

# Using the Table Saw ... Or Not Decision-Making for Safety

**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.**

**CC = Significant cross-curricular learning opportunity**

**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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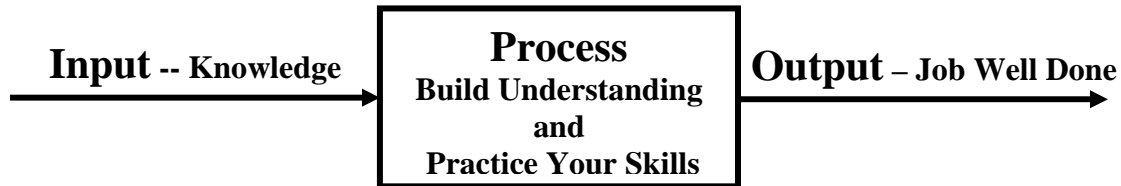
## 1 Expectations – Decision-Making

<b>Design / Build a Marketable Picture Frame Using Scrap Wood Flooring</b>	
<b>1</b> <b>Curriculum Expectation</b>	<b>2</b> <b>Activity -- What You Will Do in this Unit</b>
<i>In this unit the student will demonstrate / practise the following:</i>	
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	<b>Decision-making for safety:</b> ---Is it appropriate or necessary to use a table saw every time you cut a piece of wood? ---Can you safely use a table saw to make the cut that you need? <b>Three-Step Planning</b> 1 Measure accurately 2 Machine setup 3 Prepare a detailed step-by-step procedure – and follow it

<b>Design / Build a Marketable Picture Frame Using Scrap Wood Flooring</b>	
<b>1</b>	<b>2</b>
<b>Curriculum Expectation</b> <i>In this unit the student will demonstrate / practise the following:</i>	<b>Activity -- What You Will Do in this Unit</b>
and organized; store materials and dispose of wastes properly).	<b>Assessments</b> -Knowledge -Thinking -Communication -Application of concepts

## 2 This Lesson is Extremely Important Because...

You must be able to make a clear decision when it comes to getting a job done both safely and efficiently. Choosing the right tool to use is a skill in itself.



## 3 Review – Safety\_Machine\_Tools.doc (Critical Thinking)

First review document 1.3\_Safety\_Machine\_Tools.doc – these two sections in particular:

- The Machine / Tool Must be Ready for You to Use It
- You Must Be Ready to Use the Machine / Tool

### ***Think About This Regarding the Table Saw:***

1 Which of these items in section `Machine Must Be Ready...` is most critical with respect to the Table Saw? Justify your answer, ie your decision.

- a) Guards are secured in place and, when necessary, are adjusted according to the work-piece.
- b) Fences, jigs, fixtures, tool-rests, workpiece beds, depth gauges and other 'helper' parts are in good working order and are properly adjusted.
- c) Machine speed has been adjusted for the task.
- d) Handles are secure.

2 Which of these items in section `You Must Be Ready...` is most critical with respect to the Table Saw? Justify your answer, ie your decision.

- a) You have reviewed the procedure for achieving what you want to achieve on the machine.
- b) Your five senses are all at high alert and you are mentally prepared to use the machine.
- c) You know "what to watch for" and are prepared to act properly in the case of a problem or an

emergency.

- d) You are physically prepared to use the machine, eg proper footing for balance.

#### 4 You Already Know More Than You Think You Know: Apply Some Math

You should already know how to measure distances, both in metric and in imperial units. Measure twice, cut once, as the saying goes.

Moreover, you already know that parallel lines, if extended indefinitely, will never meet. Perpendicular lines are 90° to each other. In our three-dimensional world, rectangular prisms are described as having a length, width and thickness. We buy many raw materials such as lumber in the shape of rectangular prisms. Many of the products that we design and build are also in the general form of rectangular prisms. The 90° angles which predominate in a rectangular prism make objects of this type relatively easy to build.

Of course you`ll need some additional input information that is specific to table saws. Then you`ll need to work with – Process -- this new knowledge to build your understanding.

Then you can get your hands dirty as you apply some concepts from math class and build some skills to produce something of value in the school shop.

#### 5 INPUT -- Table Saw – Key Information

**Note:** The following Table Saw information has been obtained from the OCTE Safedoc foundation materials (with modest additions shown in blue font).

##### Table Saw

1. Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate. No loose clothing, long hair or jewelry is allowed in the shop.
2. Do not operate the table saw without the instructor’s permission. Follow the manufacturer's instructions for changing tool accessories.
3. Be aware of the position of the on/off switches and emergency **STOP** button.
4. Make sure the floor is clear in the work area.
5. Check the blade for flaws (replace if damaged, worn, or dull) Make sure auto kick-back is in place. Secure the fence position before beginning. Always keep the work firmly down on the table while pushing it past the blade.
6. Always “lock-out” the table saw before changing blades.

7. Never reach over the blade.
8. Always use a push stick when the fence is set under 3" to the blade.
9. Ask for assistance when working with large pieces. **Assistants must also wear glasses.**
10. Wear a dust mask when cutting treated wood or when there is a fine dust hazard.
11. Stand clear of possible kickback. Keep your hands clear of the blade path.
12. When working with a partner ensure you have clear communication. The second person should stand behind and to the left of the blade.
13. Do not feed the material faster than the saw will accept.
14. Use a fence when making a rip cut and a mitre gauge to make cross-cuts. Never cut a piece of material free-hand. Keep the work against the fence throughout the operation.
15. Report all unguarded and inadequately guarded equipment promptly to your instructor.
16. Always check the machine guards to make sure they are in place and operating, before using the machine. **The support / guide for the blade guard and the splitter must be tight. The splitter must be directly behind and in-line with the blade.**

**AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR**

## **6 PROCESS to Build Understanding – Practice Makes Improvement**

Regardless of the power tool that you will be using, to a large extent, success depends on three steps in your planning:

- 1 Measure accurately
- 2 Machine setup
- 3 Prepare a detailed step-by-step procedure – test it, tweak it and then follow it

Measuring accurately will typically involve a tri-square or combination square or carpenter square in addition to a measuring tape. In some situations the pythagorean theorem will prove very helpful.

The early table saws were very simple and were comprised of a few key parts: a circular blade, a table, an energy source and some kind of connection shaft / drive system between the energy source and the blade. Modern table saws now have integrated fences, mitre gauges, height and angle adjustments, all of which take some skill to use effectively. Hence the importance now of steps 2 and 3 above -- machine setup and a good detailed procedure. Moreover, if you want to make multiple identical parts of the same dimensions for your project, you would be well-advised to clearly plan ahead how you can most accurately and efficiently make all of those parts identical. This may involve a couple of cycles of slightly tweaking the machine setup to get accurately-cut angles for instance.

### 6.1 Some Aspects of Table Saw Evolution



The rich surface patina of this circa 1840 Scarborough stretcher-base harvest table scarcely betrays the table saw that it came to be a century later. As with all valuable antiques, you gotta' look underneath to see how it all came together – including the cutout to help provide for some blade height adjustment as well as some apparent occasional belt scraping. There were no guards. The business parts of this table saw were moved a decade later into a next-generation model immediately below.



Also no longer in use as a table saw, this farm-made portable model boasts war-time panels from a cigarette machine and what appears to be a piece of a very heavy leaf spring as part of the motor mount / blade height adjustment. Still no guards.



**A Relatively Modern Table Saw**

Find the guard, mitre gauge, fence, blade angle adjustment, blade height adjustment, start and stop switches



The same saw with guard lifted to show rip fence parallel to the blade and splitter; also one anti-kickback device



Same saw showing anti-kickback device on left side of splitter

## 7 PROCESS – Teacher Demonstrations (Two)

The teacher will give two demonstrations. He or she will:

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

In both demonstrations, the location of the cut will be pre-planned and measured.

If the teacher is not giving you a constant play-by-play in words during the demonstration, it is because the teacher wants you to watch closely and think very carefully about what he or she is doing – every step of the process. For example, take careful note of where the teacher`s hands are placed while making the cut in each demonstration. If the locations of the teacher`s hands are important, what about his or her feet? And beware – the teacher may even deliberately begin to show you something that is wrong! He or she will be waiting patiently for you to say something! Speak up and show your critical thinking skills!

You will be assessed on how much you learned during these demonstrations. So, pay close attention and take notes.

## **8 Group Discussions and Class Presentations – Critical Thinking**

[REFER TO FILE 1.9.1\\_TableSaw\\_Assess-KTC.doc for the practice work.](#)

## **9 For Safety`s Sake, Show Your Critical Thinking by Doing Some Technical Communication**

[REFER TO FILE 1.9.2\\_TableSaw\\_Assess-TC.doc for the practice work.](#)

## **10 OUTPUT – Thinking / Design Assignment (100 Marks)**

[REFER TO FILE 1.9.3\\_TableSaw\\_Assess-TCA.doc for the 100 mark assignment.](#)

## **11 Safety Reminder**

A table saw is quite possibly the most dangerous piece of equipment in the shop.