



Tips for Teaching Knife Skills



Karin Allen, PhD

Food Quality & Entrepreneurship Specialist

Janet Smith, MS

Extension Assistant Professor, Uintah County

Table of Contents

Section 1: Understanding Your Knife

Parts of a knife.....	1
Common types of knives.....	2
Sharpening knives.....	2
Storing knives.....	4

Section 2: Using Your Knife Safely

Knife grips.....	5
Cutting boards.....	7

Section 3: Practicing Knife Skills

Cutting techniques.....	9
-------------------------	---

Section 4: Teaching Resources

Basic vegetable cuts and dimensions.....	11
OSHA guide for teen workers.....	12
Knife skills lab – soup and salsa (2 hours).....	13
Knife skills lab – salsa (1 hour).....	16
Knife skills lab – soup (<1 hour).....	19

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions.

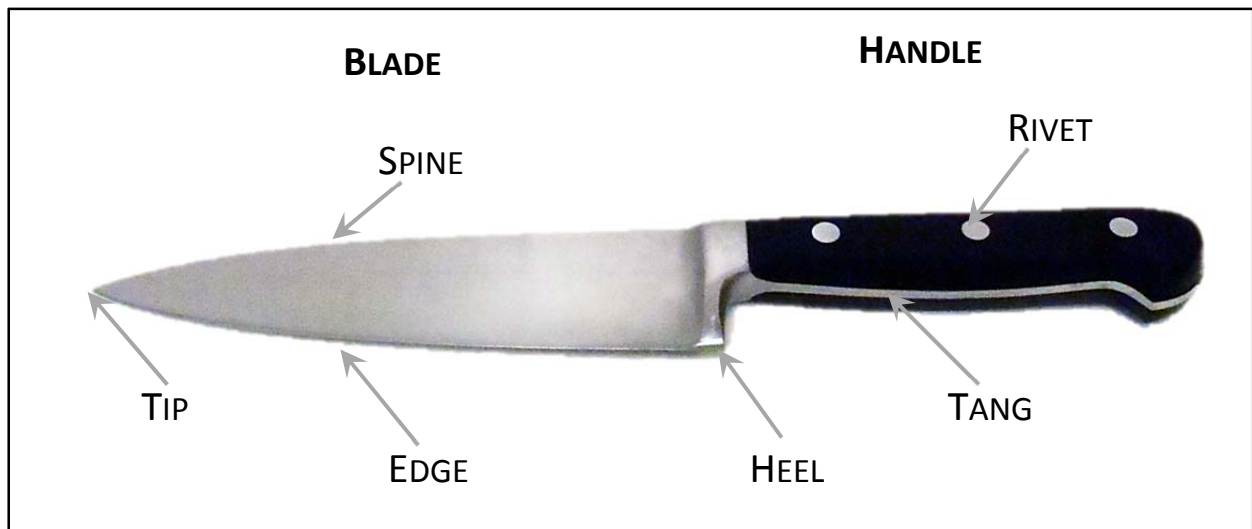
Utah State University employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities.

This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle E. Cockett, Vice President for Extension and Agriculture, Utah State University. (FCS Educational Tools/2011-01pr)

Section 1: Understanding Your Knife

Knives come in all shapes and sizes. Some are versatile, some task-specific. Some are straight, some serrated. Some are metal, some ceramic. Understanding how knives are constructed and why those differences exist will help you pick the right tool for the job.

Parts of a Knife



Blade: The most common blade material is *stainless steel*, which is either *forged* or *stamped*. Forged blades are molded into shape and are generally heavier and more durable, with a prominent heel at the base of the blade. Stamped blades are cut from a solid sheet of metal and are more lightweight, but dull more quickly. Stamped blades are common on inexpensive, low-quality knives, but high-quality stamped blades can also be found. Stainless blades of both types are easily sharpened.

Ceramic blades are very lightweight and can stay sharp for a very long time, but must be sharpened using a specialized grinder. Ceramic is also very brittle, so knives will shatter if dropped. They should not be used for tasks that involve hitting (e.g., breaking bones, cracking nuts). Ceramic knives are typically more expensive than their stainless counterparts.

Handle: *Wood* has traditionally been used for knife handles, but is being replaced by *plastics* and *laminated woods*. Wood warps when it is wet and can harbor bacteria, making it very hard to clean. Plastic handles are found often in commercial kitchens because they are easy to clean and require no special care. Plastic is used most often on stamped knives that do not have a full *tang*, an extension of the blade that the handles are attached to. On forged knives, the tang continues through the length and width of the handle. The handle is attached to the tang using three *rivets*.

Common Types of Knives



8" forged, 6" forged, and 8" stamped chef knives



Utility, boning, forged and stamped paring knives

Chef knives are versatile tools that can be used for most tasks. They are available in sizes ranging from 3" to 12" (8" is standard). You should choose a knife that you can grip securely – larger knives tend to fit best in larger hands. Chef knives with forged blades can be used for heavy-duty tasks such as cracking and chopping, while thinner, more flexible stamped blades work best for delicate tasks such as removing melon rinds.

Utility knives are used primarily for slicing. They work well with delicate foods such as fruit and small roasts or poultry. *Boning knives* are specialized knives used to de-bone poultry and smaller red meat cuts, as well as filleting fish. *Paring knives* are mostly used for peeling fruits and vegetables, but work well to slice small soft foods such as olives and mushrooms.

Serrated knives are not designed for cutting or chopping tasks. These are highly specialized knives that are designed for slicing breads and cakes. *Slicers* have less defined teeth and are "smoother" than standard serrated knives. Slicers are typically used only for carving meats.

Sharpening Knives

You've probably heard that a sharp knife is safer than a dull one. But why? Sharp knives glide evenly, and almost effortlessly, through food. This means you have control of the blade at all times. Dull knives tug so it is necessary to apply more force – meaning you have momentarily lost control of the blade. That leads to nicks, cuts, or worse. Keeping a sharp edge on your knife is key to knife safety.

Sharpening stones are stones that vary from a coarse to a fine *grit*, depending on the type of material they are made from. Most sharpening stone kits contain coarse, medium, and fine stones. If your blade is completely worn down, you should start with the coarse stone, then progress to the fine. To simply refresh a blade, the fine stone is often all that is needed.

Holding your knife at a 20° angle to the stone, sweep it across the stone from heel to tip in a single smooth motion. It is also acceptable to sweep from tip to heel – just make sure to use the same direction each time.

Electric and hand-held *knife sharpeners* are designed to imitate this motion. Some are high-quality and work very well, while others will quickly destroy your blade. When using knife sharpeners, the key is to use a single smooth motion as you pass the blade through. Jerks or pauses result in an uneven, gouged blade that may require professional attention to fix.

Despite their name, *sharpening steels* do not sharpen knives. Sharpening steels keep your knife blade sharp in between sharpenings by re-aligning the microscopic burrs that make up the fine edge of your blade. Once the burrs are broken or bent, a sharpening steel will no longer help. To use a sharpening steel, hold your knife at a 20° angle against the steel and run it from tip to heel in one smooth motion.

The safest way to use a sharpening steel is to hold it point-down against a countertop or work table, sweeping your knife against it blade-down.



Using a steel with the knife blade pointed away from you is preferred, but be aware of other people around you.



Using a steel with the knife blade pointed towards you is acceptable, but can be dangerous.

Storing Knives

Keep your knife sharp for a longer time by protecting the blade when it is stored. Wooden knife blocks and magnetic knife strips are ideal, but there are ways to protect knives that must be stored in a drawer as well.



Snap-on knife guards are the best and easiest to use, but are also more expensive.



Slice-in knife guards are less expensive and also protect knife blades, but must be used properly to avoid injury.



Make-shift knife guards can be made from file folders or cereal boxes. Make sure to put the edge of the knife facing the fold in the cardboard. The end of the guard can be reinforced with multiple layers of tape.

References

Cochran DJ, Riley MW. 1986. An evaluation of knife handle guarding. *Human Factors: The Journal of the Human Factors and Ergonomics Society* 28(3):295-301.

McGorry RW, Dowd PC, Dempsey PG. 2005. The effect of blade finish and blade edge angle on forces used in meat cutting operations. *Applied Ergonomics* 36(1):71-77.

Section 2: Using Your Knife Safely

Knives are one of the most versatile tools in the kitchen. But like any tool, it is necessary to understand how to properly use and care for knives to avoid injuries. We are bombarded with images of celebrity chefs effortlessly chopping and slicing, often without even looking at the food, at lightning speed. While it may be tempting to imitate this, that skill is only developed after years of careful practice.

Rules for Knife SAFETY

Securely hold your knife

Anchor cutting boards

Fingertips curled back

Eyes on the knife

Take your time

Yield to falling knives

Knife Grips



The most secure way to grip a knife is by gripping the top of the blade firmly between your thumb and forefinger. Place your middle finger just behind the heel. This grip may take some getting used to, but it gives you maximum control over your knife and allows you to pivot from the wrist when chopping.



It is also acceptable to grip the knife handle with all four fingers, with your forefinger just behind the heel of the blade. Your thumb should still rest on the face of the blade to maintain better control and allow you to pivot from the wrist.



Placing your thumb on the spine of the blade pushes your wrist upward into an awkward position. You do not have as much control over the angle of the blade, so it is more likely to slip during use.



Never hold a knife only by the handle. Instead of pivoting from the wrist, the heel of the knife becomes the pivot point. This motion is very difficult to control and is more likely to result in injuries.

Cutting Boards

Cutting boards come in many shapes and sizes. But choosing the correct cutting board is just as important as choosing the correct knife! There are **three** important characteristics you should look for when selecting a cutting board:

1. It should be easy to clean and sanitize.
2. It should protect the edge of your knife from becoming dull too quickly.
3. It should be rough enough to keep your food from moving around as you chop.

It is also important to prevent the cutting board from moving around during use. Some cutting boards come with rubber feet to help grip the counter. These are useful, but it limits you to using only one side of the cutting board. Others have grippers in the corners so both sides can be used. Cutting board non-slip mats are also available to secure any cutting board. If you do not have any of these available, a good substitute is a damp (not wet!) dish cloth. Place it under the cutting board, then try to slide the board around before you start cutting. If the cutting board slides, re-dampen the cloth.



Plastic (also called poly or PE)

- Pros:**
- Does not dull knives
 - Can be washed in the dishwasher
 - Can be bleached
 - Can be resurfaced to remove deep grooves

- Cons:**
- Thinner boards carried in stores usually cannot be resurfaced



Plastic Chopping Mats

- Pros:**
- Cheaper than cutting boards
 - Easy to transfer cut foods
 - Can be bleached

- Cons:**
- Warp when washed in the dishwasher
 - Do not protect knife blade as well as thicker cutting board



Acrylic

- Pros:**
- Does not dull knives
 - Can be washed in the dishwasher
 - Can be bleached

- Cons:**
- Cannot be resurfaced
 - Can crack or shatter easily



Wood

- Pros:**
- Does not dull knives

- Cons:**
- Cannot be washed in dishwasher
 - Will not stand up to repeated bleaching
 - Most cannot be resurfaced
 - Cheaper wooden boards easily warp and crack

References

Abrishami SH, Tall BD, Bruursema TJ, Epstein PS, Shah BD. 1994. Bacterial adherence and viability on cutting board surfaces. *Journal of Food Safety* 14(2):153-172.

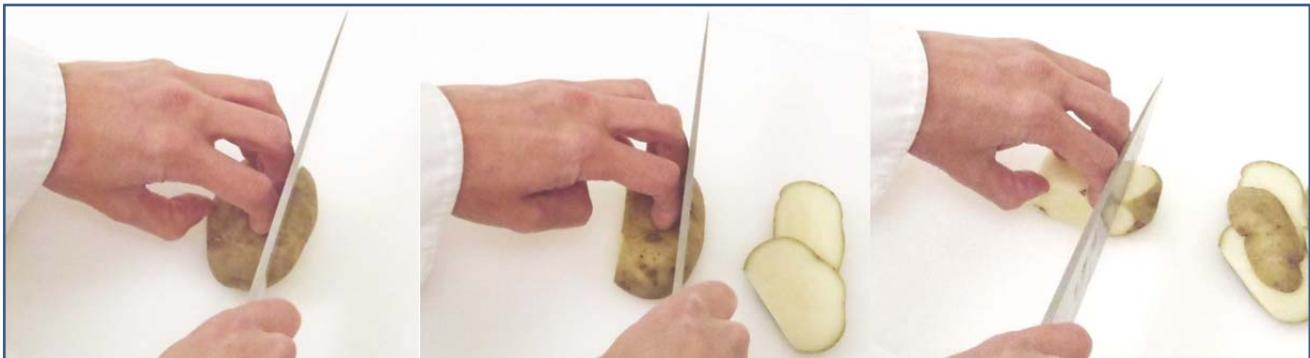
Ak NO, Cliver DO, Kaspari CW. 1994. Decontamination of plastic and wooden cutting boards for kitchen use. *Journal of Food Protection* 57(1):23-30.

Section 3: Practicing Knife Skills

Food cut to specific sizes and shapes can be very useful. Consistently sized pieces cook evenly and at the same rate, eliminating uneven textures. Decorative cuts are pleasing to the eye and allow the food to garnish itself. Many different utensils and appliances are marketed to make this process easy – but none of this specialty equipment is as versatile, durable, or easy-to-clean as a good quality knife.

Cutting Techniques

To practice your knife skills, use potatoes. They are softer, less slippery, and cheaper than many other vegetables! Cut potatoes can be held in the refrigerator in salted water overnight, then boiled and mashed.



Squaring off is helpful for most types of food. Holding with your fingers curled back, make straight cuts to create a flat surface on all four sides. This also eliminates the need for peeling vegetables before cutting them.



Make a series of slices straight down through the food. These slices can be stacked or cut individually into sticks. Sticks can then be cut into cubes. Cuts should be made by lifting the *heel* end of the knife off of the cutting board, then slicing forward and down in a single smooth motion.



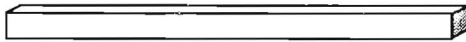
Onions can be difficult to cut into evenly sized pieces. The following steps can be used to make this process a little faster, and a lot easier.

1. Start by cutting the *stem* end off, leaving the hairy *roots*.
2. Place the onion on the newly-cut flat side, and slice straight down through the middle of the root end to cut the onion in half.
3. Working close to the edge of the counter or work table, make a series of horizontal slices through each onion half, working from the bottom up (depending on the size of the onion, you should be able to make three or four cuts).
4. Make a series of vertical cuts through the fattest part of the onion. **DO NOT** cut all the way through the root end – this is holding everything together to make the next step easier.
5. To finish dicing the onion, make a second series of vertical cuts starting at the stem end (where you made the first cut), and continuing back toward the root end (that is holding everything together). If the root end becomes too small to hold onto securely, stop cutting. *Only cut back as far as you feel comfortable going!*

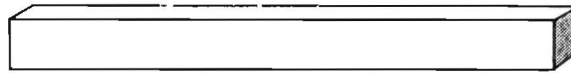
FIGURE 6-3 Basic Vegetables Cuts and Dimensions



Fine Julienne
 $\frac{1}{16} \times \frac{1}{16} \times 1$ to 2 inches



Julienne/Allumette*
 $\frac{1}{8} \times \frac{1}{8} \times 1$ to 2 inches



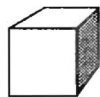
Batonnet
 $\frac{1}{4} \times \frac{1}{4} \times 2$ to $2\frac{1}{2}$ inches



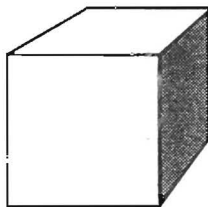
Brunoise
 $\frac{1}{8} \times \frac{1}{8} \times \frac{1}{8}$ inch



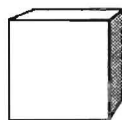
Small Dice
 $\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ inch



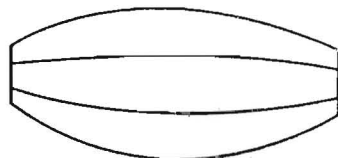
Medium Dice
 $\frac{1}{3} \times \frac{1}{3} \times \frac{1}{3}$ inch



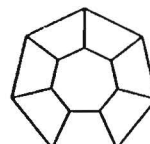
Large Dice
 $\frac{3}{4} \times \frac{3}{4} \times \frac{3}{4}$ inch



Paysanne
 $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{8}$ inch



Tourné
11



Seven 2-inch sides

*Allumette normally refers only to potatoes.

Easy Dos and Don'ts

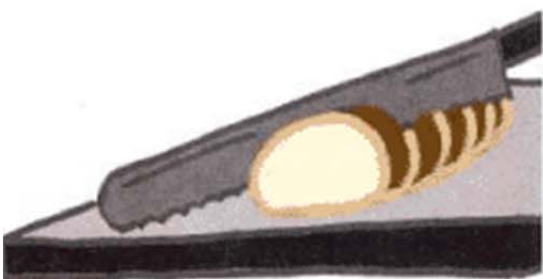
For Teen Workers - Safe Knife Handling -

Do:



- ✓ Keep knives sharpened and let other staff know when knives are newly sharpened.
- ✓ Use a knife only for its intended purpose.
- ✓ Use the appropriate knife for the job.
- ✓ Carry knives with the cutting edge slightly away from your body.
- ✓ Store knives properly in racks or knife sheaths.

Don't:



- ✗ Touch knife blades.
- ✗ Try and catch a falling knife, let it fall.
- ✗ Hand a knife to someone. Put it down on the counter and let him or her pick it up.
- ✗ Leave a knife soaking in a sink of water.
- ✗ Talk to people while using a knife.

Knife Skills Prep List (per 30 students)

(Long version - Salsa & Soup)

<u>Food Items</u>		<u>Comments / Prep</u>
16 each	Medium onions	1/2 per student, 1 for demo
32 each	Carrots	1 per student, 2 for demo
130 each	Small potatoes	4 per student, 6 for demo
2 heads	Cabbage	1 leaf per student, 2 for demo
14 each	Large Roma or plum tomatoes	2 per student group
14 cans	Chicken broth (~14 oz)	2 per student group
1/4 cup	Vegetable oil	
2 bags	Tortilla chips	for salsa judging
<u>Optional</u>		
1 head	Garlic	for salsa
1 bunch	Cilantro	for salsa
	Lime or lemon juice	for salsa
	Oregano	for salsa
	Red pepper flakes	for salsa
	Cayenne pepper	for salsa
	<u>Non-food Items</u>	
	Plastic spoons to sample salsas	1 per salsa
	Paper plates to sample salsas	1 per student, divided into section

Knife Skills Lab

Each student will demonstrate the following knife cuts. Each group will prepare broth soup and salsa.

Knife Cuts – Each group member will practice the following cuts.

Potatoes (4 per person):	Large dice
	Medium dice
	Small dice (save for the broth soup)
	Brunoise
Onion (½ per person):	Chopped (save for the broth soup and salsa)
Carrot (1 per person):	Small dice (save for the broth soup)
Tomatoes (½ per person):	Small dice (save for the salsa)
Cabbage (1 leaf per person):	Chiffonade (save for the broth soup)

Notes

- Remind students that the onion and tomatoes will be used for salsa, the small dice potatoes, carrot, onion, and cabbage will be used for the broth soup.
- At the end of lab, all salsas will be put in the dining room for all students to try and vote on the winner.

Timeline: 0:00 – Knife demo – knife handling, basic cuts.
0:15 – Break into groups to practice.
0:45 – Simmer potatoes for broth soup. Cut tomatoes and prepare salsa – let sit at room temp until needed.
1:00 – Finish preparing broth soup. Display for instructor, then eat.
1:15 – Set out salsa for judging. Try all salsas & vote for your favorite.
1:45 – Clean units.

Broth Soup (4 – 5 servings)

¼ cup potatoes, small dice	as needed, cabbage chiffonade
¼ cup carrots, small dice	as needed, pepper
¼ cup onions, small dice	as needed, thyme
¼ tsp vegetable oil	as needed, salt
28 oz chicken broth	

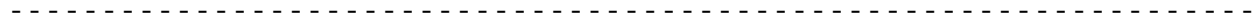
1. Put the potatoes in cold salted water. Bring to a boil then reduce to a simmer. Simmer the potatoes until barely tender. Drain and hold for service.
2. Cook carrots in a medium saucepan with the vegetable oil until barely softened. Add the onions and cook about 2 minutes more, just until tender. Add the broth and seasonings and simmer until the vegetables are tender.
3. Adjust the seasoning, add the potatoes and simmer until potatoes are heated. Ladle the hot soup over the cabbage chiffonade in bowls.

Salsa (2 – 3 cups)

2 tomatoes, small dice (about 2 cups)
2 Tbsp to ½ cup onion, small dice
as needed, salt
as needed, pepper
as needed, sugar

Optional ingredients:
½ to 2 tsp garlic, minced (1 to 4 cloves)
1 – 2 tsp fresh or bottled lime juice
1 tsp – 1 Tbsp fresh cilantro, minced
cumin, cayenne pepper/flakes, oregano

1. Mix all ingredients together. Add cold water if needed to adjust consistency. Adjust seasoning.
2. Let sit at room temperature for up to 1 hour. Can be refrigerated for 1 – 2 days, but is best if used fresh.



Group Members _____

How much of each seasoning did you use?	Which optional ingredients did you use?
Salt _____	Garlic _____
Pepper _____	Lime juice _____
Sugar _____	Cilantro _____

What other spices or herbs did you use? _____

Fill out this form and put it face down under your bowl of salsa



Salsa Ballot

Which salsa did you like the most? _____

What did you like about it? _____

Which salsa did you like the least? _____

What didn't you like about it? _____

Knife Skills Prep List (per 30 students)

(Shortened version - Salsa only)

	<u>Food Items</u>	<u>Comments / Prep</u>
16 each	Medium onions	1/2 per student, 1 for demo
130 each	Small potatoes	4 per student, 6 for demo
14 each	Large Roma or plum tomatoes	2 per student group
2 bags	Tortilla chips	for salsa judging
<i><u>Optional</u></i>		
1 head	Garlic	for salsa
1 bunch	Cilantro	for salsa
	Lime or lemon juice	for salsa
	Oregano	for salsa
	Red pepper flakes	for salsa
	Cayenne pepper	for salsa
	<u>Non-food Items</u>	
	Plastic spoons to sample salsas	1 per salsa
	Paper plates to sample salsas	1 per student, divided into section

Knife Skills Lab

Each student will demonstrate the following knife cuts. Each group will prepare salsa.

Knife Cuts – Each group member will practice the following cuts.

Potatoes (4 per person):	Large dice
	Medium dice
	Small dice
	Brunoise
Onion (½ per person):	Chopped (save for the salsa)
Tomatoes (½ per person):	Small dice (save for the salsa)

Notes

- Remind students that the onion and tomatoes will be used for salsa. Have them start with these, then practice on the potatoes while their salsa is sitting. Potatoes can be refrigerated overnight in salted water and used for mashed potatoes.
- At the end of lab, all salsas will be put in the dining room for all students to try and vote on the winner.
- If short on time, have students practice only medium and small dice on potatoes.

Timeline:	0:00 – Knife demo – knife handling, basic cuts.
	0:10 – Break into groups. Cut tomatoes and prepare salsa – let sit at room temperature for judging.
	0:25 – Practice remaining knife cuts on potatoes.
	0:40 – Clean units
	0:50 – Try all salsas & vote for your favorite.

Salsa (2 – 3 cups)

2 tomatoes, small dice (about 2 cups)
2 Tbsp to ½ cup onion, small dice
as needed, salt
as needed, pepper
as needed, sugar

Optional ingredients:
½ to 2 tsp garlic, minced (1 to 4 cloves)
1 – 2 tsp fresh or bottled lime juice
1 tsp – 1 Tbsp fresh cilantro, minced
cumin, cayenne pepper/flakes, oregano

1. Mix all ingredients together. Add cold water if needed to adjust consistency. Adjust seasoning.
2. Let sit at room temperature for up to 1 hour. Can be refrigerated for 1 – 2 days, but is best if used fresh.

Group Members _____

How much of each seasoning did you use?

Salt _____
Pepper _____
Sugar _____

Which optional ingredients did you use?

Garlic _____
Lime juice _____
Cilantro _____

What other spices or herbs did you use? _____

Fill out this form and put it face down under your bowl of salsa

Salsa Ballot

Which salsa did you like the most? _____

What did you like about it? _____

Which salsa did you like the least? _____

What didn't you like about it? _____

Knife Skills Prep List (per 30 students)

(Short version - Soup only)

	<u>Food Items</u>	<u>Comments / Prep</u>
16 each	Medium onions	1/2 per student, 1 for demo
32 each	Carrots	1 per student, 2 for demo
130 each	Small potatoes	4 per student, 6 for demo
2 heads	Cabbage	1 leaf per student, 2 for demo
14 cans	Chicken broth (~14 oz)	2 per student group
1/4 cup	Vegetable oil	

Knife Skills Lab

Each student will demonstrate the following knife cuts. Each group will prepare broth soup.

Knife Cuts – Each group member will practice the following cuts.

Potatoes (4 per person):	Large dice
	Medium dice
	Small dice (save for the broth soup)
	Brunoise
Onion (½ per person):	Chopped (save for the broth soup)
Carrot (1 per person):	Small dice (save for the broth soup)
Cabbage (1 leaf per person):	Chiffonade (save for the broth soup)

Notes

- Remind students that the small dice potatoes, carrot, onion, and cabbage will be used for the broth soup. Tell them to start with these cuts, then practice the others while the soup is simmering.
- If short on time: do not have students chop onions (these can be omitted from the soup or supplied to them pre-cut) and/or have students practice only medium and small dice on potatoes.

Timeline:	0:00 – Knife demo – knife handling, basic cuts.
	0:10 – Break into groups to practice.
	0:25 – Simmer potatoes for broth soup. Continue with other dice cuts.
	0:40 – Finish preparing broth soup. Display for instructor, then eat.
	0:50 – Clean units

Broth Soup (4 – 5 servings)

¼ cup potatoes, small dice	as needed, cabbage chiffonade
¼ cup carrots, small dice	as needed, pepper
¼ cup onions, small dice	as needed, thyme
¼ tsp vegetable oil	as needed, salt
28 oz chicken broth	

1. Put the potatoes in cold salted water. Bring to a boil then reduce to a simmer. Simmer the potatoes until barely tender. Drain and hold for service.
2. Cook carrots in a medium saucepan with the vegetable oil until barely softened. Add the onions and cook about 2 minutes more, just until tender. Add the broth and seasonings and simmer until the vegetables are tender.
3. Adjust the seasoning, add the potatoes and simmer until potatoes are heated. Ladle the hot soup over the cabbage chiffonade in bowls.