

Art Techniques Student's Guides *Clay, Pottery & Ceramics*



**Curated by
Ms. Mila Vasconcelos**



Clay, Pottery & Ceramics

Shape, sculpt, and fire your own ceramic pieces, mastering hand-building, wheel-throwing, and glazing.

Quick differentiation:

- Clay = the workable material (earthenware, stoneware, porcelain...).
- Pottery = functional ware (cups, bowls, plates).
- Ceramics = anything made from clay and fired (functional or sculptural).



Image Source: Leti Ceramics

Types of clay (what to choose & why)

Earthenware

low-fire, cone 06-04 glaze / $\sim 999-1060^{\circ}\text{C}$: red/white clays, porous, bright color glazes. Great for beginners, tiles, and school projects.



Types of clay (what to choose & why)

Stoneware:

(mid-fire, cone 5-6 / $\sim 1185-1220^{\circ}\text{C}$): strong, dense, food-safe with proper glaze; earthy palette. Good for functional ware.



Types of clay (what to choose & why)

Porcelain

(cone 9-10): White, translucent, advanced.



Types of clay (what to choose & why)

Air-dry Clay

Craft + prototypes, no kiln needed.



Image source: The Art and Beyond



Types of clay (what to choose & why)

Polymer Clay

Craft comes in many colors, also no kiln needed.



How to Start with Clay

- Wedge – Knead to remove air and align particles.



Image source: [How to wedge clay properly](#)

- Choose a method – pinch, coil, slab, or wheel.



Image source: [Art Shed](#)

HOW TO JOIN CLAY



How to Start with Clay

- Join properly – always score + slip + press.



Image source: [Crayola Canada](#)



MRS SCORING AND SLIPPING

In Ceramics when you join two pieces of clay together you will have to use the **score and slip** technique.

Slip		Slip is clay paste. The easiest way to make slip is to mix clay and water into a small dish of water. Use a brush to stir the clay and water and soon you will have a pasty clay-like glue. Use this "glue" to connect your pots. The "glue" should be the consistency of thick cream.	
Score		Scoring clay is making scratches in the clay. These scratches help join the clay and make a surface that will grip another clay surface. It's kind of like Velcro that sticks together when you press two Velcro surfaces together. **You have to score both clay objects where they will touch each other!	
1st : Wait until your clay object is firm . Now, you can score and slip your clay.		2nd : Score the clay; this means that you make scratches in the surfaces that will be sticking together.	
3rd Now you slip the object with your glue. In other words, you wet the surface with some slip, using it like glue.		4th Press the two pieces together. It's important to always score and slip clay that is leather hard . Otherwise, the pieces will pop apart when fired.	

Slipping and Scoring with Slabs








1: Flatten Out your Clay	2: Roll out your Clay	3: Cut out your Slabs	4: Arrange your Slabs
			
4. STOP and wait until your clay is Leather Hard	5: Score and Slip the edges.	6: Join the edges.	7. Measure for accuracy
			

Image source: Riverside School of Art

How to Start with Clay

- Dry slowly – cover loosely to prevent cracks. If your project is still in process, wrap your entire piece in a plastic bag.

Do cover clay with a plastic bag to keep it from drying out. This applies to works in progress and moist clay. A damp paper towel should be added to the bag if the project will not be touched for two days or more.



Source: Slide Share



Source: WikiHow

Why do clay cracks when it dries?

Use the right amount of water

Air Dry Clay is primarily a water-based product. The longer it is out of the packaging and in the open air, the more moisture will evaporate from it. Most often times too much moisture evaporating from the clay is the reason for cracks.

When you are working with air-dry clay, it is important to use the right amount of water. Too much water can make the clay too soft and prone to cracking. Too little water can make the clay too hard and difficult to work with.

A good rule of thumb is to add water to the clay a little bit at a time until it is soft enough to work with but not sticky.



Source: delineateyourdwelling.com

How to Start with Clay

- Fire (if ceramic) – bisque fire → glaze → glaze fire.



Source: [*Drying Stages of Clay*](#)

Why Shrinkage Happens? (Simple Explanation)

Clay gets smaller at every stage of the ceramics process. When clay dries, the water inside evaporates, causing the particles to move closer together – the piece shrinks. Then, during firing, the clay particles melt and fuse even tighter, shrinking again. By the time your piece goes from wet → bone dry → bisque → glaze fired, the size difference is dramatic.

Ceramics involves science, math, heat, and trial-and-error, all working together to transform soft clay into strong, durable, FUNCTIONal art that lasts a lifetime.



Image source: [*Lakeside Pottery*](#)



Image source: [*Nest Goods*](#)

THE **6** STAGES OF CLAY

1

SLIP

Watered down clay that can be used as a pottery glue.



PLASTIC

Clay you can easily mold and model.

2

3

LEATHER HARD

Clay that is somewhat dry. Good for carving.



BONE DRY

Clay that is dry and ready to be fired. Very fragile. Also called greenware.

4

5

BISQUEWARE

Clay that has been fired once in the kiln. Can never turn back into wet clay.



GLAZEWARE

Clay that has been fired again with glaze.

6



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Materials & Supplies

Understanding the basic tools:

Wire Cutter: Used to slice clay blocks cleanly and remove pieces from the bag or the wheel.

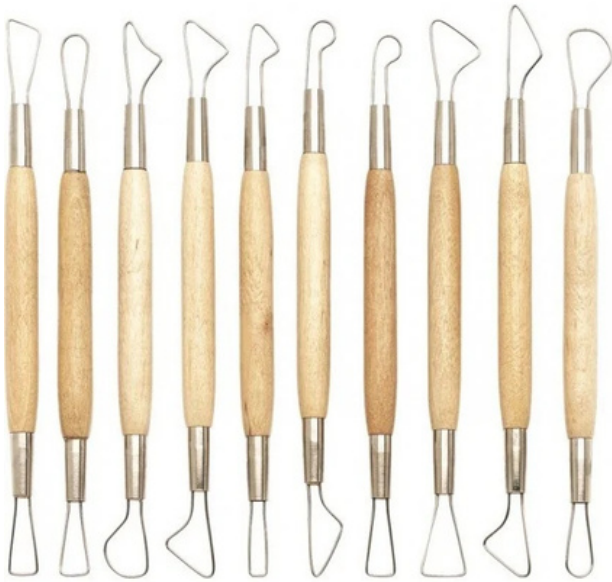


Sponge: Helps smooth surfaces, control moisture, and refine forms on both wheel and hand-built pieces.



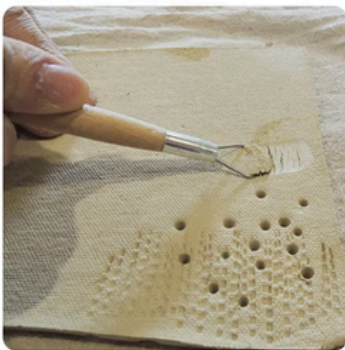
Materials & Supplies

Loop Tools/Carving Tools: Used to carve, hollow, shape, and refine clay by removing material with control.



Carving Tool

Great for clay, art projects, sculpture and other craft projects



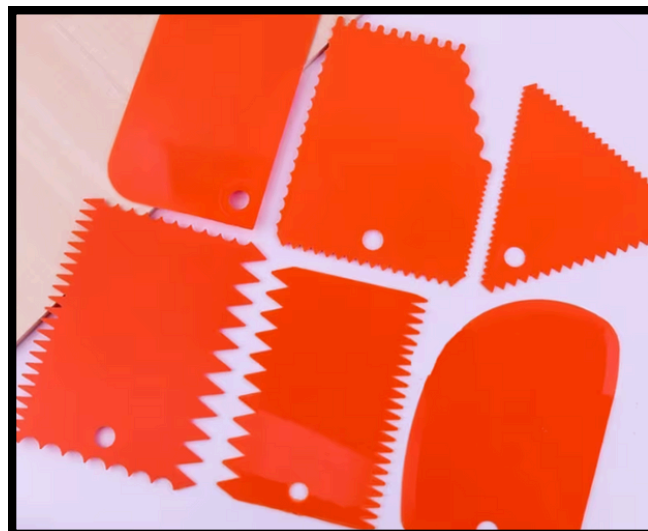
Materials & Supplies

Needle Tool: Perfect for cutting precise shapes, scoring, trimming, and checking the thickness of clay walls.



Materials & Supplies

Ribs (Wood, Metal, or Rubber): Smooth, shape, and compress clay surfaces for cleaner, more professional forms.



Materials & Supplies

Banding Wheel: A rotating stand that lets you turn your piece easily while sculpting, trimming, or decorating.



Materials & Supplies

Pottery Wheel: A rotating machine that allows you to center clay and shape symmetrical forms like bowls, cups, and vases using controlled hand pressure.



Basics of Wheel Throwing – 5 Steps

1. Prepare & Center the Clay

Wedge your clay, slam it firmly onto the wheel, wet your hands, and press steadily until the clay is perfectly centered and no longer wobbling – centering is everything.

2. Open the Clay

Press your thumbs or fingers straight down into the center, keeping the outside hand steady to maintain control while creating the initial hollow.

3. Pull Up the Walls

Gently squeeze the clay between your inside and outside hands and pull upward slowly, raising the walls a little taller with each pass while keeping the wheel speed steady.

4. Shape Your Form

Use hands, ribs, and light pressure to refine the curves, angles, or cylinder shape you want – small adjustments make a big difference.

5. Finish & Cut Off the Wheel

Compress the rim, remove excess water, clean the bottom, and use the wire cutter to slice your finished form off the wheel for drying.

Basics of Wheel Throwing – Images



a. Basic throwing: After centering and wheel-wedging, form a dimple and apply water.



b. Penetrate the lump to create a V-shaped opening.



c. Widen the bottom using the "claw" motion, and compress the bottom.



d. Begin lifting the walls.



e. Maintain firm, even pressure and steady upwards movement.



f. Stop lifting just shy of the rim.



g. Compress the rim.



h. Begin second lift, pressing into the clay at the base.



i. Continue lifting slowly and steadily up to the rim.



j. Repeat with the third lift.



k. Begin shaping the vessel as you lift.



l. Think about the shape as you follow through.

THINGS NEEDED FOR **THROWING**

**3 CLAY
SPHERES**



**BUCKET
WITH WATER**

CLAY TOOLS
(rib, loop tool, sponge)



**Don't forget to keep
your hands and clay wet!**



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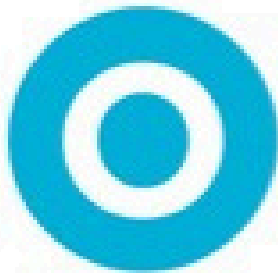
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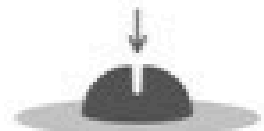
Wheel Throwing Steps



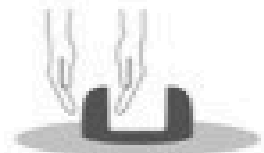
— Center



— Open



— Pull



— Shape



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HOW TO CENTER CLAY

1

Wet bat or wheel with sponge.



2

Throw clay sphere onto bat or wheel.



3

Cone up. Start at the bottom and apply upward pressure.



4

Cone down. Apply downward pressure from the top.



5

Continue coning up and down until clay is centered and not wobbling anymore. The bottom of the clay should be centered with the top of the clay.



TIPS

- Always keep hands wet.
- Anchor elbows into legs.



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Glazing Your Ceramics

After your piece comes out of the bisque firing, it's dry, porous, and ready to accept glaze. This is where the transformation happens: color, shine, texture, and durability all come from the glaze stage. It's chemistry and creativity working together.



Glazing Your Ceramics

1. What Happens After Bisque Firing

Once your piece is bisque-fired:

- It is white or light-colored, chalky, and still absorbent.
- It is much stronger than greenware, but still breakable.
- It must be dust-free before glazing – wipe gently with a damp sponge.
- The surface is now ready to absorb glaze like a sponge.

Bisque = the moment clay becomes ceramic.

Glaze = the moment ceramic becomes art.



Image Source: [Sadia's Pottery](#).

Glazing Your Ceramics

2. Glaze vs. Underglaze – What's the Difference?

Underglaze

- Works like colored paint for ceramics.
- Best for details, patterns, fine lines, and illustrations.
- Colors remain stable because they don't melt or move much.
- Must be covered with a clear glaze to become shiny and food-safe.
- Can be used on greenware or bisque.

Think of underglaze as the drawing or painting beneath the glass.

Glaze

- A glass coating that melts in the kiln and fuses to your piece.
- Creates shine, matte finishes, or special effects.
- Colors can run, blend, or change during firing – part of the magic.
- Makes pottery food-safe, waterproof, and durable.
- Applied only to bisque-fired pieces.


Think of glaze as melted glass that transforms your ceramic permanently.



Image Source: Pottery Crafters

Glazing Your Ceramics

UNDERGLAZE

	COLORED, LIQUID CLAY. <ul style="list-style-type: none"> - ONLY goes underneath glazes - Can go on greenware or bisqueware - Predicable colors for premixing - Will not bleed or fuse = sharp edges - Not dust or waterproof MUST BE FIRED BEFORE PUTTING GLAZE ON TOP 	
STEP 1: Made tile & Bisque fired it STEP 2: Covered with 3 layers of Amethyst underglaze everywhere		STEP 3: Glaze fired it - underglaze became permanent STEP 4: Covered the top right corner with 3 layers of clear gloss glaze STEP 5: Glaze fired it - Glaze turned to glass & is now waterproof

GLAZE


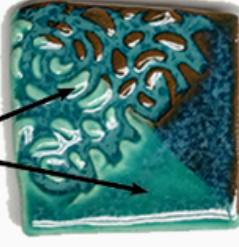
	LIQUID GLASS <ul style="list-style-type: none"> - ONLY goes on bisqueware - Unpredictable when mixing - Drips and Bleeds = fuzzy edges - Layered glazes will fuse together, making a new, mixed color NO GLAZE ALLOWED ON THE BOTTOM OF YOUR PIECE! 	pic of fuzed glaze
STEP 1: Made tile & Bisque fired it STEP 2: Covered with 3 layers of white underglaze on bottom left corner		STEP 3: Glaze fired it - underglaze became permanent STEP 4: Covered the entire tile with 3 layers of Aquamarine glaze STEP 5: Glaze fired it - Glaze turned to glass & is now waterproof

Image source: Mrs. Tesch's Art Classes

Glaze = melted glass

Underglaze = colored paint that goes under the glass

Bisque → Glaze → Glaze Firing → Finished Ceramic

Apply 2-3 layers, avoid the bottom, let dry, and expect surprises — glaze always changes in the kiln!

Kiln Basics

Think: Load → Program → Cool.

- Pieces must be bone dry.
- Shelves = kiln wash (protective coat).
- No glaze on bottoms.
- Load with witness cones to check temp.
- Fire slow → target cone → cool fully before opening.

**** If students use kiln, they must pass a checklist: dryness, foot ring clean, cone match, and safety rules.***



Expectations with Clay

Remember:

- Shrinks 5-15%.
- Color changes after firing.
- Glazes look different raw vs. fired.
- Time: drying days + firing days.



Results You Can Get

- Functional: cups, bowls, plates.
- Sculptural: masks, reliefs, abstract forms.
- Surface: underglaze painting, sgraffito, layered glaze textures.



Results You Can Get

Troubleshooting

- Cracks → uneven thickness, dried too fast.
- Explosions → fired damp or sealed air.
- Glaze defects → test tiles first, keep glaze thin.
- Warping → slabs too thin, dried unevenly.



Do's & Don'ts

- ✓ Wedge every time.
- ✓ Score & slip joins.
- ✓ Dry slowly, evenly.
- ✓ Test glazes.



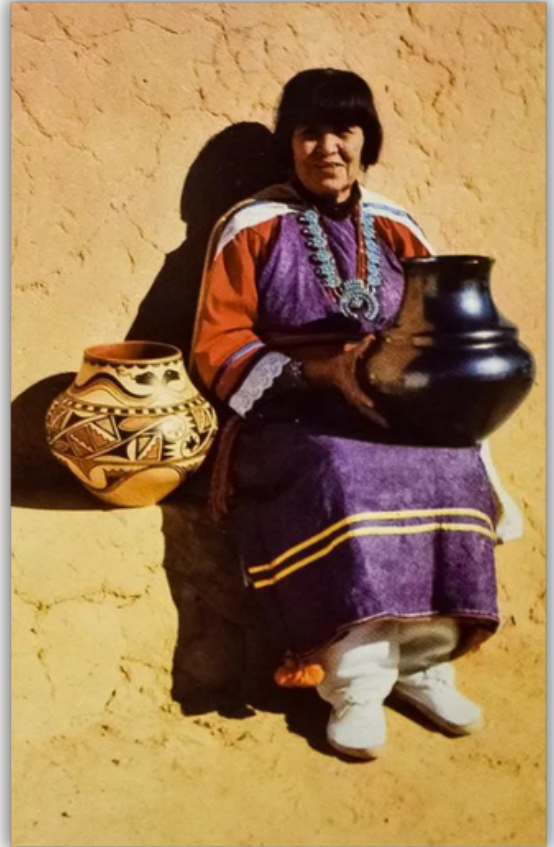
Image Source: Leti Ceramics

- ✗ Don't fire damp work.
- ✗ Don't glaze bottoms.
- ✗ Don't mix low-fire glaze with mid/high-fire clay.
- ✗ Don't open hot kiln.



Important Artists by Clay Type

Earthenware: Maria Martinez



*Maria Martinez: The Legendary Pottery
of San Ildefonso Pueblo*



Important Artists by Clay Type

Stoneware: Peter Voulkos



Important Artists by Clay Type

Porcelain: Lucie Rie



Important Artists by Clay Type

Contemporary: Magdalene Odundo



Important Artists by Clay Type

- *Contemporary: Roberto Lugo*



Important Artists by Clay Type

- **Contemporary: Betty Woodman**



Important Artists by Clay Type

Contemporary: Jane Muir



Important Artists by Clay Type

Contemporary: Guo Pei



IB Project Ideas

Cultural Cup Set (stoneware): Functional + heritage motifs.

A cultural stoneware cup set combines the durable, practical nature of high-fired clay with decorative motifs that honor specific regional or historical heritages. These sets are designed to be both everyday functional drinkware and meaningful artistic pieces. Inspired by your culture or a culture that you admire, create an artwork using cultural and heritage symbols and motifs.



Turkish Coffee & Tea Set

IB Project Ideas

Identity Mask (earthenware + underglaze): *Storytelling through form + surface. In ceramic art, masks are a powerful metaphor for exploring the tension between what is concealed and what is revealed, and the transformation of identity. The properties of the materials play a key role in this storytelling*



Masks 1999 – Tammy Wong Hulbert

IB Project Ideas

Porcelain Light Vessel: Explore translucency + carving patterns.

Creating a porcelain light vessel involves utilizing the material's natural translucency, which is enhanced by forming the clay very thinly and firing it at high temperatures. Carving patterns at the leather-hard stage allows for a dynamic interplay of light and shadow when the piece is illuminated.



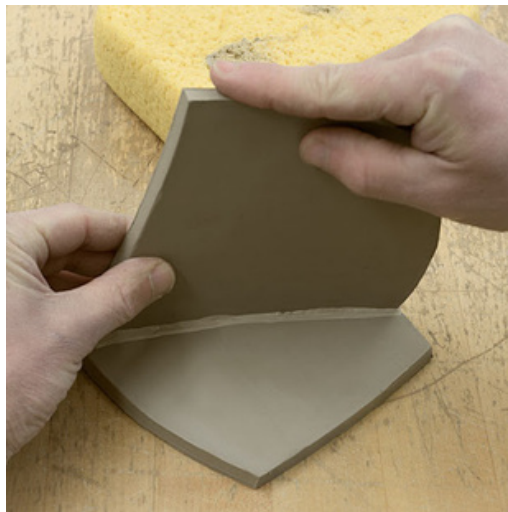
Porcelain Light Vessels
by Jennifer McCurdy

Mini Tasks

5 min: Pinch test cup.



10 min: Slab join strength test.



Mini Tasks

15 min: Texture tile with underglaze.



30 min: Coil pot with at least 3 coils.



Conclusion & Final Message

Ceramics is a slow, transformative art. It teaches patience, planning, and a deep respect for materials and time. Along the way, you'll encounter surprises: cracks, glaze failures, and unexpected textures.

But each one is part of your learning, not a setback. You don't need to master every technique to begin; you only need curiosity, consistency, and the willingness to observe what the clay is telling you. Take notes, pay attention, trust the process, and let the kiln be your quiet teacher. In ceramics, progress comes to those who persist, and clay always rewards those who return to it with care!

–*Ms. Mila*



