

Working With Re-Claimed Wood (Part 1 of 2) To Remove - or Not Remove - an Old Finish and Put on the New

Info in red font is for the benefit of the teacher (notes and ideas for differentiated learning etc). Delete text in red font from the copies that are distributed to students.

In a document / template that is intended to be "filled in" by students for assessment / evaluation purposes, the Version History table can be retained for students to use. Making an improved version is great learning.

Version History:

V #	Date	Author	Short Listing / Description of Changes
1	July 16/12	D.B. McCowan	Initial Version -- uploaded to OCTE Safety Portal
2			

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REFER ALSO TO FILE 16.2_Old_Finishes_Eval.doc for the practice work and the evaluation assignment to be marked.

1 Expectations: Critical Thinking for Decision-Making

Design / Build a Marketable Picture Frame Using Scrap Wood Flooring	
1 Curriculum Expectation	2 Activity -- What You Will Do in this Lesson
<p><i>In this unit the student will demonstrate / practise the following:</i></p> <p>C1.2 -- describe and apply best practices for conserving energy and other resources during the design process (eg reuse and recycle materials)</p> <p>D1.2 -- demonstrate an understanding of and follow personal and environmental health and safety procedures with respect to processes, materials, tools, equipment, and facilities throughout the design process and related activities (e.g., use protective equipment; set tool and equipment guards properly; ensure adequate ventilation and ergonomic seating and other workplace arrangements; follow safe operating procedures; keep work areas clean and organized; store materials and dispose of wastes properly).</p> <p>DL-M (mid) and DL-H (high): --Do not show these students the blue font highlighted portions above. These students can think this through during the assessments – which key aspects of the Expectation D1.2 are addressed in this lesson? -Encourage these students to write their thoughts (in their portfolio) for at least one of the “Think Critically About This...” boxed items below</p>	<p>Critical Thinking – “Risk Assessment” ---How can I safely remove the old finish from my nice piece of salvaged wood flooring? ---Should I leave the old finish on, adding to the story I want my product to tell? ---Is this old piece of salvaged wood more trouble than it is worth?</p> <p>Assessments -Knowledge -Thinking -Communication -Cross-curricular Application of concepts</p>

2 This Lesson is Important Because... Safety is Paramount

We are slowly – but surely -- running out of resources on earth. Re-using and re-cycling materials is generally a good idea, if done correctly and safely. There are some concerns with using old materials -- including safety concerns -- that must first be recognized, understood and then dealt with appropriately.

Those old pieces of wood in your hands may be beautiful and they may have an interesting story to tell in the product you'd like to build with them. Just make sure that part of the story they tell is how you personally took full control of the inquiry / design / build process – that you investigated the wood thoroughly and acted in a safe and responsible manner every step of the way.

3 Start to Plan a Cross-Curricular Connection -- Life Cycle of a Tree

Wood is good – a remarkably hard, strong and beautiful building material. A piece of wood comes from a tree, a living organism. A tree has a natural life cycle. As a part of nature, the sizeable components of a tree such as leaves, twigs, branches and trunks are all subject to nature's natural forces from the moment the first cell forms to the moment it finally decomposes to basic chemical compounds. The durability of the wood over time thus depends on mother nature – rain, wind, freeze-thaw cycles, animals, insects, fungal spores and moulds. Moreover, trees are living organisms – they have an expected life span. Some species live many hundreds of years before the demise and death part of the cycle finally sets in.

Then humans interfered with the life cycle of the tree by cutting it and building things out of the wood. As humans began to use wood for their shelters, they noticed that they could prolong the useful life of their wood by protecting it from the elements. Adding a leak-proof roof to keep wood members dry was an obvious action to take. Sizing and bracing joints correctly would also help – mortise, tenon, pin and brace all needed to fit together just right to remove all looseness and reduce movement during heavy winds. Applying a surface treatment to discourage wood-destroying insects from “stopping by” to lay eggs also came to be recognized as a good idea. Over time, we developed surface treatments which hardened to protect a wood floor from the wear and tear of people and their shoes. We also came to appreciate that we could keep a floor looking cleaner and more attractive if we first fill cracks with special fillers prior to the application of the final surface finish.

And of course, over time, we sadly discovered that the paints we were using were hazardous to our health – lead was a significant constituent in those old paints.

Think Critically and Creatively about extending your learning to...

...connect technological design class with science class or geography class or math class or history class.

What is it about a tree's life cycle that most interests you? By the time you are finished this Recycled Wood learning unit in Tech Design, you should have a very good idea of how you can impress one or more of your other teachers.

- You could, in math class for instance, work with strength formulas for a species of wood.
- For science class, you could investigate why some insects like eating seasoned wood.
- Impress your geography teacher by reporting on the apparent changes in certain tree species population and health in Ontario – perhaps, you surmise, due to some global warming forces.
- Your history teacher should be impressed by your interpretation of an old Ontario house style in your community -- could be a log home or post and beam timber frame or vertical plank construction.
- In English class you could write a creative piece describing how wood décor in various styles livens a room.
- For your chemistry teacher, write a report on the chemical composition of a particular kind of wood stain – and the potential effects on humans of breathing its fumes.
- In careers class, investigate the safety concerns of a worker in the old home restoration field

4 Review... You Already Know Something About Paint and Aesthetics

You probably already know that there are two basic kinds of paint:

- Oil-based – often commonly known as “alkyd”
- Water-based – or you may prefer to call them “latex”

And you've probably heard that there are also brush-on liquids called stain, varnish, lacquer, oil, shellac and maybe a few others. And you probably remember that your bedroom window was open when the folks were painting the walls. And you were not allowed to study in your room when your dad was up the ladder painting – for your safety and for his. And it is obvious to you that we paint things to make them look better!

In point form, jot down at least five more morsels of your existing knowledge in this “*aesthetics of final finish*” area of design.

5 Where there is Uncertainty ... Get More Information about Finishes

What if it is cold outside and you want to close your bedroom window? “How much time can I spend in my room breathing that stuff in?” you ask. Ok, confess... you don’t really know all that much about the safety of paints and stains from the chemistry side of things.

So you dig for more information on the internet or in the library. Here are a few internet sites for you to assess, research and study. You might need a couple more good sites, by the way – you decide which ones, and of course, cite your sources if you write a research or other report.

URL	Topic	Site Assessment: How Reliable Do You Think This Site Is?
www.wikihow.com/Construct-High-Quality-Furniture-Using-Reclaimed-Wood	Using reclaimed wood for furniture	
www.cpsc.gov/cpscpub/pubs/423.html	Paint strippers	
www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/strippers-decapants-eng.php	Paint strippers	
www.umm.edu/ency/article/002801all.htm	Paint, lacquer and varnish remover	
http://woodzone.com/Merchant2/articles/paint_stripper.htm	Finish strippers	
http://futonfraggle.hubpages.com/hub/Does-Your-Home-Contain-Lead-Based-Paint	Lead-based paints	
www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/paint-peinture-eng.php	Lead-based paints	
www.finewoodworking.com/pages/w00060.asp	Selecting a finish	
www.minwax.com/wood-finishing-101/staining-interior-wood/	Staining interior wood	
www.leevalley.com/en/shopping/TechInfo.aspx?type=a&p=59381	Finishes for items used for food	

Investigate and Think Critically About This:

During your research on both removing an old finish and applying a new one, ask yourself – “If I am working with this particular kind of finish, how can I minimize my risks?”

Safety is of paramount concern. Refer also to the summary in section “**Recycled Materials – There will also...**” of document 15.4. Better to be well-informed – and safe – than sorry! Be sure to answer all of the questions in the next section.

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