Intro to Ceramics

What is a Ceramic?

A ceramic is an inorganic, non-metallic material that have been shaped and then hardened by heating to high temperatures.

Ceramic teeth

Bullet-proof vest

Skis + snowboards

Bricks and tiles

protective tiles on the outside of the space shuttles

Ceramic has a wide variety of uses!

Knife

electrical insulators

Glass

Clay is the oldest known ceramic material. It is a natural material found in the ground, usually in areas with streams or lakes.

Clay is made from the ingredients in the soil, which are broken down into fine particles due to weathering.

These clay particles, which contains aluminum silicate, are mixed with water to form clay.

Wet clay is plastic and malleable. After firing, clay becomes hard and permanent just like rock.

HISTORY

- The oldest known ceramic artifact is dated as early as 24,000 BC during the Paleolithic period (Old Stone Age).

- It is a statuette of a woman, named the **Venus of Dolní Věstonice**, from a small prehistoric settlement in Brno, in the Czech Republic. In this location, hundreds of clay figurines representing Ice Age animals were also uncovered.

- These ceramics predated the emergence of agriculture in the Neolithic period by some 10,000 years—a development that scientists previously believed had led to the creation of fired clay vessels for cooking and storing food.

Ceramics have endured for millennia, and the medium continues to be explored today.

Egypt

Egypt made pottery before building the Pyramids. Pottery was made for functional reasons and decorative purposes. The amphora, in Egypt as in all ancient countries, was the most common and most useful vase, and was made in all sizes. It was made for holding water, wine, oil, or grain. The reason the amphora vessels had a tapered end was so they could be pushed into the earth and stand on their own when used for storage.

Greece

Ancient Greek vases are highly valued for form and decoration. The graceful lines an perfect balance speak to our desire for beauty. The pottery was decorated with pictures of the daily lives of the people and stories of their gods, goddesses and heroes.

In black-figure vase painting, figural and ornamental motifs were applied with a slip that turned black during firing, while the background was left the color of the clay. Vase painters articulated individual forms by incising the slip or by adding white and purple enhancements (mixtures of pigment and clay).

Terracotta column-krater (bowl for mixing wine and water)
ca. 550 B.C.
The symposium (drinking party)

China

Light, transparent porcelain was first produced in China. The town of **Jingdezhen** in Jiangxi province is well-known for its fine production of porcelain. Its production of pottery goes back to the Han Dynasty (206 BCE - 202 CE). By the time of the Ming Dynasty (1368-1644 CE), where beautiful blue-and-white porcelain were produced, Jingdezhen had become one of the great industrial centres of China and probably one of the earliest in the world to reach such a scale of production.

Japan

The **Jōmon pottery** is a type of ancient earthenware pottery which was made during the Jōmon period in Japan. The term "Jōmon" means "rope-patterned" in Japanese.

As Jōmon ceramics are some of the earliest-known examples of pottery in the world, scientists believe the Japanese were influenced by Chinese techniques, since the Chinese originated the world’s very first pots.

Jōmon women would undertake the laborious task of mixing the clay, creating the COILED pots, and firing them in an outdoor bonfire. The style of Jōmon pottery was incredibly diverse and evolved considerably across some 10,200 years.

COIL TECHNIQUE

First Peoples

In the early 1600s, twenty Indigenous tribes (that are recorded) live in the Great Lakes region. They relied on the wet landscapes for food and resources. Men would generally hunt and trap animals like deer, moose, fish, and other mammals. Women were in charge of harvesting and gardening.

Knowledge of ceramic-making entered the Great Lakes region about 1,000 years before the first cultivation of plants in the area. That means, the vessels had little to do with agriculture.

Older ceramic vessels in the Great Lakes region, dating to between 2,500 and 1,000 years ago, were made with a coil technique. Ceramics produced after about 1,000 years ago employed modelling techniques, in which large masses of clay were shaped into containers.

Ceramic Cooking pot, Point Peninsula culture, Central Ottawa Valley, about 2,500 years ago

Types of Clay:

EARTHENWARE clays are the oldest clays used by potters and happen to be the most common today. It is very plastic and is beginner-friendly. Earthenware is used for sculpting, hand-building, and wheel throwing. The wet clay has a tone of Brown, red, orange, or grey. Terracotta is the most popular colour.

BALL CLAYS are the most plastic clays and contain very limited mineral impurities. Because of the high plastic and high binding quality, Ball clays are commonly used for floor tiles, toilet bowls, vases, kiln furniture, and tableware.

Ball clay alone tends to be too fine and slippery for use. It can be used for wheel throwing but is mainly used in slip casting.

Ball clays have a grey color. They produce a fine white color when fired right, making them popular among potters.

STONEWARE clays are moderately plastic, hard, and nonporous. It got its name because of its stone-like qualities. It varies in colour from white, grey, and all the way to brown when wet. Stoneware is a popular clay to use for tableware. Used mainly in hand-building and wheel throwing.

PORCELAIN or China ceramics are incredibly popular, especially for dinnerware. Porcelains have very subtle and light colours. At the greenware stage, they'll show a very light grey-ish tone. They are very fragile and delicate. After firing, they are off-white to white. Porcelain is hard to work with. Mainly used in wheel throwing and cast slipping to create tableware, vases, and other decorative objects.

Different Stages of Clay

SLIP

SLIP is liquefied clay. Slip is applied to scored surfaces and acts as a sort of "glue" onto attach one piece of clay to another.

https://www.youtube.com/watch?v=PSHQxlbMNpE

0:35–3:04

TOOLS

needle tool

loop carving tools

wire cutter

shaping tools

modeling tools

HEALTH & SAFETY

Clay used in ceramics is composed of powdered **aluminum silicates**, which could get into our lungs if we breathe it in. Ceramic glazing components may contain silica and a flux, which may contain **heavy metals such as lead or barium**. For this reason, we must be careful when cleaning due to these **toxic hazard. Wash tables with a water spray bottle and CLOTH RAG only!** No paper towel to clean-up! No Clay in the sink!

No eating or drinking in the art room. Keeps hands damped at all times when working with clay. Wash hands thoroughly at the end of class to avoid ingesting silica dust!

Creature Planter

In this project, students will explore ceramic slab building technique as they create their own creature planter

Students will begin the project by designing different facial features of a monster and combining them to make a new face. They will consider the personality and/or feeling of the creature and what kind of textures it has. After they learned the basic clay techniques, they will begin by building a planter using slab and then adding in the facial features, textures, and any other details that their monsters might have. After their project is fired, students will glaze it. At the completion of their project, students will fill their planter with soil and plant a seed in it that would later grow into a beautiful plant or tasty veggie.

Learning Goals

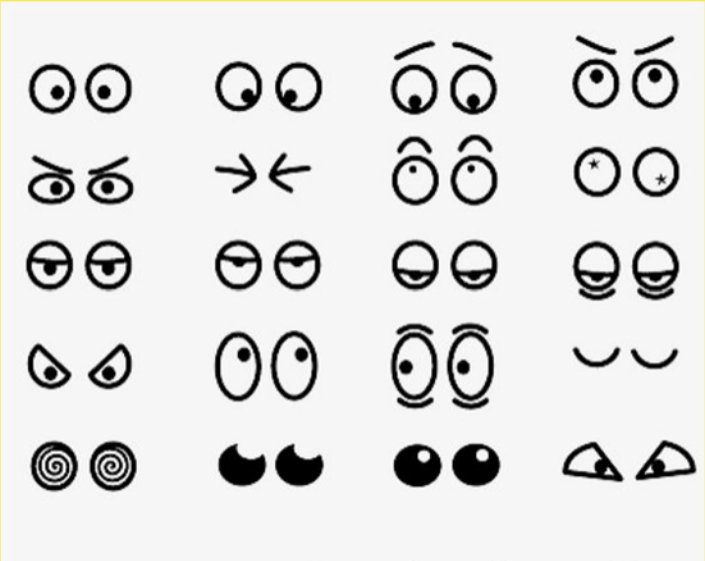
- Create character design both collaboratively and as an individual using ideas inspired by imagination, incorporating visual elements such as forms, textures and colours.
- Practice and explore clay hand-building techniques.
- Demonstrate safe and responsible use of materials, tools, and work space.

Let’s design our creature together!

1. Create 3 sets of eyes.
   Play with distinct shapes.

   Is the eye round, skinny, tilted? Does it has eyelashes and eyelid? Are there more than 2 eyes?

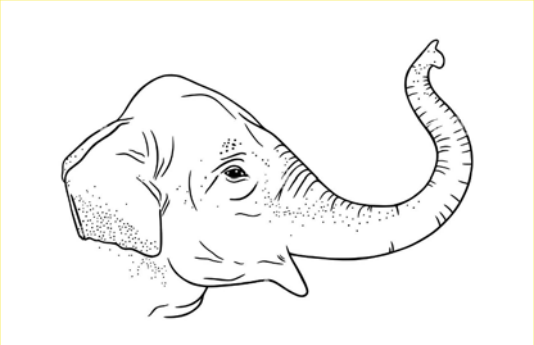
You have **3 min** to draw the eyes

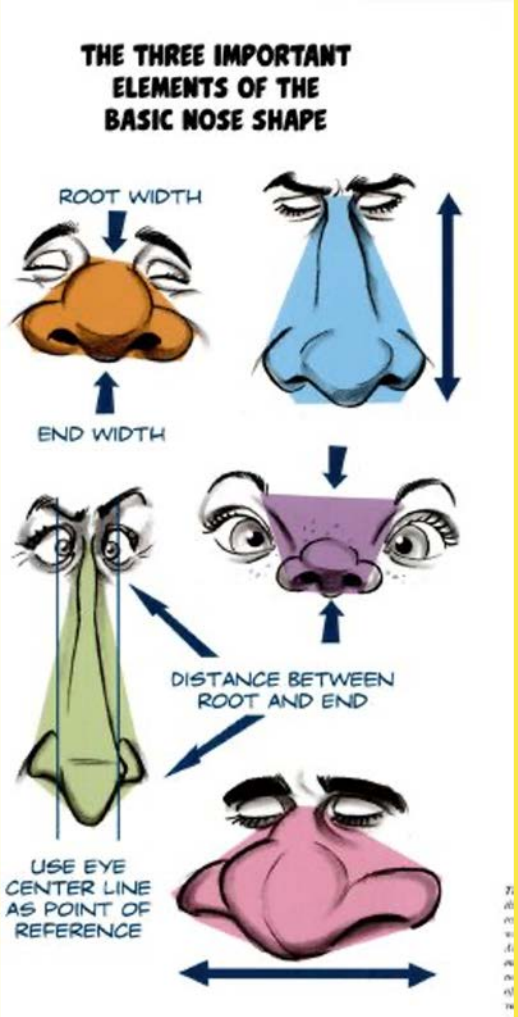


2. Create 3 unique noses.

Play with different shapes.

Is the nose long, skinny, fat, or rounded?
Any whiskers?
What's the shape of the nostrils?





You have **3 min** to draw the noses

3. Create 3 different mouths

Is it big or small? Does it have teeth/ tongue sticking out? Is it smiling, yelling, licking its lip?

You have **3 min** to draw the mouths

4. Draw 2 additional features

Does it have hair/ fur/ scale?
Does it have ears/ horns/ whiskers?

Ceramic Tips & Rules:

1.Keep Your Clay Moist

- When clay is exposed to air, it will naturally dry out, and it dries out FAST! As clay dries, it shrinks. One of the main reasons why some ceramics crack is **uneven drying**. When one part of your clay is more moist than the other, they shrink at a different rate, which leads to cracking.

- Make sure to keep your clay moist as you work on your project. By the end of each class, wrap your work-in-progress in a damp cloth and store it in the container to keep it moist and soft and ready to be worked on again next class.

2. Your Clay should not be too THICK of too THIN

- The thicker your clay is, the more likely you could get air trapped inside. Trapped air can cause clay to EXPLODE. Make sure to hollow out sculptural forms and put needle holes through enclosed forms for air to escape.

- The general rule is that **your clay should be no thicker than your thumb or no more than 1 inch.**

- Clay that is too thin is fragile and easily-breakable, so **try to keep your clay thicker than 1/4 of a inch.**

3. Allow Time for your Project to Dry

- Even a little amount of moisture present in the clay might cause an EXPLOSION when it’s being put under the excessive temperature of heat. We need to make sure that our projects are completely dry before we put it in the kiln. Allow at least a week of drying time.

(Everyone should get their project done by the deadline, so by the time we are loading them into the kiln, everyone’s projects are dry enough to go. Please manage your time well in class.)

4. Be Careful & Respectful

- Handle your project with **two hands** at all times. Be GENTLE!
- Keep your hands to yourself! Do not touch other people’s work without their permission.
- No Fooling around in the classroom! You don’t want to accidentally knock over yours or someone else’s project.
- Be careful with the ceramic tools. Needle tools are quite sharp and metal scrapers could potentially cut your hands.

5. Follow Proper Health & Safety + Clean-up Procedures

- Clay dust are harmful if you are exposed to it for long periods of time, so keep your area clean. **Wash tables with a water spray bottle and CLOTH RAG only! Do not use paper towel to clean-up! Do not try to brush off/ sweep off the dust.**

- **Put dry chunks and wet chunks of clay in the indicated bin. Wash all your tools and put them back in the right place. DO NOT MIX the brushes we use for ceramics with the ones for painting!**

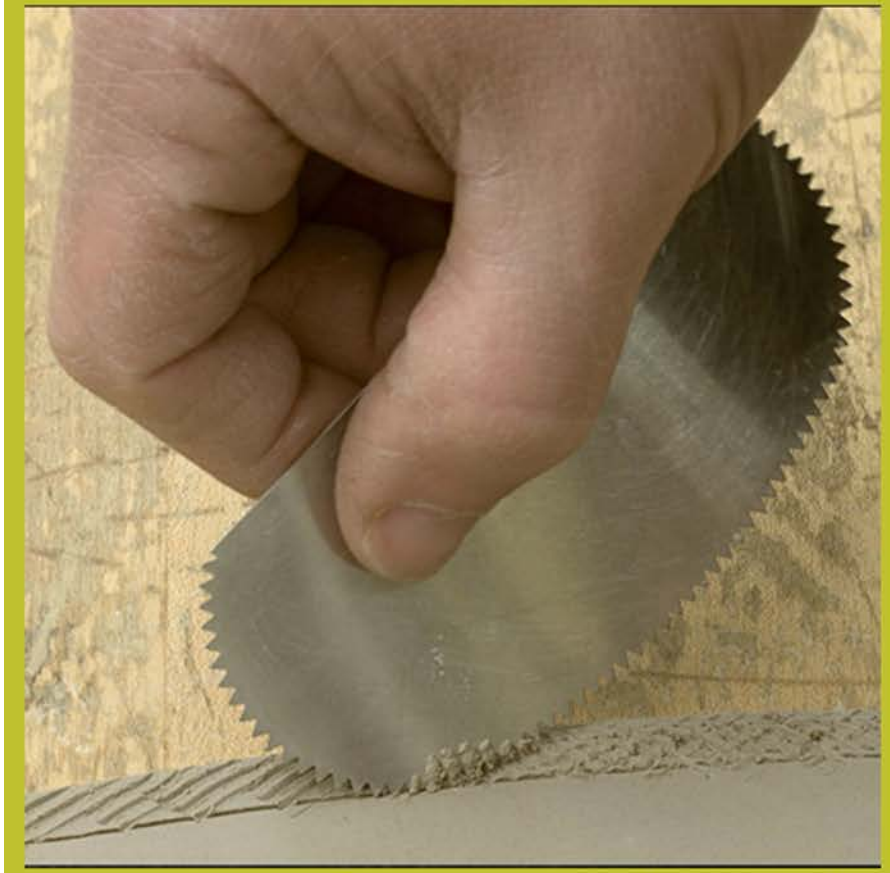
- **No food or drinks in the classroom**

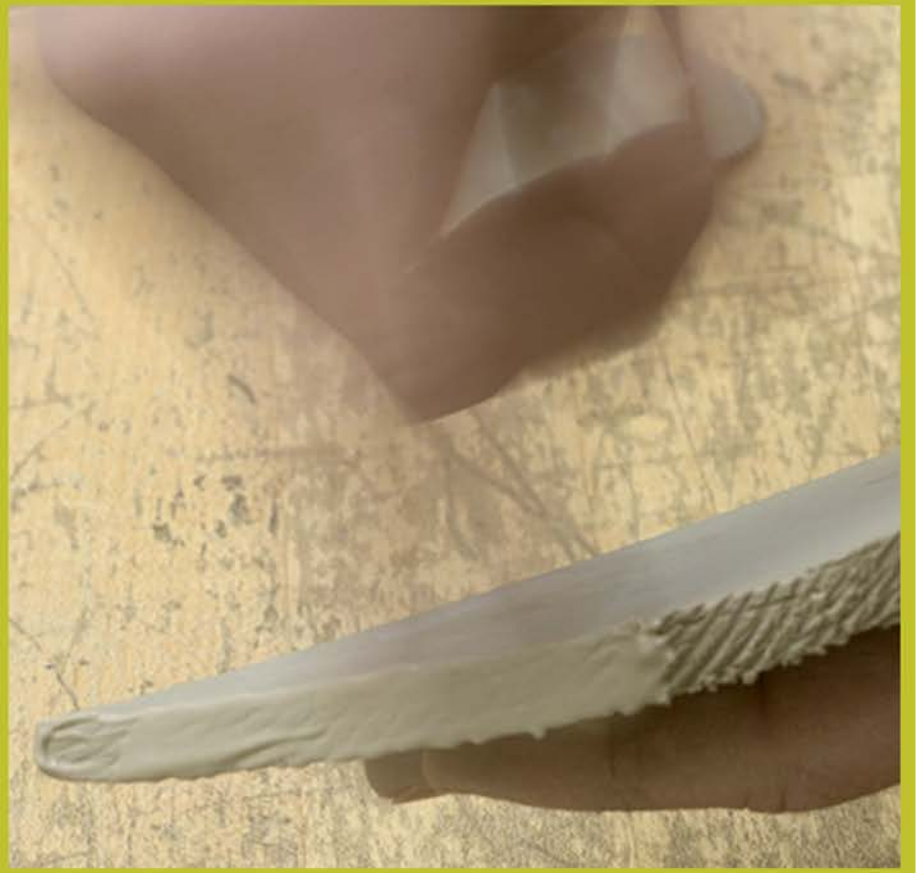
- **Wash your hands properly.** When your hands are dirty, do not touch anything other than your project and the tools.

RULES OF JOINING CLAY

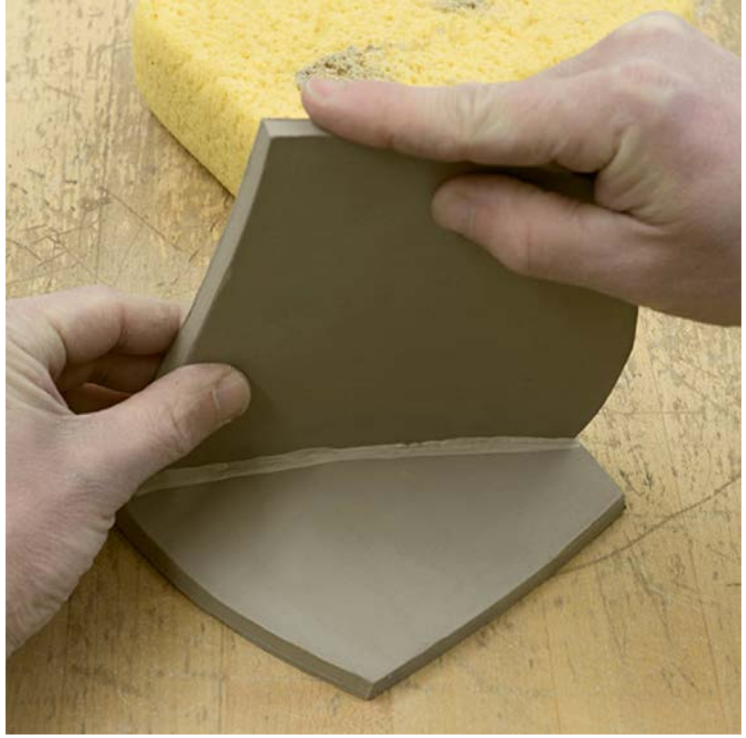
SCORE, SLIP & BLEND

https://www.youtube.com/watch?v=kdtM_G90rhA





STEP 1 and 2: Score clay with any sharp tool and apply slip.



STEP 3: Attach the two pieces together and smooth things out

STEP 4: Add clay coil In the gap for reinforcement

In order for clay to stick together it **must** be scored and and slipped together while the clay is moist (plastic) or leather hard.

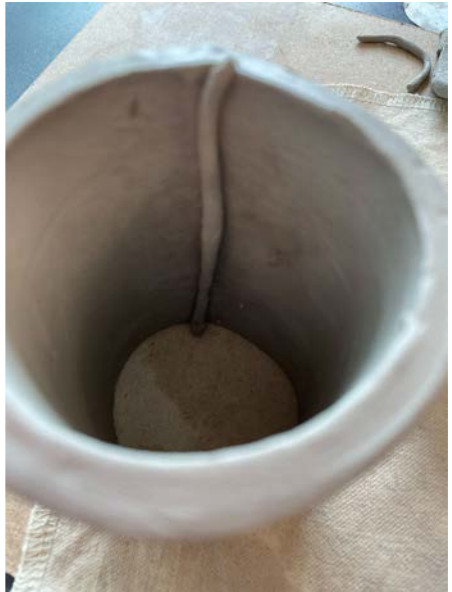
Let’s make our planter using the slab technique!

Step 1. Cut out the paper template. Using a knife or a needle tool, trace and cut out the shape from the template.

Step 2. Lightly wrap your rectangle slab into a cylinder shape, using your circle as a size reference. The circumference of the cone should be a bit smaller than the circle. Cut off the excess clay.
Cut at a slight angle for better attachments.

Step 3. Score and Slip the edges and attach them together.

Step 4. At the connecting point, blend the two pieces together so that it’s fully integrated both outside and inside. You can add in a piece of coil at the gap for reinforcement.



Step 5. Create a light outline of the circle. Score inside the outline and the edge of the cylinder. Apply Slip to all.

Step 6. Attach the cylinder to the circle. Press down on it but not TOO hard. Blend the clay evenly all the way around. Trim off the excess clay and continue to blend and smooth everything out.

You got yourself a cup!

Health & Safety + Clean-up Procedures

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- When your hands are dirty, do not touch anything other than your project and the tools.

- **Put dry chunks and wet chunks of clay in the indicated bin. Wash all your tools and put them back in the right place. DO NOT MIX the brushes we use for ceramics with the ones for painting!**

- **No food or drinks in the classroom**

- **Wash your hands properly**

Let’s talk about some problems we encountered yesterday…

1.CRACKS

How to fix it:

- If your clay is still soft and moist, smooth out the cracks with your fingers or a damp sponge.

- If your clay is on the drier side (at the leather or leather-hard stage), score and slip around the crack area and smoosh in a piece of coil to patch things up.

https://www.youtube.com/watch?v=bkekHWj-f0c (16:38)

Let’s talk about some problems we encountered yesterday…

2. Clay Not Fully Blended

- When you connect two pieces together, make sure you smooth out both the <u>outside wall and the inside wall.</u> You want to make sure there’s no gap at the connecting point. Everything is fully integrated and seamless.

Let’s talk about some problems we encountered yesterday…

3. Too Much Water

- Too much water could cause your clay to become too wet and possibly fall apart. When you are using a spray bottle, don’t spray in one concentrated area.

  You can also use a damp sponge to keep your clay from drying out.

Let’s talk about some problems we encountered yesterday…

4. Score & Slip

If you want to connect anything together, you need to score and slip!

Creature design tour

Let’s add facial features to our creature planter!

1. Using a chunk of fresh clay, cut out or sculpt out the shape of your creature’s facial features.

1. Attach the pieces to your planter Score, Slip, & Blend!

Remember, your clay should be no thicker than your thumb

Clean-up

1. Wet the blue cloth at the sink and squeeze out any excess water. Lay the moist cloth over your clay.

   Put your project in the container with plastic bag over it. Make sure your name is on it. Place your project in the back shelf. Top shelf for front row

Clean-up

2. Put all excess wet clay in the bin that says “wet clay recycle.” If there’s any dry chunks, put it in the bin that says “dry clay”

3. Wash your tools and put them back in the container. Return container to the cart at the back of the room. DO NOT MIX ceramic brushes with the paint brushes!!

Clean-up

4. Using a rag and a spray bottle, clean up the table areas. If you are done early, check around the room to see what else needs to be cleaned

5. Once all the clean-ups are done, wash your hands with soap and water.

PINCHING

How it Works: Shape a piece of clay into a smooth ball about the size of your hand. As you hold the clay sphere, press your thumb into the center of the ball, about halfway down to the bottom. As you revolve the ball with one hand, press the walls out evenly with your thumb on the inside and your fingers on the outside. Smooth the surface with a damp sponge.

Khnum, the Egyptian deity of water and pottery, was believed to have created the first children using his potter's wheel and clay from the banks of the Nile. This Egyptian statuette from ca. 3500–3400 B.C., in the Predynastic period, was not made with a potter's wheel, however. In this era, Egyptians employed the PINCHING method to create remarkably thin-walled vessels and representational figures out of hollowed-out pieces of brownish-red clay also known as terracotta.

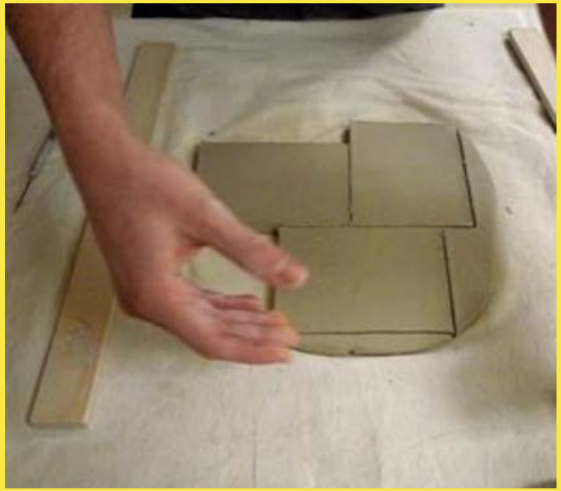
PINCHING TECHNIQUE

Lynda Draper’s pinched ceramics sculpture

PINCHING TECHNIQUE

SLAB

How Soft Slab Works: Begin with rolled-out, flat, and wet or moist pieces of clay (you can roll them out by hand-tossing or using a rolling pin or slab roller). Cut each individual piece into shapes, and connect or form them into an object. Score and slip the joined areas to ensure the object will dry out without losing its form.



SLAB

Found in Indian and Mesopotamian architecture, ceramic tiles are believed to have been constructed from SLABS of clay since 14,000 B.C. *Effigy urn in the form of the Sun God* from 12th–14th-century Mesoamerica is formed from a slab of unglazed clay (also called earthenware). The figure's elaborate garb, jewelry, and headdress represent the god's divinity—as the protector against everything from drought to illness. In ancient Mayan culture, slab-built lids and bases for vessels, boxes, and incense burners were used alongside coiled pots and clay slips to create the intricate decorative arts that the Mayans are well-known for.

SLAB TECHNIQUE

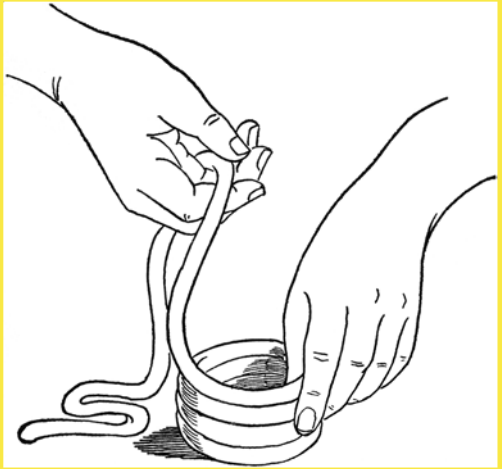
SLAB

JOHN MASON's Slab Sculptures

SLAB TECHNIQUE

COIL

How it Works: Coiled pots are constructed by gradually stacking and joining coils of clay one on top of the other. The coils can be left visible or can be smoothed away depending on your desired aesthetic end result.



Marissa Y Alexander

“I feel free when using coils to establish forms - there are no restrictions, the possibility of where the lines lead to is endless”

COIL TECHNIQUE

THROWING

Wheel throwing pottery is the process of shaping clay on the pottery wheel. Throwing usually involves a few steps from the beginning to the end of making a pot. These are centering the clay, opening it up, pulling up the walls, and collaring in the neck of the pot.

THROWING

The potter's wheel, often referred to as the process of "THROWING," was invented around 3,500 B.C. in Mesopotamia in modern-day Iraq, and it remains one of the most significant inventions of all time. The wheel's centrifugal force allowed potters to create vessels with unmatched speed and quality, enabling the formation of thinner and more refined vessels than was previously possible with handbuilding techniques. The invention of the wheel is largely accountable for the more than 100,000 vessels that survive from Ancient Greece.

Historians have pointed out the potential for innovation that the wheel ushered in.
The Haas Brothers continue to utilize the wheel THROWING to create forms that elicit the curiosities of nature—and to comment on contemporary culture as a whole. Strange, quirky, and lush, the objects created by the L.A.-based twins manifest a wide range of feelings, materials, and techniques. It's their "Unique, Hand-thrown" works particularly, however, that convey a certain timelessness, suggesting methods of the past.

CASTING

How it Works: Pour liquid clay (the slip) into a securely fastened plaster mould. After a few minutes, allow the clay to form and solidify within the mould's interior wall, and then pour out any remaining liquid clay. After a few more minutes, remove the hardened clay from the mould, trim unwanted areas if necessary, and air-dry.

CASTING

The China wares you might see displayed behind glass in your grandmother's dining room originate from the golden age of China's Tang Dynasty (618–907). Around 19,000 years after the first ceramic vessels from Xianrendong Cave, the Tang developed and perfected the manufacture of porcelain. Trade by sea and along the Silk Road enabled the exchange of goods with India and the Middle East, and may have led to the discovery of new chemical compounds for the invention of many more coloured glazes. With a precise and controlled **CASTING** technique and the development of new glazes, people from those regions created delicate, fine-bodied porcelain wares that elevated pottery to a sophisticated class of artistry.

Nagae Shigekazu is one of the leading pioneers of porcelain casting and firing techniques in Japan. Casting is commonly associated with the mass production of porcelain, yet Nagae valiantly transcends this stereotype, ultimately elevating this technique to the avant-garde. Casting alone cannot achieve the natural movements found within Nagae’s forms. In fact, the intensity of his gas-kiln fires help mould, shape and curve his delicate white porcelain, thereby giving birth to sleek and razor-thin silhouettes that have become Nagae trademarks.

Discovered by farmers while digging for a well, more than 8,000 Terracotta Warriors lay dormant for more than 2,000 years before excavations began over thirty years ago. These are the armies of Qin Shi Huang, the first emperor of China. They are buried with the emperor with the purpose of protecting him in his afterlife.

Contrary to popular belief that the terracotta soldiers were handcrafted by artisans due to their individualised facial features, the soldiers were in fact cast out of moulds.

The faces were, however, hand-carved, but features were probably not based on real faces; rather, the variation was due to drawing each face slightly differently.