

<b>Title of Lesson Plan</b>	A Closer Look at Wood
<b>Prepared By</b>	Nina Gaddy
<b>City and State</b>	Collierville, TN
<b>Grade Level(s)</b>	9-10 grade biology
<b>Keywords (subjects covered)</b>	Hardwoods, coniferous trees, density, pressure-treated wood, pulpwood, engineered wood products, bole, extractives, silviculture, sustainable forestry
<b>Brief Description</b>	Humans are consumers of wood and thousands of wood products. Forests are renewable, but to sustain this renewable resource we must practice conservation and sound management of woodlands.
<b>Total Time Required</b>	Two 55 minute class periods
<b>Setting</b>	Lab tables/classroom
<b>Lesson Objectives/Goals</b>	The students will (TSW) distinguish between qualitative and quantitative observations. TSW determine the density of a sample of wood. TSW predict possible uses of wood. TSW describe steps of plywood production. TSW suggest ways to foster sustainability in forests.
<b>Materials Needed</b>	Regional wood samples, metric ruler, scale, calculator, note cards, samples of rayon fabric, turpentine, vanilla extract, graphic organizer templates
<b>Standards Addressed</b>	TN Science Standard 1.1b The human senses and technological instruments are used to gather information from the environment. Data collected from the scales of scientific instruments are accurately read and recorded using significant digits. Standard 2.2b Environmental, sociological, psychological, electrochemical, and biochemical alterations may induce changes in the form, and may alter the function of an organism. Standard 4.1c The perceived value of any technology may vary for different groups of people and at different times. The relative importance of new technology may depend upon cultural norms and its usefulness at a particular time and setting. Standard 4.5a Science and technology impact economic growth and productivity. TN Gateway Standard 9-12 Biology 5.2 Infer the types of organisms native to specific environments included in the major biomes present on earth.
<b>Procedure</b>	To each group of three students, give a wood sample of similar size and shape. Allow time for students to

	<p>make qualitative and quantitative observations and write them on the note card. Collect all wood samples in a box. Ask volunteers to identify another group's sample based on the description written on that group's card.</p> <p>Return original samples to each group. Remind students how to use electronic scale. Ask students to make an indirect measurement and to calculate the density of the wood (mass/volume). Discuss correct units of measurement. Discuss how density is related to function/use in wood products?</p> <p>Allow students to calculate the density of an unknown wood sample (southern yellow pine). Discuss possible uses for solid wood products of pine (manufacturing, construction, and shipping). Discuss possible uses for engineered wood products (plywood, particleboard). Show sample of pine plywood and explain procedure for producing plywood; from log to finished 4x8 sheet. Demonstrate with a roll of paper towels. Discuss use of wood pulp (cellulose, turpentine, paper products) and show examples. Discuss use of wood by-products/extractives (clothes, fragrances, soaps) and show examples.</p> <p>Show video "The Miracle Resource" to explain how forests are the renewable resource. Discuss methods for maintaining and sustaining forests. Show "Two Sides of Fire." Show examples of graphic organizers.</p>
<b>Assessment</b>	Each student generates/creates a graphic organizer that demonstrates at least three, specific efforts that humans can practice to ensure the sustainability of forests.
<b>Literature Cited/References</b>	Temperate Forest Foundation publications: <i>The Dynamic Forest</i> and <i>Eco-Link</i> publication and DVDs: "The Miracle Resource" and "Two Sides of Fire." HRW, <u>Modern Biology</u> ; Biology Gateway Institute, TN Dept. of Education, Jan. 2000
<b>Forestry Tour Attended</b>	South Central 2008

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