

# Using the Table Saw ... Or Not

## Collaborate (Share What You Know), Thinking and Communication

**Info in red font is for the benefit of the teacher (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	June 7/12	D.B. McCowan	Initial Version -- uploaded to OCTE Safety Portal
2			

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### 1 Expectations and Self-Reflection

Design / Build a Marketable Picture Frame Using Scrap Wood Flooring	
1 Curriculum Expectation <i>In this unit the student will demonstrate / practise the following:</i>	2 Activity -- What You Will Do Now – See Section 2 Reflect – How Well Did You DO?
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><b>Do the Assessment in Sect 2 – Knowledge; Thinking; Communication</b></p> <p><b>Reflection:</b> Now reflect on how well you met the expectations. What additional knowledge and skills do you need before you believe that you can work safely and effectively on the table saw? What have you not yet mastered in Expectation D1.2? Enter a brief reflection in the space here or in a separate file if you prefer.</p>

## 2 Group Discussions & Class Presentations: Critical Thinking (KTC)

### Note to Teacher:

Sample answers in red font below each question are (deliberately) neither perfect nor even complete – and in some cases, rather jumbled. Encourage students to make improvements. Every student should first choose at least one question that he or she will do entirely on his / her own. Every student should then join one of the other groups. Group work is suggested such that stronger students can help weaker students with the critical thinking that is so important. Each of the six groups should present their findings to the class. Students in the audience should take notes during each presentation. If a student insists on working alone, DL options include the following:

Differentiated Learning Ideas	
Abbrev	Description / Notes
DL-L	For students with lower abilities. --Up front, give these students all of the sample answers with some key words missing – a fill-in-the-blanks exercise, with a list of words to choose from -- Encourage student to make at least one improvement or addition to at least one sample answer. This could involve putting the answer in an improved or more logical order.
DL-M	For students with moderate / mid-range abilities. This should generally be the default, always involving some level of critical thinking. -- Up front, give these students only 3 of the sample answers with some key words missing – a fill-in-the-blanks exercise, without a list of words to choose from -- Encourage student to make at least one improvement or addition to at least 3 sample answers. This could involve putting the answer in an improved or more logical order. -- Student to answer the other 3 questions on own (without sample answers up front). Give students at least one good website as a research resource.
DL-H	For students with higher abilities or, ideally, "for any students who want to do more". -- Student to answer all questions on own (without sample answers up front) by doing their own research either on-line or in books. Students should judge reliability of selected research resources.

The teacher gave two demonstrations. In both demonstrations, the location of the cut was pre-planned and measured. You were to pay close attention and take notes. He or she:

- Used a hand saw to make a 90° cut across a piece of 1 x 4 x 24" (appr) scrap wood.
- Used a table saw to make a 90° cut across a piece of 1 x 4 x 24" (appr) scrap wood.

Answer the following question(s) in the manner agreed with your teacher.

1. Identify the hazards / risks in using the table saw for cross-cutting. Use a table to structure your data.

Hazard	Risk	Precautions / Actions to Take
Electrical Energy	-Shock -Fire	-Make sure there are no sparks -Check that switches are covered by the proper plate -Turn on dust extraction system and open the damper at the table

Hazard	Risk	Precautions / Actions to Take
		saw
Mechanical Energy: Sharp rotating blade	-Cuts -Severed fingers	-Make sure guard is in place and functioning properly -Use one or even two push sticks when cutting small workpieces -For very small workpieces, use a good handsaw and a clamp or vise instead of the table saw
Mechanical Energy: Rapidly rotating blade cutting a piece of wood	-Punctured lung or other organ due to stabbing by wood that is kicked back by the blade	-When cross-cutting, make sure rip fence is well out of the way -Make sure that anti-kickback devices are in place and working properly -Check that blade insert is fully inserted and that nothing else will impede smooth movement of the workpiece -Stand slightly to the side, out of the `line of fire`. -Be very aware of increasing resistance to your push on the workpiece – stop motor if necessary -For very small workpieces, use a good handsaw and a clamp or vise instead of the table saw (-If ripping, make sure rip fence is perfectly parallel to the blade)
Other flying debris	-Cuts -Eye injury	-Make sure everyone in the shop is wearing safety glasses with side shields or, better yet, complete safety goggles with tight strap
Dusty environment	-Irritation of eyes -Respiratory irritation	-Turn on dust extraction system and open the damper at the table saw -Wear a good dust mask or certified ventilator

2. Why did the teacher not use the fence to make the above cut on the table saw? Describe the geometrical relationship between the fence and the saw blade. Can you `trust` that a pre-existing cut across a board is a good 90° cut?
  - a. The table saw fence must be perfectly parallel to the saw blade. The fence must also be perfectly parallel to the splitter on which the guard is typically mounted. Furthermore, the splitter must be perfectly collinear with the saw blade. A rip fence is used only when you need a cut that is parallel to the long axis of the board. Check a board`s existing trueness, square-ness of edges, knots and other flaws before making a decision on how to best make your cut. You may need to square-up the board beforehand. Using the rip fence to make a cross-cut is both dangerous and could damage the equipment. If the workpiece twists diagonally, at the very least the fence could twist – and even damage to bearings could occur.
  
3. Why and how would you check the calibration of the mitre gauge on the table saw? Take careful note of how `sloppy` the mitre bar is in the miter slot on the table – how much `play` is there?
  - a. If you want a good 90° cut across the board, you need a firm grip and control over the board as you tightly press it against the mitre gauge and smoothly push the gauge / board forward together to make the cut. But if you did not use a large square to first ensure that the mitre gauge is perpendicular to the saw blade, you will be wasting your time and will have to make the cut again (or perhaps you will waste that piece of wood). If there is significant play or wobble of the mitre bar in the mitre slot, the cross-cuts that you make will not consistently be 90°. A

person skilled with a hand saw can make more accurate cross-cuts than another person working with a poorly designed mitre gauge on a table saw. A radial arm saw or a power mitre saw is generally a better bet for cross-cutting than is a table saw.

4. What does the splitter prevent you from doing?
  - a. The splitter prevents you from making a cut only partially through the board's thickness. The splitter typically holds the guard in place, and because you must use the guard, **YOU MUST NOT ATTEMPT TO MAKE DADO OR RABBET JOINTS ON THE TABLE SAW.** See the teacher for additional lessons if your design involves joints such as these.
  
5. If cross-cutting changes the length of a board and if ripping changes the width of a board, what is the purpose of re-sawing?
  - a. Re-sawing must then change the thickness of a board. **DO NOT ATTEMPT TO RE-SAW USING THE TABLE SAW.** If you must change the thickness of a board, use a thickness planer – or use a good old-fashioned hand plane and grow your hand skills and patience.
  
6. In four carefully chosen words, how would you describe good hand-sawing technique?
  - a. **Smooth, gentle, controlled rhythm. Cut just slightly (say 1/32") on the waste side of your line.**

Take up the sample text in red font (above) in class. The class should have many other good points too.

### 3 Peer Assessment

NOTE: In the feedback, the Peer Assessor must “make the student think” – not give the student the answer! Be sure to include comments justifying the assessment value that you are giving. Peer Assessor must put his / her comments in red font.

**Assessor's Name and Additional Notes:**

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