

Exploring Ceramics

Teachers' Resource

Supporting KS3-4 Art & Design and Design & Technology curricula and exam specifications

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DesignLab Nation is generously supported by Sarah Nichols

Cover image: Jasperware trials mounted on a wooden tray, by Josiah Wedgwood, 1773–76, Stoke-on-Trent, Britain, Height: 2.2cm, Width: 30.2cm, Depth: 38.5mm © Victoria and Albert Museum, London

Teachers: How to use this resource

The Victoria and Albert Museum (V&A) in London is the world’s leading museum of art, design and performance. Its collection of 2.7 million objects spans over 5,000 years of human creativity. Each object in the museum has a different story to tell and can spark different questions about our connection to design. The V&A’s Ceramics collections are unrivalled anywhere in the world. Encyclopaedic and global in scope, they encompass the history of ceramic production from about 2500 BC to the present day.

The V&A Wedgwood Collection in Stoke-on-Trent comprises over 175,000 works of art, ceramics, manuscripts and photographs documenting the work and legacy of Staffordshire potter and entrepreneur Josiah Wedgwood (1730–95). In 1759, Josiah founded his ceramics company which achieved global success and remains in production today. The V&A Wedgwood Collection showcases innovations in taste and fashion spanning over 260 years.

About this resource

This Exploring Ceramics resource aims to support secondary school teachers to engage their students with ceramics, empowering young people to develop their own ceramics practice while gaining critical, creative and collaborative-thinking skills. This resource is designed to support both KS3 and KS4 students, studying either Art & Design or Design & Technology.

Each object card covers a different stage of the creative design process a ceramicist or ceramic designer may follow including material exploration, experimentation, gathering inspiration, learning techniques, design iteration, using tools, development and production.

To encourage object-based learning, each card leads with a focus on a different ceramic object from the V&A’s collection. These are then complemented with activities for students to explore their own ceramics practice, acting as a springboard for future work.

The resource is designed so activities are run over multiple 1-hour lessons, allowing students the opportunity to build skills and confidence with ceramics. We suggest carefully considering what can be achieved in each lesson using the suggested timings provided. It may be possible to deliver more than one activity within an hour’s lesson. You can choose to use these cards as independent activities, or as a tool to support your own teaching.

This resource also includes an interview with V&A Ceramicist in Residence Florence Dwyer.

Student Booklet

A student booklet has been provided at the end of the resource to be used in conjunction with the discussion of V&A objects and activities. This is a place for students to note down and sketch their responses to the activities, objects and the discussion points. The booklet is designed to be printed out (on both sides) and can be included in sketchbooks or portfolios. The booklet can be used on a visit or for work in the classroom.

V&A Objects – Managing student discussion

You can carry out object discussion while visiting the V&A or V&A Wedgwood Collection or to support object-based learning in the classroom. Before starting, please check the suitability of the content of the object description and questions for your students. Students can explore the objects individually, but we recommend they refer to them in small groups to encourage peer-to-peer discussion. In some cases, you may wish to facilitate the discussion. You can use the object cards as posters in your classroom after the activity.

Each card includes an object image, short object description and discussion questions. Encourage your students to take time looking at or drawing the details of the object before taking it in turn to read the description aloud and ask questions within their group. We suggest giving students about 5–10 minutes to work through the questions on each card.

We recommend voicing the following discussion guidelines before students start:

- Allow everyone in the group to voice their opinion. Be kind, patient and respectful of other people’s views and ideas.
- Don’t worry if you don’t know what your opinion is yet. Ask further questions to your group or do more research to help you decide.
- Remember that everyone’s opinion is valid. If someone has a different opinion to you, listen to them and ask them to explain their reasoning – it might change your own viewpoint.

Further questions

As well as the discussion points on the cards, use the questions below to encourage further object-based discussion with your students. Not all of them will apply to every object.

<i>Aesthetic</i>	What are its stylistic features?
<i>Technical</i>	What is it made from? How does it work?
<i>Industrial</i>	How and in what volume is it manufactured?
<i>Cultural</i>	What or who is it responding to?
<i>Behavioural</i>	How do you interact with it?
<i>Economic</i>	How does it financially impact the consumer and/or manufacturer?
<i>Environmental</i>	Is it sustainable? What is its lifespan?

Student activities

Student activities have been designed so they can be delivered in the classroom, without access to specialist equipment, with support of teachers and educators. We do however suggest teaming up with other departments in your school, local universities and nearby design industries to potentially share specialist equipment (e.g. a kiln) or gain further insight from local ceramicists, designers and craftspeople. For certain activities we recommend preparing a classroom or school space in advance so students can use messier materials. You may want to think in advance where to store student work while drying. Working with ceramics requires specialist health and safety considerations. We highly recommend carrying out a full risk assessment for all activities, materials and equipment.

We recommend using the student activities to kickstart extended ceramic projects. You can adapt activities to tie in any design challenges or themes your class is currently working on. Also feel free to adapt activities and discussion questions to meet the needs and demographic of your group.

Advice for working sustainably and being cost effective:

- Aim to use recycled materials where possible or share specialist equipment.
- If using a kiln, work with others to fill it to capacity.
- When ordering clay, try to buy in bulk to minimise delivery costs and reduce carbon emissions. Try to order clay locally.
- Although you can use airdrying clay, try to buy ceramic clay (which can be reclaimed and used again). Once your students have finished their creations, ask them to photograph it. You can then replace the clay in an airtight bag and seal for future uses. If clay has become too dry it can be soaked in a bucket with water and reclaimed. Follow this link to find out how to reclaim clay: bit.ly/reclaimclay

Visiting the Museum

We suggest complementing activities with a trip to one of the V&A sites or a local museum which may hold a ceramics collection. Please note V&A displays and galleries change regularly. Please check before you visit to make sure the works you would like to see are on display and that you can use certain drawing materials in a gallery space. Encourage your students to find out more about the objects by visiting vam.ac.uk/collections/ceramics.

Celebrating your school's ceramics

Please share your students' ceramics journey while using this resource. Please tag @vamuseum in your social media posts.

Curriculum and exam specification links

The V&A Exploring Ceramics resource is designed to support areas of the Design & Technology and Art & Design curriculums and allow students to develop their own ideas while exploring the work of others. Links to the curriculum include:

Design & Technology

- Material properties: Knowledge and understanding of physical and working properties.
- The work of others: Students should investigate, analyse and evaluate the work of past and present designers and companies to inform their own designing.
- Generate imaginative and creative design ideas using a range of different design strategies: This includes collaboration, user centered design, iterative design and avoiding design fixation.
- Explore and develop their own ideas: Iterative processes including sketching, modelling, testing, evaluation of their work to improve outcomes.
- Specialist techniques and processes: How to select and use specialist techniques and processes appropriate for the material and/or task and use them to the required level of accuracy in order to complete quality outcomes.

- Scale of production: How products are produced in different volumes e.g. prototypes, batch, mass.

Art & Design

- Idea development: Developing ideas through investigations, demonstrating critical understanding of sources.
- Practical skills: Refining work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.
- Responding to sources: Recording ideas, observations and insights relevant to your intentions as work progresses.
- Knowledge and understanding: Presenting a personal and meaningful response that realises intentions and demonstrates understanding of visual language.

Critical Friends

The content for this resource has been devised in consultation with a group of internal and external individuals and organisations. We are grateful to them for contributing their expertise and knowledge in the selection of the objects and the development of the content. Special thanks to teachers Melanie Stace (St Thomas More Catholic Academy), Tracy Warrener (Thistly Hough Academy) and Drew Wicken (Co-op Academy) as well as Florence Dwyer (V&A Ceramicist in Residence) and Hugh Williamson (Staffordshire University).

Ceramics glossary for teachers and students

Clay: A group of silicate minerals (a compound with anions consisting of silicon and oxygen) distinguished by their small particle size and composition. When clay is damp, its particles can slide over one another, making it malleable or 'plastic'. Clays are formed from the weathering and decomposition of rock. Clays are widely found, and are dug from open clay pits or quarries. Clay is the raw material used in ceramics. Clays are sometimes grouped according to the ceramics that they are used to make – earthenware, stoneware and porcelain.

Ceramic: Ceramic is the material formed when clay has been fired to high temperature, making it permanently hard.

Kiln: An oven used to fire clay. Clay must be fired in order to turn it into ceramic. A kiln can reach temperatures of above 1300°C.

Slip: Clay mixed with enough water to form a liquid. It is used for joining leather-hard (semi-hardened) clay, pouring into a mould to cast a shape, or for decoration.

Glaze: A glassy coating on ceramics. It is used for decoration, to ensure the item is impermeable to liquids and to provide a surface that can easily be cleaned. Glazing can make ceramic objects food safe.

Slab: A portion of clay that has been flattened into a sheet of even thickness. Clay slabs are most often made by using a rolling pin or a slab roller. Slabs can be pressed into moulds, or can be used to construct ceramic objects in a process known as slab-building (a form of hand-building).

Wedging: The process of preparing clay in order to remove any air bubbles trapped in the clay body.



Properties of Clay and Ceramics

MittiCool clay refrigerator, designed by Mansukhbhai Prajapati, India, 2005, Height: 66.8cm Width: 38cm Depth: 30cm

In rural Indian communities where dependable and affordable electricity is scarce, keeping food cool can be difficult. This fridge uses an ancient technique of cooling by evaporating water through clay. This method, which does not need electricity, is a practical and sustainable solution to the challenge of preserving fresh food in a hot country. The Mitticool company has since included ceramics cookware in its product range.

Watch

Find out more about how the MittiCool fridge works in this short animation: bit.ly/VA-Mitticool

Discuss

- Why do you think Mansukhbhai Prajapati chose clay to make this refrigerator? What properties of clay and ceramics make this a suitable material for a refrigerator?
- How could you use the properties of clay and ceramics to enhance objects you use daily, or make them more sustainable?

Student activity: Researching ceramic properties

- Students working in small group or as a class
- Materials: Paper or whiteboard, pencils/pens, online access
- Duration: Approx. 15–30min

- Ceramicists and ceramic designers choose to create objects out of clay and ceramics because they have many different properties. How many different properties can you name? Think about both the properties of clay, and the properties of ceramics (clay when fired at high temperatures). Discuss what would happen if clay and ceramic were replaced with another material e.g., wood, fabric, metal, plastic?
- Carry out further research of the properties of clay and ceramics. Add any further properties you find to your group's list.

Notes for teachers

You may wish to prompt students with the following properties:

- Clay: plasticity (soft and easily shaped), hardens when dried or fired, relatively cheap
- Ceramics: hard wearing, durable, strong under compression, nonporous (when glazed), brittle, resistant to high temperatures, resistant against corrosion, thermal insulators, electrical insulators, low density, light compared to their size

See the following card, *Ibreeq* ('drinking vessel'), for an activity about uses of ceramics.

Purposes of Ceramics

Ibreeq ('Drinking vessel'), Siddig El Nigoumi, 1980, UK, Height: 22.4cm
Depth: 20.50cm

Born in Sudan in 1931, ceramicist Siddig El Nigoumi originally trained as a calligrapher at the School of Art in Khartoum before moving to the UK to study ceramics. El Nigoumi popularised the use of traditional African pottery techniques within British studio ceramics. He is known for creating hand-built pots using red earthenware (a type of clay). His pots are often burnished (polished with a stone or similar smooth tool) and left unglazed.

This two spouted drinking vessel on four feet is called '*Ibreeq*', an Arabic word for 'jug'.

Discuss

- Compare *ibreeq* with other drinking vessels you use on a regular basis. How does it compare? What are the benefits of this design?
- Siddig El Nigoumi used his skills as a calligrapher to incise (scratch) into his ceramics to create a surface pattern before firing. How could you use your skills and interests in other areas of art and design to influence your ceramics?
- The ceramics of Siddig El Nigoumi are infused with African, Arabic and British influences. How could you bring together your heritage or experience of different cultures and places to create your own drinking vessels?

Student activity: Where are ceramics used now?

- Students working in small group or as a class
- Materials: small pieces of paper or a whiteboard, pencils, devices with access to internet
- Duration: approx. 15–30 min
- Ceramics have been used for millenia for lots of different purposes. Think about where ceramics are used now at home, at school, outside or in different industries. How many uses can you list?
- Research further uses of ceramics. Add any further uses you find to your group's list. Have you used ceramics in any of these ways? Do any of the uses surprise you?
- Looking back to your previous list of properties of ceramics, discuss why do you think ceramic was selected as a material for this use. e.g. Why is ceramic a suitable material for a toilet?

Notes for teachers

You may wish to prompt students with the following uses: tableware, oven hobs, bricks, pipes, roof tiles, wall tiles, toilets, sinks, bullet proof vests, biomedical implants, disc brakes on a car or bike, ornaments, tiles on a space shuttle.

Experimentation/Play

Jasperware trials mounted on a wooden tray, by Josiah Wedgwood, Stoke-on-Trent, Britain, 1773–76, Height: 2.2cm Width: 30.2cm Depth: 38.5mm

Josiah Wedgwood is one of the most recognisable names in British ceramics. He dedicated his life to innovation and experimentation, responding to changes in fashion of the day. When Neoclassical architecture was introduced in the mid-18th century, the style was characterised by grand scale, white walls and details and columns inspired by classical architecture of ancient Rome and Greece. Wedgwood wanted to create a new type of ceramic that would be compatible with the interiors of these new fashionable buildings.

This trial tray shows the different tests to perfect the different colours of 'Jasperware', a type of matte, unglazed pottery invented by Wedgwood. Wedgwood only perfected the colours of Jasperware after thousands of experiments, including many failures.

Discuss and experiment

Think about the style of buildings you see every day – this may be your home, school, in your town centre. How would you describe their style? Inspired by the forms of the buildings sketch out the outline of 3 different ceramic vessels – this could be a teapot, cup, or a jug. Inspired by the colours and textures of the buildings, experiment with different ways of mark making to decorate your vessels. Mark making could include drawing with the side of crayon, splashing ink/paint or smudging.

Find out

Find out more about Neoclassicism here: bit.ly/VANEoclassicism

Find out more about Josiah Wedgwood here: bit.ly/VAwedgwood

Student activity: Blindfolded clay modelling

- Students working in pairs
- Approx 400g of clay, blindfold, two printouts of V&A ceramic objects (folded so they can't be seen), table cover, aprons, cardboard or wooden boards to work on
- Duration: Each person 10–15min, then swap
- Student 1 puts on blindfold and holds clay
- Student 2 looks at the image of the V&A ceramic object. Student 2 needs to describe the object to Student 1 to help them recreate it without them looking at the image. Student 2 is not allowed to say what the object is e.g. 'It's a teapot!'. Student 2 should think about describing its form, its texture, its size, its surface pattern. For complicated objects try describing different parts of the object and then ask Student 1 to bring them together
- After 10 minutes, compare the clay creation with the original image. Take photos of clay creation
- Switch roles and repeat activity

Notes for teachers

You may wish to demonstrate the activity for students before they start.



Gathering Inspiration

Frieze tile, by an unknown maker, Takht-i Sulayman, Iran, 1275, Height: 35.7cm Width: 36.5cm Depth: 3cm

Ceramics have been made and used across the world, with the earliest examples dating back 20,000 years. The V&A's collections include ceramics from east to west, with ceramics dating from 2500BC to present day.

When the Mongol Empire invaded Iran in the 13th century there was devastation and disruption. However, as much of Asia became unified by Mongol rule, there was a period of increased prosperity and a boom in international trade. One result of this was an increase in the influence of Chinese art on design in Iran. This included the use of Chinese-inspired imperial symbols like the dragon and phoenix.

This tile once decorated the summer palace of Takht-i Sulayman in the mountains of north-western Iran. The palace was built by Iran's Mongol rulers, who followed the Chinese in using the dragon as symbols of imperial power.

Discuss and draw

How could you use symbolism to embed a message in your own ceramics? Research different symbols found on ceramics from different cultures. Think about how to include the symbol – whether it's through the form, colour, or surface design. Draw out your ideas.

Student activity: Quick fire drawing

- Students working individually
- Materials: paper/sketchbook, pencils, coloured pencils
- Duration: approx. 10–15min per object

- Teacher Prep: This activity is best delivered during a visit to the V&A or a local museum which holds a ceramic collection. If visiting a museum, please visit guidelines before starting. If delivering in the classroom students can explore vam.ac.uk/collections/ceramics

Select a ceramic object. You have 1 minute to carry out each of the following drawing activities:

- Draw the object using the opposite hand
- Draw the object, using a continuous line (without taking your pencil off the page)
- Draw the negative space of the object
- Draw the surface pattern of the object
- Draw the object, with your paper/sketchbook on top of your head (so you can't see!)

Compare your different drawings. Use the gallery label or object description to try to find out:

- the name of the object and the maker
- what the object is or what it does
- the year the object was made
- the country the object was made
- how it was made

Notes for teachers

You may want to read out the different activities in turn to the class. Encourage 'mistake making' by encouraging students to persevere and not providing rubbers.



Ceramic Techniques

Faceted onggi vase, by Ahn Seong Man, South Korea, 2015, Height: 20cm
Diameter: 14cm

Ceramicists and ceramic designers use many different techniques to create ceramics.

Onggi jars have been produced in Korea since 5000BC to pickle, cook and store condiments and foods. They have thick walls and are laborious to produce due to the coarse clay paste.

3D printing is an additive form of manufacturing, which involves heating and the layering down of material such as plastic to construct 3D objects from a digital file.

Korean ceramicist Ahn Seong Man takes advantage of the new creative possibilities of 3D printing to create his ceramics. He first designed his onggi vases on a computer. He then modified an existing 3D printer, adjusting the nozzle to print the ceramic vase design. He had to thin out the coarse clay so it could be printed.

Discuss

What are the advantages and disadvantages of 3D printing in ceramics? Think about different uses of ceramics: are handmade ceramics or 3D printed ceramics more favourable?

Find out

Find out more about 3D printing through other V&A objects here bit.ly/VA3dprinting

Student Activity: Practice different ceramic techniques

- Students working individually or in small groups
- Materials: approx 400g of clay per student per activity, cheese wire, rolling pin, water pots, basic clay tools, cardboard or wooden boards to work on, table cover, aprons
- Suggested duration: each technique approx. 20–40min

Explore each of these different ceramic techniques:

- Have a go at creating a pinch pot: bit.ly/pinchpotfilm
- Have a go at coiling: bit.ly/coilfilm
- Have a go at slab rolling and building: bit.ly/slabfilm

Notes for Teachers

Each of these films have suggested pause moments so you can pause the film as needed.



Design Iteration

Iteration is the process of adapting and improving a design to quickly test and create ideas. The process of design iteration allows ceramicists and ceramic designers to adapt and develop their designs to achieve their desired form, aesthetic and/or function.

1. First edition 'Portland Vase', made at the factory of Josiah Wedgwood, Etruria, Britain, 1793, Height: 25.5 cm Diameter: 19cm

2. Trial copy of the 'Portland Vase', made at the factory of Josiah Wedgwood, Etruria, Britain, about 1789, Height: 25.5 cm Diameter: 19cm

3. Trial copy of the 'Portland Vase', made at the factory of Josiah Wedgwood, Etruria, Britain, about 1789, Height: 25.5 cm Diameter: 19cm

The Portland Vase, also known as the Barberini Vase, is a Roman glass vase, which is dated to between AD 1 and AD 25.

In the 18th century, to demonstrate exceptional technical and artistic skill, ceramics manufacturer Josiah Wedgwood sought to copy the Portland Vase.

Wedgwood devised a coloured clay to imitate the blue-black colour of the original glass vase. To replicate the translucency of glass, he add very thin white clay reliefs and painted with diluted liquid clay.

However, he encountered various technical difficulties, which are shown in a number of trials.

Discuss

- Compare Wedgwood's 'Portland Vase' (1) with his trials (2 and 3). What problems do you think he encountered? How would you feel if you were Wedgwood?
- Have you encountered any problems with your ceramics? How did you solve these?
- Find out more about Josiah Wedgwood's 'Portland Vase' here: bit.ly/VAportlandvase

Student activity: Adapting ceramics

- Students working in individually or in small groups
- Materials: approx. 400g of clay per student, modelling tools, access to the internet on a device, aprons, table covers, cheese wire, cardboard or wooden boards to work on
- Duration: 50min–1 hour
- Select a vase, teapot or cup by searching on vam.ac.uk/collections/ceramics
- Model the basic shape of the vessel using clay. Try developing one of the techniques you might have practiced earlier (page 16). Don't worry at this stage about details.
- Change your design for different uses. You have 5 minutes for each challenge. Take photos of your vessel each time. Adapt your vessel:
 - so 10 people can drink out of it at the same time.
 - so it could be used by a runner.
 - for someone with a physical disability.



Using Ceramic Tools

Outpour, by Alison Britton, London, UK, 2012, Height: 51cm
Width: 33.5cm Diameter: 28.5cm

Ceramicists and ceramic designers use many different tools to create ceramics.

Alison Britton is a leading British ceramic artist who blurs the line between art and craft. She creates her distinctive sculptural ceramics through slab building and decorates them through mark-making.

Outpour is one of a series of ceramic works by Britton that refer to the containment and movement of water. Britton decorated this ceramic by pouring and splashing pale and mid brown slip (liquid clay) as well as clear and green glaze (a glossy coating) onto the finished form.

Discuss and draw

In a group look at Alison Britton's ceramic and the works of other ceramicists from the V&A's Ceramic collection vam.ac.uk/collections/ceramics. Each person should identify 3 different action words which they think have played a role within the object's transformation e.g. roll, dip, pour, twist and write them a separate pieces of paper. Fold and put all the action words in the centre. Each person picks 3 words at random. Sketch out a new tool you think the ceramicist might have used to create this effect. Try combining your action words so the tool has multiple uses. Discuss your different designs.

Student activity: Create your own tools

- Students working in individually or in small groups
- Materials: coloured slip (liquid clay), clay, clean and safe found/recycled objects (e.g. feather quills, corks, used biros, teapots, tin cans, plastic pots), tape, scissors, rolling pin, rolling sticks, aprons, table and floor covers, cheese wire, cardboard or wooden boards to work on.

- Teacher prep: you may want to prep slabs of clay for students in advance – see film on page 16. Cover the slabs with plastic wrap/bin liners to keep them wet prior to the class.
- Duration: 50min–1 hour
- Slip is liquid clay (clay with water added). It is often used by ceramicists for applying surface pattern. Watch this short film of V&A Ceramicist in Residence, Florence Dwyer experimenting with slip here: bit.ly/VAflorencedwyerslip
- Use a rolling pin to roll out a slab of clay, approx. 1cm thick.
- Have a look around your house, school, shed, in the park, for anything you think could be adapted to make a tool/device for pouring slip (liquid clay) out of. Think about objects that have a spout, holes, tube, vessel for holding liquid.
- Look at what you've gathered. Think about how you could de-construct and combine some of these components to make your own tool.
- Assemble it.
- Test pouring slip out of your tool onto a clay slab. You can pour directly onto the clay or prep your slab of clay first with a layer of slip of a different colour.
- Can your tool be adapted to work in a different way or to create a different pattern/effect?
- Take photographs to record your slip experiments.



Developing Ideas Further

Porcelain tiles for V&A Exhibition Road Courtyard, designed by Koninklijke Tichelaar Makkum/Amanda Levete Architects (AL_A), 2017

Following an extensive international competition, Amanda Levete Architects (AL_A) was selected from architectural teams from all over the world to create a new courtyard, entrance and exhibition gallery for the V&A. Inspired by the V&A's Ceramics Collection, the courtyard is paved with 11,000 handmade nonslip porcelain tiles. Porcelain is a smooth, white clay with a translucent finish. The tiles were decorated with fifteen different linear patterns covering the 1,200-square-metre space and were designed and manufactured by Dutch tile company Koninklijke Tichelaar Makkum.

Discuss and draw

- What considerations do you think the designers had to take into account when creating a public courtyard out of porcelain tiles?
- If you were asked to design a new space for the V&A, how could you draw inspiration from the ceramics collections? Explore vam.ac.uk/collections/ceramics and sketch out your ideas.

Find out more

Watch this video to explore how the tiles were made: bit.ly/VAexhibitionroadtiles



Student activity: Changing the scale

- Students working individually or in small groups
- Materials: approx. 600g of clay per student, cheese wire, table coverings, clay tools, cardboard or wooden boards for working on.
- Teacher prep: you may want to prep slabs of clay for students in advance – see film on page 16. Cover the slabs with plastic wrap/bin liners to keep them wet prior to the class.
- Duration: 50min – 1 hour
- Roll out a slab of clay until it is approx. 1cm thick.
- Select one of the following themes: organic forms, geometric shapes, facial features
- Responding to your theme, use clay tools to cut simple shapes out of the slab of clay.
- Now reimagine and remodel your clay shapes as one of the following:
 - a piece of architecture
 - a piece of visual design – maybe a logo or font
 - a piece of jewellery – maybe a headdress or watch
- Discuss your design with others. How could you utilise the properties of ceramics to enhance your design? e.g. durable, insulating, non-permeable or semi-permeable surface.



Production

Waster, by an unknown maker, Delft, The Netherlands, 1650–70,
Height:50cm Width:42cm Depth:35cm

These were intended as 34 individual plates, until the plates fused together when the protective cylinder in which they were fired collapsed in the kiln (an oven for ceramics). Due to the accidental fusion, the ceramics were discarded and later were found in a canal. Ceramic items discarded due to manufacturing defects are called 'wasters'. All the plates had been intricately hand-painted before being placed in the kiln. The 'waster' is an example of the risks involved in firing ceramics before industrial methods were developed.

Discuss

- This waster is the result of a production mistake and is unique. Do you think it has any value? Would you rather see the 'waster' in a museum or the separate 34 identical plates?
- The plates were all painted with the same design. This is an example of standardisation. What is more important: a design following standardisation or a design being unique? Discuss in relation to different ceramic products like dinner plates, disk brakes on a car, roof tiles, biomedical implants...

Find out more

The Wedgwood Factory is still producing ceramics today. Check out these links to different factory processes:

Throwing – bit.ly/WOWthrowing

Flat Making – bit.ly/WOWflatware

Hand Figure Making –
bit.ly/WOWfiguremaking

Student activity: Creating a mould

- Students working in individually or in small groups
- Materials: scissors, masking tape, 3D cardboard forms (e.g. egg boxes, fruit packaging), approx. 400g of clay per student, cardboard or wooden boards for working on.
- Duration: 50min – 1 hour, plus drying time
Teacher prep: any 3D forms provided should be made out of cardboard and not plastic as clay will stick to plastic.

Moulds are used a lot within ceramics. Their main purpose is to allow people to make multiples of the same object.

- Select 3D cardboard forms with interesting positive and negative space. You will press clay to the inside the negative spaces of your mould to create a positive shape.
- Use scissors and tape to cut and stick your cardboard 3D shapes together. For your first try, don't worry about creating a mould for a particular object – your 3D shape should be abstract.
- Once you're happy with the shape, take small pieces of clay and start to press clay inside your mould. Do this until you can see no more cardboard and try and aim for it to be able 1cm thick. Allow to dry overnight.
- Carefully peel away the cardboard to reveal your 3D shape.

Notes for teachers

Remind students that they need to fit their hand in to their mould to add the clay.



Interview with V&A Ceramicist in Residence, Florence Dwyer

How did you get into ceramics?

Quite soon after finishing my BA degree in Art and Design one of my friends taught me some ceramic skills. I'd go to her studio where she taught me the basics of hand building, and this really got me intrigued by the material. At that time, we were living together, and along with another flat mate of ours we started making plates for us all to use at home. We were kind of sharing all the stages of making; one of us was rolling the clay, the other one press moulding, and the other painting. I loved this way of working and how clay really lent itself towards working collaboratively. These plates are still in use today... 9 years on!

What is a V&A Residency, and what did it involve for you?

A V&A Residency is when an artist or designer works within the museum for a set period to work on a project and develop new ideas in response to the V&A collections. I had my own ceramics studio on the top floor of the museum for 6 months. I was working among thousands of historical and contemporary ceramic objects. This was a truly unique environment to be working in and so different from the studio where I normally work. As part of my residency, I was researching the V&A Wedgwood collection – ceramics made in the Wedgwood factory in Stoke-on-Trent.

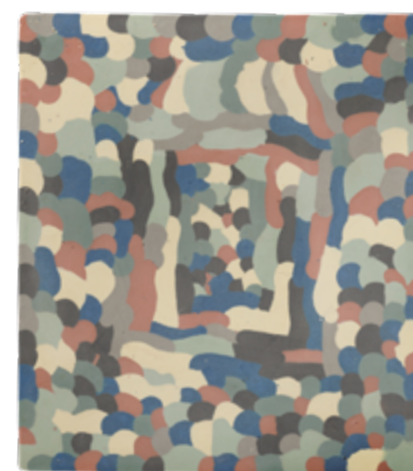
I was also working with the V&A Learning team and 3 secondary school teachers to help to develop this resource. So, all in, the V&A residency for me was a time of immense learning, gathering, meeting people and experimenting!

What is your design process?

I would say it's pretty hands-on. It usually starts with a theme, a particular object I'm looking at, or a place I'm making something for. From then I usually do loads and loads of really quick ink drawings – as a way to get all my ideas out of my head and on to paper. These then act as prompts for things to try out in the studio. I make lots of tests, playing with clay, adjusting the ingredients, glaze recipes and colours. I try out different tools to create different effects. After firing these tests, I usually step back and reflect on these to think about what direction I'd like to take next.

Where do you get your inspiration?

I often get inspired by looking at historical objects and thinking about how they might have been made, who they were made by and what they were made for. This then sets me off down a research avenue. Museums are a useful resource for me. I also get lots of inspiration from going on walks and being in new environments. I also love going to flea markets and into charity shops – I enjoy looking at all the different objects, materials and patterns and thinking about the previous owners. This has often inspired lots of my work.



Tell us about 'Inlay' (object below):

This is a tile called '*Inlay*' that I made whilst I was working in the studio at the V&A. It's made entirely from slip and pigments. Slip is liquid clay and is something I was working with a lot whilst I was on residency. I enjoy working with clay when it is not quite solid but not quite liquid, and from this I make drawing, making marks and patterns. I was looking at lots of medieval slipware in the museum, from huge plates decorated with different coloured slips to inlay tiles where the design is embedded into the body. I liked the idea that if you were to slice one of these medieval tiles down the middle, you might see the pattern running through it. So making *Inlay* was a way of trying this out. I've been asked to make a wall piece for someone's home, and so this is a sample for that.

What advice do you have for young people interested in ceramics?

Don't be scared of failure! Clay is such a strange and versatile material – it can do so many unexpected things. I think the only way of learning about it is giving it a go and getting stuck in. Start off with making something simple, repeat it, make it again and tweak it until you feel that little bit more confident. It doesn't matter if things aren't perfect first time around. I would recommend getting some air-drying clay and experimenting at home, then if you can, try and see if you can find a course nearby where you can start to learn about the firing and glazing of ceramics. There are also so many great YouTube videos talking you through lots of different techniques that are worth seeking out.

Sketch & notes



MittiCool clay refrigerator, 2005

In rural Indian communities where dependable and affordable electricity is scarce, keeping food cool can be difficult. This fridge, designed by Mansukhbhai Prajapati, uses an ancient technique of cooling by evaporating water through clay. This method, which does not need electricity, is a practical and sustainable solution to the challenge of preserving fresh food in a hot country. The Mitticool company has since included ceramics cookware in its product range.

Discuss

- Why do you think Mansukhbhai Prajapati chose clay to make this refrigerator? What properties of clay and ceramics make this a suitable material for a refrigerator?
- How could you use the properties of clay and ceramics to enhance objects you use daily, or make them more sustainable?

Researching ceramic properties

Ceramicists and ceramic designers choose to create objects out of clay and ceramics because they have many different properties. How many different properties can you name? Think about both the properties of clay, and the properties of ceramics (clay when fired at high temperatures). Discuss what would happen if clay and ceramic were replaced with another material e.g., wood, fabric, metal, plastic?

- Carry out further research on the properties of clay and ceramics. Add any further properties you find to your group's list.

Sketch & notes

Sketch & notes



***Ibreeq* ('Drinking vessel'), 1980**

Born in Sudan in 1931, ceramicist Siddig El Nigoumi originally trained as a calligrapher at the School of Art in Khartoum before moving to the UK to study ceramics. El Nigoumi popularised the use of traditional African pottery techniques within British studio ceramics. He is known for creating hand-built pots using red earthenware (a type of clay). His pots are often burnished (polished with a stone or similar smooth tool) and left unglazed. This two-spouted drinking vessel on four feet is called '*Ibreeq*', an Arabic word for 'jug'.

Discuss

- Compare *Ibreeq* with other drinking vessels you use on a regular basis. How does it compare? What are the benefits of this design?
- Siddig El Nigoumi used his skills as a calligrapher to incise (scratch) into his ceramics to create a surface pattern before firing. How could you use your skills and interests in other areas of art and design to influence your ceramics?
- The ceramics of Siddig El Nigoumi are infused with African, Arabic and British influences. How could you bring together your heritage or experience of different cultures and places to create your own drinking vessels?

Where are ceramics used now?

Ceramics have been used for millenia for lots of different purposes. Think about where ceramics are used now either at home, at school, outside or in different industries. How many uses can you list?

- Research further uses of ceramics. Add any further uses you find to your group's list. Have you used ceramics in any of these ways? Do any of the uses surprise you?
- Looking back to your previous list of properties of ceramics, discuss why do you think ceramic was selected as a material for this use. e.g., Why is ceramic a suitable material for a toilet?

Sketch & notes

Sketch & notes



Jasperware trials mounted on a wooden tray, 1773–76

Josiah Wedgwood is one of the most recognisable names in British ceramics. He dedicated his life to innovation and experimentation, responding to changes in fashion of the day. When Neoclassical architecture was introduced in the mid-18th century, the style was characterised for grand scale, white walls and details and columns inspired by classical architecture of ancient Rome and Greece. Wedgwood wanted to create a new type of ceramic that would be compatible with the interiors of these new fashionable buildings. This trial tray shows the different tests to perfect the different colours of 'Jasperware' a type of matte, unglazed pottery invented by Wedgwood.

Discuss and experiment

- Think about the style of buildings you see every day – this may be your home, school, in your town centre. How would you describe their style? Inspired by the forms of the buildings sketch out the outline of 3 different ceramic vessels – this could be a teapot, cup, or a jug. Inspired by the colours and textures of the buildings, experiment with different ways of mark making to decorate your vessels. Mark making could include drawing with the side of crayon, splashing ink/paint or smudging.

Describing and modelling a hidden object

- Sit in pairs, with one student either side of the box.
- On the flat side of the box, Student 1 places their hands through the holes of the cardboard box, so they can feel the clay but not see it.
- On the exposed side of the box, Student 2 looks at the image of the V&A ceramic object. Student 2 needs to describe the object to Student 1 to help them recreate it without them looking at the image. Student 2 is not allowed to say what the object is e.g. 'It's a teapot!'. Student 2 should think about describing its form, its texture, its size, its surface pattern. For complicated objects try describing different parts of the object and then ask Student 1 to bring them together.
- After 10 minutes, compare the clay creation with the original image. Take photos of clay creation.
- Switch roles and repeat activity.

Sketch & notes

Sketch & notes



Frieze tile, 1275

When the Mongol Empire invaded Iran in the 13th century there was devastation and disruption. However, as much of Asia became unified by Mongol rule, there was a period of increased prosperity and a boom in international trade. One result of this was an increase in the influence of Chinese art on design in Iran. This included the use of Chinese-inspired imperial symbols like the dragon and phoenix.

Ceramics have been made and used across the world, with the earliest examples dating back 20,000 years. The V&A's collections include ceramics from east to west, with ceramics dating from 2500BC to present day.

Discuss and experiment

- How could you use symbolism to embed a message in your own ceramics?
Research different symbols found on ceramics from different cultures. Think about how to include the symbol – whether it's through the form, colour, or surface design. Draw out your ideas.

Quick fire drawing

This activity is best delivered during a visit to the V&A or a local museum which holds a ceramic collection. If visiting a museum, please check you are ok to draw in the gallery before starting. If delivering in the classroom explore vam.ac.uk/collections/ceramics

Select a ceramic object. You have 1 minute to carry out each of the following drawing activities:

- Draw the object using the opposite hand
- Draw the object, using a continuous line (without taking your pencil off the page)
- Draw the negative space of the object
- Draw the surface pattern of the object
- Draw the object, with your paper/sketchbook on top of your head (so you can't see!)

Compare your different drawings of the same object. Use the gallery label or object description to try to find out:

- The name of the object
- The name of the ceramicist/designer
- What the object is or what it does
- The year the object was made
- The country the object was made
- How it was made
- If time repeat with another object

Sketch & notes

Sketch & notes



Faceted onggi vase, 2015

Onggi jars have been produced in Korea since 5000BC to pickle, cook and store condiments and foods. They have thick walls and are laborious to produce due to the coarse clay paste.

3D printing is an additive form of manufacturing, which involves heating and the layering down of material such as plastic to construct 3D objects from a digital file.

Korean ceramicist Ahn Seong Man takes advantage of the new creative possibilities of 3D printing to create his ceramics. He first designed his onggi vases on a computer. He then modified an existing 3D printer, adjusting the nozzle to print the ceramic vase design. He had to thin out the coarse clay so it can be printed.

Discuss

- What are the advantages and disadvantages of 3D printing in ceramics? When thinking about different uses of ceramics, are handmade ceramics or 3D printed ceramics more favourable.



Sketch & notes

Copy of the Portland Vase, 1793, about 1789, and about 1789

The Portland Vase, also known as the Barberini Vase, is a Roman glass vase, which is dated to between AD 1 and AD 25. In the 18th century, to demonstrate exceptional technical and artistic skill, ceramics manufacturer Josiah Wedgwood sought to copy the Portland Vase using his newly developed 'jasper' clay. Wedgwood devised a special mixture of colours to imitate the blue-black colour of the original glass vase, trying to mirror the translucency of the glass with very thin white clay reliefs as well as painting with diluted liquid clay.

Iteration is the process of adapting and improving a design to quickly test and create ideas. Iteration is an important part of the design process for all different types of design, including ceramics. The process of design iteration supports ceramicists and ceramic designers to adapt and develop their designs to achieve their desired form, aesthetic and/or function.

Discuss

- Compare Wedgwood's Portland Vase (1) with the two other trials (2 and 3). What problems do you think Wedgwood encountered? How would you feel if you were Wedgwood?
- Have you encountered any problems with your ceramics? How did you solve these problems?

First edition of copy of the Portland Vase, made at the factory of Josiah Wedgwood, Etruria, Britain, 1793, Height: 25.5 cm, Diameter: 19cm

Trial copy of the Portland Vase, made at the factory of Josiah Wedgwood, Etruria, Britain, about 1789, Height: 25.5 cm, Diameter: 19cm

Trial copy of the Portland Vase, made at the factory of Josiah Wedgwood, Etruria, Britain, about 1789, Height: 25.5 cm, Diameter: 19cm

© Victoria and Albert Museum, London

Adapting Ceramics

Select a 3D vessel (something which could carry water) from the V&A's ceramic collection using vam.ac.uk/collections/ceramics. This could be a vase, a teapot or something else.

Model the basic shape of the vessel using clay. Try developing one of the techniques you might have practiced earlier (page 14). Don't worry at this stage about fine details or surface pattern.

Now it's time adapt to your design for different uses. You have 5 minutes for each challenge. Take photos of your vessel each time before you adapt it.

- Adapt your vessel so 10 people can drink out of it at the same time.
- Adapt your vessel so it could be used by a runner at your local marathon event.
- Adapt your vessel for someone with a physical disability.

Sketch & notes



Sketch & notes

***Outpour*, 2012**

Alison Britton is a leading British ceramic artist who blurs the line between art and craft. She creates her distinctive sculptural ceramics through slab building and decorates them through mark-making, inspired by modern painting.

Outpour is one of a series of ceramic works by Britton that refer to the containment and movement of water – others include *Runnel*, *Standpipe* and *Watershed*. Britton decorated this ceramic by pouring and splashing pale and mid-brown slip (liquid clay) as well clear and green glaze (a glossy coating) onto the finished form.

Ceramicists and ceramic designers use many different tools to create ceramics.

Discuss and draw

In a group look at Alison Britton's ceramic and the works of other ceramicists from the V&A's Ceramics collection vam.ac.uk/collections/ceramics.

Each person should identify 3 different action words which they think have played a role within the object's transformation e.g., roll, dip, pour, twist and write them on separate pieces of paper. Fold and put all the action words in the centre. Each person picks 3 words at random. Sketch out a new tool you think the ceramicist might have used to create this effect. Try combining your action words so the tool has multiple uses. Discuss your different designs.

Create your own tools

Slip is liquid clay (clay with water added). It is often used by ceramicists for applying surface pattern. Take photographs to record your slip experiments, patterns and tools.

- Use a rolling pin to roll out a slab of clay, approx. 1cm thick.
- Have a look round your house, school, shed, in the park, for anything you think could be adapted to make a tool/device for pouring slip (liquid clay) out of. Think about objects that have a spout, holes, tube, vessel for holding liquid.
- Have a good look at what you've gathered. Think about how you could de-construct and combine some of these components to make your own tool.
- Assemble it.
- Test it. Have a go at pouring slip out of it on to a flat slab of clay. You can pour directly onto the clay or prep your slab of clay first with a layer of slip of a different colour.
- Does it work? Can it be adapted to work in a different way or create a different pattern/effect? Can you make one that trails two different coloured slips at one time?

Sketch & notes

Sketch & notes



Porcelain tiles for V&A Exhibition Road Courtyard, 2017

Following an extensive international competition, Amanda Levete Architects (AL_A) was selected from architectural teams from all over the world to create a new courtyard, entrance and exhibition gallery for the V&A. Inspired by the V&A's Ceramics Collection, the courtyard is paved with 11,000 handmade nonslip porcelain tiles. Porcelain is a smooth, white clay with a translucent finish. The tiles were decorated with fifteen different linear patterns covering the 1,200-square-metre space and were designed and manufactured by Dutch tile company Koninklijke Tichelaar Makkum.

Discuss and draw

- What considerations do you think the designers had to take into account when creating a public courtyard out of porcelain tiles?
- If you were asked to design a new space for the V&A, how could you draw inspiration from the ceramics collections?

Changing the scale

- Roll out a slab of clay until it is approx. 1cm thick.
- Select one of the following themes:
Organic forms
Geometric shapes
Facial features
- Responding to your theme, use clay tools to cut simple shapes out of the slab of clay.
- Now reimagine and remodel your clay shapes as one of the following: A piece of architecture – your shapes could take the form of a building for a new museum, a school or a train station. You could think about the whole building, or just part of it. A piece of visual design – your shapes could take the form of a poster, a logo or a new font. A piece of jewellery – your shapes could take the form of headress, a watch or a ring.
- Discuss your design with others.
How could you utilise the properties of ceramics to enhance your design?
e.g., different colours can be applied to ceramics, hardwearing, thermal insulators...

Sketch & notes



Sketch & notes

Waster, 1650–70

These were originally intended as 34 large individual plates, until the plates fused together when the protective cylinder in which they were fired collapsed in the kiln (a type of oven for ceramics). Due to the accidental fusion, the ceramics were discarded (and later found in a canal). Ceramic items discarded due to manufacturing defects are called 'wasters'. All the plates were intricately hand-painted with Chinese patterns before being placed in the kiln. The 'waster' is an example of the tremendous risks involved in firing ceramics before industrial methods were developed.

Discuss

- This waster is the result of a production mistake and is completely unique. Do you think it has any value? Would you rather see the 'waster' in a museum or the separate 34 identical plates?
- How would you feel if the designs that you and your friends had been working on were all suddenly fused together, out of your control?
- Before the plates fused, they were all painted with the same design. This is an example of standardisation. What is more important: a design following standardisation or a design being unique? Discuss in relation to different ceramic products e.g. disk brakes on a car, roof tiles, biomedical implants.

Creating a Mould

Moulds are used a lot within ceramics. Their main purpose is to allow people to make multiples of the same object. Moulds are often made from plaster as these help the clay to dry and shrink away.

Check out this video of V&A Ceramicist in Residence, Florence Dwyer using a mould to create a large pot: bit.ly/VAflorencedwyermould

- Collect 3D cardboard forms (e.g., egg boxes, fruit and veg packaging), tape and scissors to create a mould. Select 3D cardboard forms with interesting positive and negative space. The idea is that you will be pressing clay to the inside the negative spaces of your mould to create a positive shape.
- Use scissors and tape to cut and stick your cardboard 3D shapes together. For your first try, don't worry about creating a mould for a particular object – your 3D shape should be abstract.
- Try experimenting with different cardboard textures on the inside of your mould.
- Once you're happy with the shape, take small pieces of clay and start to press clay inside your mould. Do this until you can see no more cardboard and try and aim for it to be able 1cm thick.
- Allow to dry overnight and carefully peel away the cardboard to reveal your 3D shape.
- If time, repeat the activity to create an object with a particular purpose in mind e.g., a jug, a vase. You can use sheets of cardboard to create your mould from scratch.

Sketch & notes