

Unit 87: Exploring Specialist Ceramic Techniques

Unit code:	T/502/5349
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

The aim of this unit is to enable learners to use clay directly to gain an understanding of the natural properties and tactile qualities of clay and ceramic materials, and the techniques and processes used to transform them into ceramic items.

● Unit introduction

Clay is a versatile and responsive medium. It is used by craftspeople, designers and artists as a medium for self-expression and the realisation of ideas. It can be carved, cast, shaped and modelled to make 3D sculptural forms. Alternatively, it can be used to produce everyday items of functional ware that are part and parcel of contemporary life. It has applications in interiors and is hardwearing and robust when used in items such as floor or wall tiles.

Ceramicists build up a wealth of knowledge on their subject through practical application of ideas and technical knowledge. In this way they develop a personal language in ceramics suited to their intentions.

As learners develop understanding of their working practices, they should be able to relate their ideas to specific construction methods, for example hand building. The beauty of clay as a medium for recording the marks of the maker mean it is ideally suited for surface explorations such as applying textures. Some research will be required to support ideas for finished work, but the emphasis is on the practical rather than the theoretical.

Practitioners record technical information to inform and develop personal working practices. Learners will also be introduced to health and safety information regarding correct specialist studio working practices. On completion of the unit, learners should have compiled a technical log that can usefully be referred to when using ceramic techniques, materials and processes in the future.

This unit has an emphasis on exploring and investigating, rather than on the production of finished pieces of work. While the making process will be a part of the exploration, the aim is to gain a thorough understanding of the properties and the characteristics of ceramic materials, how they can be prepared, treated, worked and joined together to meet design intentions. This unit is important, because without this underpinning knowledge, the learner will not have a basis for future work in ceramics.

Exploration and experimentation in craft-making skills will be nurtured through the use of open-ended thematic assignments. The development and realisation of ideas will directly relate to the quality of research and the availability of specialist materials and equipment. Decisions will have to be made as to purpose: whether to develop purely decorative forms, or objects with practical functions that respond to clear aims set out in a design and craft project or projects. Learners can develop their ideas, elaborating themes on paper while making small test samples and maquettes, leading to finished craft pieces. As well as using traditional 2D and 3D craft media, the opportunity to use discarded materials and common everyday objects could be investigated. It is useful to consider what is available when operating on a tight budget. These materials may be transformed into interesting craft objects through creative repurposing.

Learners can also benefit from visits to the centre by local craftspeople or opportunities to see open studios or workshops, should they be available. The makers are often keen to talk about how they develop and realise their ideas, as they have to be confident enough to sell their work to shops, galleries and the general public.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand the properties and working characteristics of ceramic materials
- 2 Be able to investigate properties and working characteristics of ceramic materials safely
- 3 Be able to prepare, form, finish and store ceramic materials to meet specified requirements.

Unit content

1 Understand the properties and working characteristics of ceramic materials

Properties: eg tactile, malleable, pliant, durable, strengths, weaknesses, weight, fragility, workability

Working characteristics: changing stages eg softness, hardness, brittleness, plasticity, shrinkage, wet, leather-hard, bone-dry, before firing, after firing; controlled drying; heat treatments; tactile qualities eg rough, raised, indented, smooth, polished, glossy; finishes; fine detailing; colours before firing, colours after firing

Materials: clay eg earthenware, stoneware, smooth, grogged, porcelain, casting slip, paper clay; oxides eg cobalt, copper, iron, manganese, underglazes; slips eg painting, inlay, wax resist, paper resist; glazes eg earthenware, stoneware, transparent, opaque, shiny, matt

2 Be able to investigate properties and working characteristics of ceramic materials and techniques safely

Investigate: working processes eg methodical, sequential; testing eg models, maquettes, materials, techniques; recording eg processes, results, notes, annotations, photography, drawings; researching eg sculpture (historical, contemporary), materials, techniques; working safely: within the workshop environment; following the COSHH guidance on materials; wearing protective clothing as necessary; thoroughly cleaning tools and surfaces; following procedures for disposing of ceramic materials

3 Be able to prepare, form, finish and store ceramic materials to meet specified requirements

Prepare materials: eg pugging, wedging, kneading for soft working, controlled hardening prior to slab constructions, mixing slips and glazes

Forming and finishing techniques: eg pinching, coiling, slabbing, throwing, casting, modelling, moulding, cutting, joining, constructing, assembling, carving, painting, texturing, scraping, burnishing, slip trailing, sgraffito, resist, inlay, sprigging, stamping, marbling, glazing, firing; using tools and machines eg hand tools, banding wheels, throwing wheels, spray gun

Storing: wrapping clay in polythene to retain soft consistency; unwrapping as necessary for controlled drying; placing on appropriate shelving for correct firing temperatures

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 explain the working characteristics of ceramic materials [IE]	M1 compare the properties and working characteristics of diverse ceramic materials	D1 demonstrate informed analysis of the potential and limitations of ceramic materials and techniques
P2 investigate ceramic materials and techniques safely [IE, CT]	M2 plan and organise purposeful research and exploration of ceramic materials	D2 independently plan and organise integrated research and exploration of ceramic materials
P3 use ceramic materials and techniques for design intentions. [RL, CT]	M3 form and use finishing techniques skilfully to meet design intentions.	D3 demonstrate dexterity and flair with forming and finishing techniques.

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

For this unit learners will need to know how to manipulate and control ceramic materials at appropriate stages for successful completion of works. They will also need to know about the potential and limitations of what is possible with ceramic techniques. Emphasis should be placed on learners experiencing the qualities of clay as a medium for self-expression as well as a vehicle for practical uses such as utilitarian ware. Delivery techniques should include explanatory demonstrations, discussions, structured guidance, regular reviews and exposure to historical and contemporary examples. Where possible, delivery could include visits to galleries and museums, to enable learners to recognise ceramic techniques and processes in different contexts.

Tutors delivering this unit should ensure that health and safety issues relating to working with ceramic materials are stressed, particularly as many are hazardous substances and the appropriate COSHH guidance and workshop rules must be adhered to. Learners will be made familiar with potential risks associated with ceramic materials in a working environment and how to minimise these to themselves, others and the environment. They should work under supervision and observation to ensure regulations are followed correctly. Much of the background information required could be delivered via Assignment 1 in the outline learning plan, where tutor/s will deliver a presentation, supported by museum or gallery visits if available. Learners will record this information, and then apply what they have learnt through practical explorations that also address LO2. The studio sessions in Assignment 1 will also require learners to collect and collate relevant technical, and health and safety information as they explore materials practically. This information should be used at the culmination of the first assignment. To ensure exposure to the range of techniques available, learners should be allocated timetabled sessions for practising skills and processes, with opportunities for personal investigations, experimentations and different approaches. Work can range from following established procedures, to systematic, scientific and sequential investigations, to purely experimental for discovering unexpected outcomes.

Learners will need to develop regular and ongoing habits of producing trials and samples for intended finishes, as natural accompaniments to designing and making. As these are time-consuming activities, learners could share findings and results by working in small groups. Regular reviews and revisions should take place to reinforce and consolidate information. When learners are working on developing practical work, such as in Assignment 2 in the outline learning plan, it is essential that all stages of investigative work are accurately recorded, not just the end result, and learners should devise personal methods of recording in sketchbooks or notebooks, which they can access and refer to at any time. They may also record others' findings. Personal recording, rather than tutors' handouts, will aid memory of the practical work and in turn increase knowledge and understanding. Tutors should remind learners to refer to their records when working with ceramic materials, rather than repeating instructions.

Because there is potentially complex and technical information to absorb, learners should focus on a limited range of content at one time and have the opportunity to absorb and apply understanding gained, before moving on to another. Since the emphasis in this unit is on exploration rather than finished work, projects should be devised so that learners can produce exploratory and experimental works and to develop making skills which will be applied to specific outcomes. Therefore, this unit should not be taught in isolation, but be combined with *Extending Ceramic Techniques*, in which the focus is on producing designs and finished works.

Learning outcome 1 will be achieved through empirical work produced for learning outcomes 2 and 3; without direct experiences of handling, manipulating and working with ceramic materials, learners would not meaningfully understand the properties and characteristics of these. However, learners will also need to have theoretical understanding for increasing independence. Learners should become familiar with and use creatively the materials available to them. At this level learners will need technical support to ensure they are working safely in all areas of the unit.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
Group introduction to unit and structure of the programme.
Assignment 1: Properties of Ceramic Materials Group based read through of assignment and description of sources to be researched. This will include a review of examples of ceramicists' work.
<ul style="list-style-type: none">• Tutor presentation on ceramics – makers, construction methods, finished work – this can be supported by visits to galleries/museums if available.• Learners make notes and independently collect reference materials.• Tutor demonstration of health and safety/construction methods/glazing techniques.• Learners work with clay and explore textures/glazes.• Learners record all relevant information in work journals. Assessment – interim grade.
Assignment 2: Produce Ceramic Outcomes Group read through of assignment – individual learners to use parameters of brief to develop own work.
<ul style="list-style-type: none">• Stage 1 – tutor outlines the construction methods to be explored.• Stage 2 – learners work with clay to explore characteristics of media and to investigate potential in various construction techniques.
Learner initiated study.
<ul style="list-style-type: none">• Stage 3 – learners pack kiln and set up biscuit firing (with appropriate technical support).• Stage 4 – learners work through various glazing/finishing techniques and processes.• Stage 5 – learners complete evaluation of working methods. Assessment of assignment 2.
Learner initiated study.
Review of unit and assessment.

Assessment

Learners should be encouraged to use a range of different ways of investigating, exploring and exploiting the potential of clay and associated ceramics materials. Work can range from the purely experimental (aimed at discovering the unexpected outcome as well as confirming established information) to a more systematic and sequential investigation of the materials. It is particularly important for learners to develop the habit of making accurate and comprehensive records of their exploration. These should be organised in a sketchbook or notebook. These records, alongside trials, samples, maquettes and tutor observation, will provide the evidence required for assessment purposes.

For P1, learners will be expected to explain the properties and working characteristics of ceramic materials at a group critique, what changes take place at different stages and how these can be controlled.

P2 requires learners to work under supervision and within compliance of health and safety regulations to produce a series of samples, which test materials, techniques, processes and finishes, as demonstrated. In addition, samples should be recorded in notebooks by a method of the learners' choosing, with annotations to include basic information. Learners should explain and annotate how they follow health and safety procedures. At least one contextual example of works, which relate to the processes and techniques explored, should be included.

P3 requires learners to use ceramic techniques and materials appropriately for making and finishing, with understanding of all stages to meet specified requirements.

For M1, learners will be expected to make comparisons between diverse properties and working characteristics of ceramic materials at a group critique and show how materials react in particular ways.

M2 requires learners to plan, organise and pursue purposeful research and exploration of ceramic materials and techniques. Consultations with tutors will take place as necessary, but learners will record all discoveries made and information acquired, to refer to at later times. These records should be clear and informative, showing visual connections with own and others' works.

For M3, learners will form and use finishing techniques skilfully to meet design intentions, showing a consistent attention to detail and finish.

For D1, learners are required to demonstrate in-depth knowledge and understanding of ceramic materials and techniques at a group critique, based on own observations and informed analysis.

For D2, learners will explore the potential and limitations of ceramic materials and techniques by systematic and flexible approaches to exciting experimental work, investigating unusual or unexpected combinations, within health and safety compliance. They will produce comprehensive and informed records to communicate perceptive evaluations and make judgments about risks and limitations. They will also recognise the potential of unexpected results through continuous analysis of results.

For D3, learners will show dexterity and flair, sustained control and firm grasp of forming and finishing techniques.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, M1, D1 P2, M2, D2	Assignment 1: Properties of Ceramic Materials	A ceramicist is exploring different ways of developing their working practices to broaden their portfolio and to attract a wider range of opportunities for selling work.	Portfolio of evidence consisting of: <ul style="list-style-type: none"> work journals, containing notes and research materials learners' technical log practical work, including maquettes and test samples.
P2, M2, D2 P3, M3, D3	Assignment 2: Produce Ceramic Outcomes	A client has commissioned a ceramicist to develop a range of work that can be sold through a retail outlet. The ceramicist has experimented with different techniques and is developing their final outcomes.	Portfolio of evidence consisting of: <ul style="list-style-type: none"> work journals, containing notes and research materials learners' technical log, including COSHH data tutor observation of studio practice/kiln room work learners' practical work, final outcomes, test pieces and maquettes.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Art and Design sector suite. This unit has particular links with the following unit titles in the BTEC Art and Design suite:

Level 1	Level 2	Level 3
Introduction to 3D Design Crafts	Working with 3D Design Crafts Briefs	Materials, Techniques and Processes in Art and Design
		Extending Specialist Ceramic Techniques
		Developing and Realising Fine Art Ideas

Essential resources

Specialist workshop facilities, equipped to the appropriate standard for this level of work, are essential. They should include suitable safe storage for raw materials and work in progress, specialist machinery and equipment for the production of ceramic work, a kiln room with an air extraction system, suitable space for experimental work and a clean area for recording trials and experiments. Conditions should, as far as possible, equate to those of professional practitioners, and comply with the relevant health and safety regulations.

Employer engagement and vocational contexts

Centres should develop links with practising artists, craftspeople and designers, to deliver assignments to learners or to provide work experience.

Links with employers are essential to the delivery of the programme for work experience and future employment.

Vocational learning support resources:

- Learning and Skills Network – www.vocationallearning.org.uk

Business and finance advice:

- local and regional Business Link – www.businesslink.gov.uk

Assignments should be vocationally relevant; centres should consider the delivery of 'live projects' for example to support the vocational content of the unit and programme.

Creative and cultural skills (www.ccskills.org.uk), the sector skills council for arts, crafts and design have launched the web portal Creative Choices (www.creative-choices.co.uk). This portal has a range of information about careers in the arts, crafts and design sector, including job descriptions.

Indicative reading for learners

Textbooks

Beard P – *Resist and Masking Techniques* (A&C Black, 1996) ISBN 978-0713637472

Birks T – *The Complete Potter's Companion* (Conran Octopus Ltd, 1993) ISBN 978-1850294313

Blandino B – *Coiled Pottery* (A&C Black, 1997) ISBN 978-0713645231

Cowley D – *Moulded and Slipcast Pottery and Ceramics* (Batsford, 1984) ISBN 978-0713409727

Eden M and V – *Slipware* (A&C Black, 1999) ISBN 978-0713645156

Fraser H – *Ceramic Skillbooks: Electric Kilns and Firings* (Pitman, 1980) ISBN 978-0273013938

Hamer F – *The Potters' Dictionary of Materials and Techniques* (A&C Black, 1997) ISBN 978-0713644180

Hamer F and Hamer J – *Ceramic Skillbooks: Clays* (Pitman, 1977) ISBN 978-0273010005

Hinchcliffe J and Barber W – *Ceramic Style* (Cassell, 1995) ISBN 978-0304347513

Mattison S – *The Complete Potter: The Complete Reference to Tools, Materials and Techniques for all Potters and Ceramicists* (Apple Press, 2003) ISBN 978-1840923636

Minogue C – *Impressed and Incised Ceramics* (A&C Black, 2002) ISBN 978-0713661187

Morley-Fletcher H – *Techniques of the World's Great Masters of Pottery and Ceramics* (Phaidon, 1984) ISBN 978-0714880105

Osterman M – *The Ceramics Surface* (A&C Black, 2009) ISBN 978-1408113394

Osterman M – *The New Maiolica* (A&C Black, 1999) ISBN 978-0713648782

Peterson S and J – *Working with Clay* (Laurence King, 2009) ISBN 978-1856696050

Scott P – *Painted Clay* (A&C Black, 2000) ISBN 978-0713647549

Wardell S – *Slipcasting* (A&C Black, 1998) ISBN 978-0713676723

Wickham M – *Ceramic Skillbooks: Pottery Science* (Pitman, 1978) ISBN 978-0273011897

Journal

Ceramic Review

Website

www.craftscouncil.org.uk

The Crafts Council

Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are ...
Independent enquirers	comparing the properties of different ceramic materials investigating ceramic techniques
Creative thinkers	developing and proposing design ideas in relation to the brief applying different ceramic techniques, materials and processes
Reflective learners	considering test pieces, samples and maquettes reviewing use of ceramic techniques.

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	sourcing information about ceramicists and ceramic techniques
Creative thinkers	adapting design ideas in response to review of exploratory work with clay and processes
Reflective learners	setting success criteria for design work
Self-managers	managing the production process organising making time around firing schedules.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Find and select information	
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	sourcing information from websites and electronic publications about ceramicists and processes
English	
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	reading information about ceramicists reading and absorbing information about health and safety/ COSHH data
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	gathering and recording relevant technical information about ceramics techniques and processes.