Unit 2: Lumber Characteristics

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 1**
Length: **1 Weeks**
Status: **Published**

Standards

LA.RST.11-12.1	Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.
LA.RST.11-12.2	Determine the central ideas, themes, or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
LA.RST.9-10.2	Determine the central ideas, themes, or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
LA.RI.11-12.1	Accurately cite strong and thorough textual evidence, (e.g., via discussion, written response, etc.), to support analysis of what the text says explicitly as well as inferentially, including determining where the text leaves matters uncertain.
LA.RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
LA.RST.11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LA.RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.
LA.RST.11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
LA.RI.11-12.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
LA.RST.9-10.5	Analyze the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
LA.RST.11-12.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LA.RST.9-10.6	Determine the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
LA.RST.11-12.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
LA.RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
LA.RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

LA.RST.11-12.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
LA.RST.9-10.8	Determine if the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
LA.RST.9-10.9	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
LA.RST.11-12.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LA.RST.9-10.10	By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.
LA.RST.11-12.10	By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
VPA.1.1.12	All students will demonstrate an understanding of the elements and principles that govern the creation of works of art in dance, music, theatre, and visual art.
CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.
CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.
TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.2.12	Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Essential Questions

• What is meant by the terms hardwood and softwood, which one is commonly cut to standard sizes, why?

• What is the advantage of having more than one cutting method for boards?

• How can it be decided which wood/s will work best for specific project?

• How the lumbering industry changed in the last century and what has brought about these changes?

Objectives : What students will know/What students will be skilled at

STUDENTS WILL KNOW:

• the difference between a hardwood and softwood.

• how to identify specific types of lumber.

• how lumber is made.

• how lumber is dried and why.

• how lumber is dimensioned and the meaning of board foot, square foot, and linear foot.

• the meaning of S2S and S4S.

• how lumber is graded.

• key terms (e.g. old growth, lumbering, coniferous, deciduous)

• how forests are harvested.

• what the job of a forester is.

• the main parts of a tree.

• which woods are generally used for furniture, cabinets, construction, and why.

STUDENTS WILL BE SKILLED AT:

• Knowing thow to choose lumber because it will greatly affect the look, feel, and structural stability of the work.

•knowing many types of wood available to the woodworker.

• understanding lumbers will present varying degrees of difficulty when machining, due to their individual characteristics.

•understanding kiln-dried woods behave differently than air dried woods when exposed to atmospheric moisture.

• identifying the direction of the grain

Learning Plan

• Preview the essential questions and connect to learning throughout the unit.

• Introduce essential questions and key vocabulary.

• Present lesson on lumber characteristics.

• Distribute samples of both hardwoods and softwoods and have students separate and document their characteristics.

• Distribute various grades of lumber and have students grade them according to industry standards.

• Have students saw into boards several 18" – 20" logs. Working in groups students will prepare the boards for the drying process.

• Monitor the drying boards above throughout the year and chart the moisture content on a graph.

• Have students place several blocks of wood in jars containing ½" of colored water. Students create a 5 day chart of the appearance and dimensions of the blocks, keep a record of the results, and report the findings to the class.

• Discuss the differences between a managed and un-managed forest.

• Present the video "The Forest Goes on Forever" by Weyerhaeuser.

• Have students use the Internet to research endangered forests and report their findings to the class.

• Show sample logs of various trees including each of the types used in our shop.

• Read and discuss relevant selections from woodworking textbook.

• Have student's research and discuss the effects of over-harvesting a forest.

• Have students discuss the condition of today's rainforests and what might be done to combat some of the problems.

• Have students self – evaluate their conservation efforts relating to forest products, class discussion.

• Writing prompt completion, sharing and evaluation.

Assessment

•Formative:

- **answer the essential questions.**
- **be able to identify specific types of hardwood.**
- **be able to estimate the cost of lumber using board feet in their calculations.**
- **be able to draw on paper the difference in the look of a plain-sawed log and a quarter-sawn log.**
- **comprise a partial list of items that they use throughout their day, and be able to tell which items come from trees.**
- **be able to separate a given number of blocks into hardwoods and softwoods and using the internet determine what type of wood the blocks are.**
- **be able to explain why a particular wood is the best choice of material for a given project.**
- **demonstrate knowledge and understanding of shop safety procedures at all times.**

- **actively and meaningfully participate in all classroom activities and discussions.**

•Summative

- **complete a writing prompt related to the characteristics of wood.**
- **complete a quiz on the characteristics of wood**
- **using the many environmental sites on the internet, students will create a list of endangered trees and explain why they are disappearing as well as the impact this has on the environment.**

Materials

Textbook

Various Types of Lumber

Handtools

Wood Cutting Machinery

Internet Research

Accommodations & Modifications

https://docs.google.com/spreadsheets/d/16FQGn9mt8fKFWc_lwnwVGmdb-Qonsj6UsyBQAtmTRlI/edit?usp=sharing