

A STEAMS Central, Inc. Program  
STEAMS Central, Inc. | STEAMS Initiative  
8605 Santa Monica Blvd  
#123617  
West Hollywood, CA  
90069-4109  
[info@steamsinitiative.org](mailto:info@steamsinitiative.org)  
833-379-6892