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Research and analysis

Research review series: art and design

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Applies to England

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Introduction

The study of art enables pupils to understand, appreciate and contribute to a dimension of life that taps into and expresses human innovation, imagination and thought.^{[\[footnote 1\]](#)} In this review, we use the term 'art' to include the traditions of art, craft and design.

At an individual level, a high-quality art education can build pupils' ability to 'appreciate and interpret what they observe, communicate what they think and feel, or make what they imagine and invent'.^{[\[footnote 2\]](#)} At its best, the subject is both intellectually challenging and creatively demanding.

As a subject studied in school, art includes a range of practices, as well as theoretical and philosophical ideas and interests. The building blocks of the subject enable pupils to see, to know and to experience art. Pupils learn how to view, discuss and make art in its multifaceted, complex and contested forms.

This review explores some factors that contribute to a high-quality art education. Art and traditions of art education are broad and diverse. There is no single way to provide a high-quality education in the subject. In this review, we emphasise the curriculum, which is the ‘substance’ of what pupils learn.^[footnote 3] This connects the review to our inspection methodology.^[footnote 4] Further details about the purpose of this and other reviews can be found in ‘Principles behind Ofsted research reviews and subject reports’.^[footnote 5]

In this review, we:

- explain the national context of art and design
- summarise our review of research into factors that can affect the quality of education in art and design
- consider curriculum progression in art and design, pedagogy and assessment, and the impact of school leaders’ decisions on the provision

We draw on a range of sources, including our ‘Education inspection framework: overview of research’ and the 3 phases of our curriculum research.^[footnote 6] We also draw on research into art education, specifically sources that explore art curriculums in schools. Through this work, we hope to contribute to raising the quality of art education for all young people.



Context

The nature of art, craft and design

Art is a rich and varied set of practices central to human civilisation. Art itself is not static, and its purposes, materials and methods are always evolving. Historically, it has served a range of purposes, including representing nature, expressing feelings, embodying formal beauty, and preserving or criticising social norms. Major art forms include painting, sculpture, drawing and printmaking. Since the early 20th century, art has broadened to include photography, performance, installation and new digital media. Art is closely related to design and craft in graphics, typography, textiles and ceramics. It is not easy to draw a clear line between art, craft and design, because the boundaries between them have changed over time; these fields continue to

inform and enrich each other. Together, they are the basis of art education in schools.

Art, craft and design are practical in nature, and are partly based on studio practices. They are also informed by related academic disciplines, including the history of art, aesthetics and art criticism. The school subject of art draws on concepts and ideas from all of these traditions. The possible content is vast and subject leaders and curriculum designers need to be selective in what they include in their art curriculums.

Just as art, craft and design are wide-ranging, so too are the ideas, perspectives and approaches to art education. Art education concerns why pupils are learning the subject, what they might be taught, and how to teach and assess them. It is beyond the scope of this review to explore every tradition of art education, and we recognise that there are various and sometimes competing ideas about it.^[footnote 7] This is to be expected in a subject where both the content of the curriculum and the tradition of art education itself are influenced by cultural, social, economic and political factors.

The education inspection framework states that a high-quality education includes an ambitious curriculum that gives pupils ‘the knowledge and cultural capital they need to succeed in life’.^[footnote 8] Our review considers the nature of an art curriculum that achieves the aims of the national curriculum (see ‘[Curriculum](#)’ section). We do not explore wider ideas about the indirect uses or benefits of art education, such as the idea of art as a ‘playground for experimentation’ or as a way of promoting self-esteem and well-being.^[footnote 9] These areas of research may be valuable, but they are beyond the scope of this discussion about what pupils learn in art.

The national context

Art makes an important contribution to pupils’ overall education. Schools must offer a broad and balanced curriculum, according to the law.^[footnote 10] This expectation is reflected in the national curriculum and is at the heart of our education inspection framework, which states that a high-quality education consists of pupils being taught ‘a full range of subjects for as long as possible’.^[footnote 11]

Early education and primary schools

Children first encounter art and design in the early years foundation stage (EYFS). In the EYFS statutory guidance, ‘expressive arts and design’ is a specific area of learning and development.^[footnote 12] The guidance says it is important for children to engage with the arts regularly and to explore a range of materials and media.^[footnote 13] This helps them to work towards the early learning goals, such as safely using and exploring a variety of materials, tools and techniques. High-quality practice in the early years stimulates children’s interest and imagination in the materials and media they encounter, and provides the necessary foundations for future learning.

In the national curriculum, art and design is a compulsory subject at key stages 1 and 2.^[footnote 14] A report has highlighted a decline in both the quality and quantity of art education in primary schools.^[footnote 15] There may be a range of reasons for this, including:

- a decline in real-terms funding, so pupils have less access to specialist resources and support^[footnote 16]
- schools focus more on core subjects and less on foundation subjects^[footnote 17]
- primary teachers lack the skills, training and experience to teach a high-quality art curriculum^[footnote 18]

Secondary schools

In secondary schools, art is often a separate subject in the timetabled curriculum.

This is the first time that many pupils are taught art by a specialist teacher. The key stage 3 curriculum is important for a variety of reasons. Key stage 3 may be the last opportunity for a pupil to engage critically and creatively with art during their education. It is the time when pupils build on the knowledge they learned at primary school, and when teachers address gaps in pupils' subject knowledge. The key stage 3 curriculum also needs to give pupils the breadth and depth of knowledge necessary for them to be successful at key stage 4 and beyond. An art curriculum that significantly limits the amount of time given to the subject is unlikely to benefit pupils.

In 2021, the Department for Education reported that there were 1,040 fewer art and design teachers in 2020 than there had been in 2010. This equated to a decline of about 8%.^[footnote 19] There was no change between 2019 and 2020.^[footnote 20] A report by a subject association also suggested that pupils were taught fewer hours of art and design at secondary level in 2020 than in 2010.^[footnote 21]

At key stages 4 and 5, pupils have the opportunity to study art both for its own sake and to further their career aspirations. They can gain both depth and breadth of knowledge, which enables them to pursue a range of artistic interests and specialist pathways. Data from the Joint Council for Qualifications (JCQ) suggests there were more entries for GCSE art and design in 2022 than in 2010.^[footnote 22] However, compared with 2002, the number of entries for GCSE art and design in 2022 were at a similar level.^[footnote 23] Notably, the number of entries for other arts-based subjects, such as design and technology, fell significantly over the same period.^[footnote 24] For some pupils, the art and design curriculum is the only subject available to them that aligns closely with future training, education and work opportunities within the creative industries. In 2019, the creative industries made a significant contribution (£115.9 billion) to the UK economy.^[footnote 25] Many roles in these industries require a qualification in art and design.^[footnote 26]



Curriculum

Summary

The art and design curriculum in schools sets out how pupils can ‘get better’ at the subject.

Pupils can develop practical knowledge of how to create art, craft and design, for example by learning the methods and techniques that artists, craft-makers and designers use.

They can also build theoretical knowledge of the tools, materials and history of art, craft and design.

In addition, pupils can acquire disciplinary knowledge of the concept of art itself, such as the ways it is judged, valued and evaluated.

Pupils make progress in the art curriculum when they build practical, theoretical and disciplinary knowledge (which we define below) and learn the connections between them. A high-quality art and design curriculum sequences the knowledge that pupils learn. This helps pupils to get better as they move through early years, primary and secondary education.

The national curriculum and the school art curriculum

There is an important distinction between the national curriculum and the school subject curriculum in art. The national curriculum sets out the aims of the subject and an outline of the content pupils should study. Our discussion of quality in art education uses these aims and considers what pupils need to learn, over time, to achieve them. However, the national curriculum does not set out the exact range and depth of the content, concepts and practices that pupils need to learn. This means that teachers, subject leaders, and curriculum designers are able to select content. In this section on curriculum, we consider what high-quality art curriculums might look like. We focus on the content that they might include to meet the aims of the national curriculum.

All pupils in maintained schools are expected to study the national curriculum. This includes the requirements for art and design in key stages 1 to 3.^[footnote 27] Academies are expected to offer pupils a broad curriculum that should be ‘similar in breadth and ambition to the national curriculum’.^[footnote 28]

The current national curriculum states that the aims of art and design are to make sure that all pupils:^[footnote 29]

- produce creative work, exploring their ideas and recording their experiences
- become proficient in drawing, painting, sculpture and other art, craft and design techniques
- evaluate and analyse creative works using the language of art, craft and design
- know about great artists, craft-makers and designers, and understand the historical and cultural development of their art forms

The national curriculum does not set out how to sequence the content that pupils study in art.^[footnote 30] Some art educators have commented that the national curriculum does not include detail about how schools should build on each stage of development.^[footnote 31] Therefore, in this review, we will consider how schools might sequence the content in the art curriculum. The national curriculum also does not go into detail about the content that pupils should learn. This means subject leaders and curriculum planners need to have some sort of idea of what might be ‘cumulatively sufficient’ or ‘collectively enough’ content for the curriculum to be high quality.^[footnote 32]

Domains of knowledge

There are many ways of ‘carving up’ domains of knowledge in art education. The subject literature uses a range of terms for the domains. In this review, we suggest 3 domains:

- ‘practical knowledge’, which is about developing technical proficiency
- ‘theoretical knowledge’, which is the cultural and contextual content that pupils learn about artists and artwork^[footnote 33]
- ‘disciplinary knowledge’, which is what pupils learn about how art is studied, discussed and judged

These terms are helpful for discussing the different types of knowledge that pupils build in art, and for describing good-quality art education. We do not expect schools to use this terminology.

The 3 domains build on the different ways that knowledge about art has been discussed in recent research. For instance, some researchers put forward ‘foundational art disciplines’, which include art production, art history, art criticism and aesthetics. They suggest that pupils build knowledge in these domains when they study art.^[footnote 34] Some literature refers to ‘productive’, ‘critical’ and ‘cultural’ domains in art education.^[footnote 35] Other approaches refer to the types of knowledge that pupils learn when they learn ‘about’ art, ‘with’ art, ‘in’ art and ‘through’ art.^[footnote 36] Although these approaches use different words from the ones we have chosen, they all recognise that it is important to be clear that there are subject-specific forms of knowledge in art. The terms we have used (practical, theoretical and disciplinary) incorporate many of these ideas, as we go on to explain. We have chosen them because, first, they align with the aims of the national curriculum for art and design and, second, they link to wider traditions in art education.

Our education inspection framework prioritises the knowledge that pupils learn in the curriculum.^[footnote 37] Some researchers have expressed concern about focusing on ‘knowledge’ in arts education, when the meaning of the term is limited to accumulating disconnected facts.^[footnote 38] Our school inspection handbook highlights problems with pupils ‘memorising disconnected facts’.^[footnote 39] The definition of knowledge in our review is broader than this. We use the term to refer to what pupils learn in art (sometimes called the ‘curriculum objects’), including concepts and/or principles.^[footnote 40] When pupils learn this subject knowledge, they build the capacity to appreciate and create art. There are a range of capacities and competencies that pupils could develop from learning the art curriculum. However, they depend on the smaller building blocks of art knowledge that pupils will learn. Various art educators and theorists have used terms such as ‘qualitative intelligence’, ‘visual literacy’, ‘aesthetic literacy’, ‘visual aesthetic literacy’ and ‘enlightened cherishing’ to describe such capacities.^[footnote 41]

The forms of knowledge that we will explore are types of expertise that pupils can build over time. This expertise is both productive (pupils becoming proficient in the aspects of art or producing art) and receptive (pupils learning about aspects of art). The national curriculum for art and design gives examples of both of these types of expertise.^[footnote 42] This suggests that each of the 3 domains of knowledge include receptive and productive elements. For example, within the domain of practical knowledge, pupils may ‘develop proficiency in drawing, painting, sculpture and other areas of making’ (productive expertise). This is because they learn about methods and techniques used in drawing, painting, sculpture and other areas of making (receptive expertise).^[footnote 43] Both forms of expertise are essential to the traditions of art education. This is because, while the knowledge that pupils need to learn must

be clear, what they do with that knowledge may be unexpected, unpredictable or unanticipated.^[footnote 44] It is important for leaders and teachers to recognise that defining the knowledge that pupils need to learn through the curriculum is not the same as restricting or prescribing the artwork they produce.^[footnote 45]

In summary, there are 3 subject-specific forms of knowledge that subject leaders and curriculum designers might plan and sequence in the art curriculum.^[footnote 46]

Practical knowledge

Pupils develop practical knowledge through the art and design curriculum. This knowledge is necessary for when they make and create art. Practical knowledge allows pupils to make choices based on what they know about the limits and possibilities of materials and media. This practical knowledge is specific to ways of creating art. The National Society for Education in Art and Design recognises 12 different 'areas of making'.^[footnote 47] These include:

- drawing
- painting
- printmaking
- sculpture
- ceramics
- creative craft
- collage
- textiles
- photography and lens-based media
- installation and site-specific work
- digital and new media
- design and graphic design

Of these areas of making, 3 (drawing, painting and sculpture) are specified in the national curriculum.^[footnote 48] The national curriculum also refers to 'other art, craft and design techniques'. This suggests that schools will include areas of making beyond these 3.^[footnote 49] There is therefore a broad range of content for subject leaders and curriculum designers to choose from. A school art curriculum is unlikely to be able to cover all the areas of making in sufficient depth for pupils to engage meaningfully with them. Therefore, subject leaders and curriculum designers need to choose which areas to include. Schools may achieve the aims of the national curriculum in different ways. For example, in addition to drawing, painting and sculpture:

- primary schools may teach:
 - collage, because they have included 'pop art' in their curriculum and think this is the most suitable way to teach it, and because a range of everyday items are available for pupils to use
 - ceramics, because they may have access to particular equipment, such as a kiln oven
- secondary schools may teach:
 - textiles, to give pupils the opportunity to visit and see the work of contemporary artists and craft-makers, and to get a glimpse of career pathways such as fashion and textile design
 - photography, so that pupils learn a form of artistic visual representation

Subject leaders and curriculum designers should have a sound rationale for why the combination of areas of making they include in the curriculum is cumulatively

sufficient (together these areas provide pupils with a coherent understanding of art). They will need to have a rationale for which areas of making they teach and revisit over time, and which areas they will not teach. This prevents the art curriculum from collapsing into a superficial tour of different areas of making. Once subject leaders and curriculum designers have made these choices, they can broaden the curriculum by exploring in detail the various ways that artists, craft-makers and designers have expressed these areas of making.

Although the different areas of making sometimes overlap and have similarities, each has its own materials, media and technical language as part of a specialist tradition. For this reason, subject leaders and curriculum designers need to be clear about which materials, media and technical terms they want pupils to learn. For instance, when the following areas of making are taught, teachers will want to plan for pupils to learn foundational aspects of that area of making:

- In drawing: concepts such as line, shape and form; the use of different media such as pencil, ink or pastels; technical terms and phrases, such as ‘observational drawing,’ ‘outer edges’ and ‘where lines intersect’, which help pupils to draw what they are seeing, rather than what they imagine they see; and drawing media other than pencils, brushes and pens, such as wire or string
- In painting: concepts such as colour mixing; the associations between mixed colours, meanings and emotions; and different media, such as watercolour (a translucent paint), gouache (an opaque paint) and/or acrylic oil paint
- In sculpture: concepts such as form and space; and key terms pupils need to know when they manipulate clay, such as ‘slabbing’, ‘coiling’ and ‘pinching’
- In photography: concepts such as light, dark, balance and ‘the rule of thirds’; key terms about photographic processes such as film, print, slide, transfer; and key terms about digital photographic processes such as ‘manipulation’ and ‘resolution’
- In textiles: concepts such as texture and appliqué; different fabrics, such as woven and felted textiles; and terms such as ‘threads’ and ‘cords’

Practical knowledge also includes the various components of artistic practice. These are the elements of practical knowledge that give pupils the ability to represent physically whatever they have envisaged. These skills, techniques and practices learned in the art curriculum are underpinned by specialist and subject-specific knowledge. [\[footnote 50\]](#)

Practical knowledge can have both receptive and productive sides. In each area of making, pupils learn about materials and techniques, the vocabulary to identify them (a kind of receptive expertise), and how they themselves can use those materials and put those techniques into practice (a kind of productive expertise). The distinction that can be made between receptive and productive expertise is illustrated below:

- In drawing, pupils learn drawing-specific meanings for line, colour, form and shape (receptive expertise), and how to create lines using pencils, brushes, pens, wires or string. They learn how to use colour, generate form and depict shape for themselves (productive expertise)
- In painting, pupils learn elements such as shape, colour (including ‘cold’ colours and ‘warm’ colours), form and value (receptive expertise). They learn how to mix colours, to use complementary or contrasting colours and value to give the illusion of light, and to create shape and form (productive expertise)
- In sculpture, pupils learn the meaning of shape and form, the way 3-dimensional forms occupy their space (receptive expertise), and how to manipulate materials such as clay into 3 dimensions to create form. At the early stages of sculpture in particular, they also learn how to join elements and how to carve or incise surface detail (productive expertise)
- In photography, pupils learn about elements such as light, focus and repetition, specific compositional tools, and how photographers use equipment and materials (receptive expertise). They also learn how to select an image, how to use light and

exposure, how to apply compositional tools such as the rule of thirds (and, where appropriate, to break rules) and depth of field (productive expertise)

- In textiles, pupils learn about techniques such as appliqué, beadwork and sewing stitches, and how craft-makers use machinery (receptive expertise). They also learn how to create 2- or 3-dimensional, abstract or figurative works using a range of techniques (productive expertise)

Practical knowledge includes sensory aspects that are linked to areas of artistic practice. For example, pupils learn sensory aspects of drawing when they use different mediums and techniques (such as fine-liner pens or brushstrokes) to affect the 'quality of line'. There is a tradition in art education that reflects on the idea of 'tacit knowledge' or 'intuitive knowledge' gained through the senses.^[footnote 51] One writer described this as 'unspoken and uncoded words, that [occur in artistic practice] and [become] a matter of habit' and the 'thousand little everyday moves that add up in sum to a practice'.^[footnote 52] All areas of making also have spoken and codified components that pupils need to 'get better at'. Subject leaders and curriculum designers can identify these for teaching.

Drawing is central to art and design curriculums at primary and secondary level.^[footnote 53] The national curriculum mentions drawing specifically as a 'way of making'.^[footnote 54] Research on the teaching of drawing gives some examples of components:

Components of drawing	Examples of components that pupils can practise at appropriate stages of the curriculum
Fine motor control ^[footnote 55]	Pencil grip Range of marks Series of lines (for example in cross-hatching) Applying pressure to affect tone Shading to suggest form
Repertoire of lines and shapes, ^[footnote 56] which become symbolic systems or semiotic codes ^[footnote 57]	Simple marks Dots Vertical lines Horizontal lines Lines that enclose spaces Circles
Knowledge of elements of art ^[footnote 58]	How light and dark can be represented by pencil control Orientation of drawings
Knowledge of art language, such as spatial language ^[footnote 59]	Accurate use of art-specific words such as shape, line and colour
Techniques or methods ^[footnote 60]	Hatching Cross-hatching Stippling Finger blend

These are examples of components that are part of the curriculum. Pupils can learn and practise them. Some literature identifies other factors that can support the teaching of drawing:

- conditions that help pupils to think and concentrate^[footnote 61]
- tuition and modelling^[footnote 62]

- recursive encounters over time [\[footnote 63\]](#)

While important, these other factors are concerned with pedagogy. They are different from components of drawing on which teachers can focus their teaching.

Curriculum planners do not need to prioritise traditional expressions of art. Once pupils have learned the components of drawing, they can gain further knowledge and explore creative possibilities. For example, if a curriculum focuses on drawing, it would be appropriate for leaders or curriculum designers to select content taken from the whole history of drawing and the different traditions within it. [\[footnote 64\]](#) Pupils might be taught content, methods and techniques, and do practical work, from this range of traditions. For example, pupils may be taught:

- the use of the sketch and the development of preliminary ideas in Italian Renaissance art
- the use of line drawing during the Japanese Nihonga period

This applies to other areas of making. For example, in painting, children in the early years and pupils at key stage 1 may begin to develop forms of control by being taught:

- the form of control that gives the appearance of distinct dots of colour in the traditions of pointillist styles of painting
- the form of control that gives the appearance of distinct dots of colour in the traditions of indigenous Australian art

Pupils at key stage 2 might be taught the use of bold colour in 2 different traditions, such as in:

- Indian Madhubani paintings that depict religious and cultural events, and that include geometric and floral patterns
- Fauvist art that uses strong colour and gestural paint strokes

In sculpture, pupils may be taught:

- abstractions of the human form in Western art (used by sculptors such as Barbara Hepworth and Henry Moore)
- abstractions of the human form in prehistoric art

In these ways, the curriculum can be broad while also concentrating in enough depth on specific areas of making, to ensure that pupils gain some proficiency in that area. The breadth of the practices within an area of making are important. This is because, over the course of the curriculum, the methods, techniques and styles taught help pupils to build up knowledge of the diversity of drawing or painting or sculpture (or any other area of making). Theories of cognitive science highlight how knowledge of concepts is sustained by the range of examples that we have of them. [\[footnote 65\]](#)

While pupils will not be able to engage meaningfully in each tradition if the curriculum is 'a mile wide and an inch deep', the various components that pupils are taught through the curriculum are, nonetheless, what give them a broad and accurate conception of drawing, painting, sculpture and so on. Pupils therefore build up different examples of the diversity of art, craft and design traditions. They go on to construct and produce their own art within this framework.

Theoretical knowledge

The second domain of knowledge in the art and design curriculum is theoretical knowledge. This enables pupils to make connections between art's past, present and future.

The national curriculum states that pupils should know about great artists, craft-makers and designers. They should also understand the historical and cultural development of their art forms. The theoretical knowledge, including art history, that pupils gain is not simply knowing dates or facts about artists and their artwork. It is the knowledge pupils learn about:

- meaning and interpretations
- materials and processes
- journeys and connections through time

Pupils' theoretical knowledge puts into context much of the practical knowledge that they learn in the art and design curriculum. In making artistic decisions, artists themselves draw on personal experiences, and the work of their contemporaries and artistic predecessors. However, art educators have not always recognised the important interplay between practical and theoretical knowledge, or seen it as essential to curriculum design. Some researchers have commented that art education focuses on 'practical skills', sometimes at the expense of learning theoretical knowledge. [\[footnote 66\]](#)

When pupils learn theoretical knowledge about art, craft and design, they learn about themes and diverse connections that have existed over time and in different places. One writer has described this as pupils recognising the way that art and art practices are 'embedded' in 'socio-cultural matrices'. [\[footnote 67\]](#) The meaning of images, objects and artefacts can also change over time. Art takes place within cultures, societies and history. If teachers do not contextualise art, craft, and design traditions, pupils can build profound misconceptions about the ways that humans make and understand art. [\[footnote 68\]](#)

High-quality art curriculums should plan for pupils to develop sufficient knowledge to make sense of artists, artwork and art traditions. For example, primary schools often teach pupils about Vincent Van Gogh. Pupils can make sense of Van Gogh as an artist and his work when they are taught, for example:

- about the post-impressionism movement
- how this movement emerged and its purposes
- the influence of Japanese woodblock printing on his style and work
- how Van Gogh used tools and techniques, particularly his brushwork and use of colour
- the themes and meaning in his work

The broad range of curriculum content, beyond a single painting, helps pupils to avoid simplistic or narrow perspectives such as 'Van Gogh worked in the field of impressionism and painted sunflowers'.

A sculptor sometimes studied in primary schools is Andy Goldsworthy. Pupils can make sense of him and his work when they are taught, for example:

- how he uses natural materials to create sculptures
- about the tools and techniques he uses with natural materials
- about the relationship between the artist and the movement of 'environmental art'
- how his works fit into the natural and urban environments they are positioned in and how this can change how the viewer perceives the work
- why he has chosen different shapes and forms

It is important not to confuse theoretical knowledge about the historical and cultural development of art forms with a focus on a very narrow group of artists and artwork. [\[footnote 69\]](#) In high-quality art curriculums, pupils build an accurate impression of the range of art, craft and design work that humans have produced. This will include Western and non-Western traditions of art, craft and design. Subject leaders and

curriculum designers should think carefully about the examples and case studies they include in the curriculum to illustrate the variety of established, contested and neglected stories of art. High-quality art curriculums will give examples of the diversity of art in different areas of making by including, for instance:

- art, craft, design work produced outside Europe
- artists, craft-makers and designers from diverse communities
- traditional and contemporary forms of art, craft and design

For example, primary curriculums might include:

- geometric and natural forms expressed through patterns in Islamic art, when teaching theoretical knowledge in ceramics or painting
- flat planes of colour or pattern, and strong line, as used in Japanese ukiyo-e prints, when teaching theoretical knowledge in printmaking

It is important for leaders and curriculum designers to carefully plan the theoretical knowledge pupils should learn in the art curriculum. It helps pupils understand that art is a product of human culture, and is affected by human culture.^[footnote 70] Subject leaders need to make sure they identify and teach this type of knowledge. It would be 'unreasonable' and 'a fallacy' to assume that pupils will acquire it simply by learning practical knowledge.^[footnote 71]

When introducing case studies or examples, subject leaders and curriculum designers should think carefully about which components pupils need to know to make sense of them. For example, in a secondary school curriculum, subject leaders might include the study of Chila Kumari Singh Burman's 'If There is No Struggle, There is No Progress – Uprisings' (1981). For pupils to make sense of this piece, they will need to know about:^[footnote 72]

- the materials and techniques the artist has used in printing, such as etching and lithography
- the processes the artist has used, such as layering and fragmenting, to convey meaning
- ideas such as conflict, racial discrimination and social justice in relation to the piece
- ideas such as inclusion and 'visibility in relation to artist identity
- social and political knowledge to contextualise the references to unrest and protest, such as historical knowledge of the Thatcher government and the unrest and protests in the UK in the summer of 1981
- broader historical context, such as 'the Windrush generation' or 'colonialism' to foreground the themes in the artist's work

A secondary curriculum may include design work by the architect David Adjaye, such as his 'Gwangu River Reading Room'. The theoretical knowledge pupils would need might include:^[footnote 73]

- the materials and techniques used in the construction of the building, such as concrete and timber
- design-specific concepts such as 'shape' and 'form'
- context-specific concepts such as 'revolt', 'memory' and 'storytelling'
- the social, political and historical context of the Gwangju Revolt
- concepts such as 'monument' and 'landmark'

These examples show how curriculum designers and subject leaders can identify important component knowledge when introducing pupils to complex art, craft and design content. There is a vast range of art and artists that teachers and curriculum designers can choose from. This means the component knowledge that teachers include may differ greatly from school to school. However, in all cases, the

component knowledge acts as building blocks to allow pupils to build in-depth theoretical knowledge.

Theoretical knowledge also helps pupils to develop their practical art-making. Subject leaders and curriculum designers can link theoretical and practical knowledge in a variety of ways, including to:

- improve pupils' command of practical knowledge; for example, pupils can use knowledge of the forms and conventions of past art to reflect on their own drawing techniques or craft skills
- frame discussions about pupils' 'personal style'; for example, pupils can explain their own artistic influences
- develop a common classroom language for discussing, comparing and contrasting artwork
- build pupils' knowledge of cultural norms, conventions and categories, such as authorship, artwork and exhibition space
- help pupils to understand current issues for artists, craft-makers and designers, such as sustainability in design projects

Disciplinary knowledge

The domain of disciplinary knowledge is very broad. It captures the idea that, through the curriculum, pupils learn:

- how aesthetic judgements are formed and claimed
- how art is studied
- how to participate in the discourses of artists, scholars and critics

It is important for pupils to learn disciplinary knowledge because art is not fixed. It is fluid and dynamic. It changes through encounters and exchanges with new technologies, new ways of thinking and new opportunities. When pupils learn disciplinary knowledge, they participate in discussions about big ideas in art. They explore, among other things, concepts of quality, value and purpose.^[footnote 74]

Disciplinary knowledge is central to recent developments in art education which focus on the formal and substantial teaching of art. Some art educators have explained how disciplinary knowledge should inform the art curriculum, such as basing it on 'foundational art disciplines'.^[footnote 75] This review does not advocate any specific disciplinary approach. Instead, we emphasise the importance of knowledge that helps pupils to make sense of what the subject is and how it came to be.

Disciplinary knowledge relates to theoretical knowledge, but is different. Theoretical knowledge is about specific forms or works of art (including their medium, origins, provenance and production). By contrast, disciplinary knowledge is not bound to a specific 'way of making'. Instead, it transcends different areas of making, and focuses on the norms, products and purposes of art. It is about how art itself is thought of as a discipline. This knowledge contributes to pupils' capacities to interpret art.^[footnote 76] Some commentators have suggested that art education is weak or incomplete if it does not give pupils the knowledge to discuss contentious issues.^[footnote 77] For these reasons, it is important for curriculum designers and subject leaders to include disciplinary knowledge content. There are many ways that they can do this. For example, they can include content about:

- disciplinary questions, such as 'how is art made?', 'what is art?', 'how is art judged?', 'what is the purpose of art?', 'how does design affect the lives of users?', and 'how does design affect human environments?'
- what artists have done across cultures and throughout history to draw attention to

the influences of art

- different pathways, practices and industries linked to art, craft and design
- how commentators and critics judge and evaluate art
- concepts such as ‘aesthetic judgement’ and ‘value’
- age-appropriate content that explores how thinkers have drawn attention to aspects of art that shape the stories humans tell through art (‘art histories’), including their perspectives on social, political and moral issues^[footnote 78]
- artistic approaches in other areas of making that pupils do not study in depth, or in new and emerging technology such as in film, sound and photography
- the different ways of working in the disciplinary field, such as the roles of illustrators, critics, commentators and curators

When pupils learn this type of content in the art curriculum, they can begin to make sense of, interpret and judge claims and propositions that are sometimes made about art. They can join in conversations about the nature of art, drawing on the disciplinary concepts and examples of theoretical knowledge they have learned. Pupils might then analyse playful claims and tentative propositions about art, such as:

- ‘the value of art cannot be measured by money alone’
- ‘all art is equal in value’
- ‘art can never be separated from the artist’
- ‘artists build on the work of previous artists; artists subvert the work of previous artists’
- ‘artists create images for the purpose of being seen’

Statements like these can be helpful to curriculum designers and subject leaders when they are choosing practical and theoretical knowledge to include in the curriculum. This is because, if pupils are to build up sufficient knowledge about these abstract ideas, they will need curriculum content that is well-selected and diverse, and includes a range of forms and cultures. The content should illustrate the plurality of art, craft, design and associated traditions. When pupils are familiar with this content, they can learn disciplinary knowledge about art.

Disciplinary knowledge is important as it enables pupils to see how (what might appear to be) contradictory ideas can co-exist and be connected within the traditions of art. At the same time, it can give teachers a useful planning tool. They can ground their curriculum content in the kinds of questions that artists, critics and scholars ask. When leaders and teachers include disciplinary knowledge in their art and design curriculums, they induct pupils into the ‘manner of thinking and acting’ found in communities of artistic practice and analysis.^[footnote 79]

Curriculum progression

Our definition of progression is that pupils know more and remember more of the planned curriculum, and that they are therefore able to do more with the subject-specific knowledge that they learn. This is what we mean by the phrase ‘the curriculum is the progression model’. As we have said above, knowledge that is learned and remembered should not be understood just as disconnected facts or prescribed processes.^[footnote 80] It should be understood in nuanced, subject-specific terms.

As pupils move through an art curriculum, they should build the 3 forms of knowledge that we discussed above. When pupils ‘know more’, they can develop latent capacities to ‘do more’ in art, and so develop their expertise.^[footnote 81] When we talk about ‘developing expertise’ in art in this review, we do not mean that we expect pupils to become experts or masters of art, craft and design, although some may do

so. But it is an aim of the national curriculum that pupils become 'proficient' in different areas of making.^[footnote 82] So, 'developing expertise' means that pupils build sufficient knowledge and skills that could enable them to achieve high degrees of specialism and proficiency in art.

Progression, or 'getting better', in subjects is complex, as it is a 'process of qualitative change as well as cumulative acquisition'.^[footnote 83] Subject leaders and curriculum designers have to think carefully about the content that they include in the curriculum. They need to make sure it is sequenced so that it brings about this qualitative change in pupils and helps them to achieve the subject-specific goals of the curriculum. They also need to help pupils become familiar with procedures for gaining and validating new knowledge in different subjects.^[footnote 84] Curriculum designers and subject leaders can explore these further in the following sections.

Sequencing art and design content towards end points

High-quality curriculums build on what pupils already know and prepare them for what is to come.^[footnote 85] This is important because it is pupils' breadth of knowledge that they draw on to make sense of new content or engage in new ideas.^[footnote 86] Pupils' cognitive development depends on, among other things, having the knowledge necessary for the next stage of learning.^[footnote 87]

In art, 'sequence pertains to the organisation of activities so that they [the activities] challenge, develop, and build upon the ideas and skills that students have previously acquired'.^[footnote 88] When sequencing learning, curriculum designers need to consider what pupils already know.^[footnote 89] This principle can be applied across lessons, schemes of work or schooling phases. For example:

- In terms of practical knowledge, when pupils know colour theory, they are better equipped to use colour to communicate a particular mood and suggest meaning
- In terms of theoretical knowledge, when pupils know about the diverse ways that artists have explored the theme of 'identity', they are better equipped to create an original response, drawing on approaches used by artists, designers and craftspeople across time and cultures

Some curriculums in art, craft and design have very high-level ideas as end goals. These might include 'the way artists represent places and spaces' or 'the way artists represent nature in art'. There are different approaches to designing the art curriculum to achieve these goals. One is a thematic approach that organises (mainly theoretical) content according to themes such as 'places and spaces' or 'art and nature'. Another is to consider relevant traditions in art, craft and design history (theoretical knowledge) when studying particular techniques. Whichever curriculum structure teachers choose, they will need to make sure pupils gain a sufficient combination of practical, theoretical and disciplinary knowledge to achieve the curriculum goals. Pupils will need this to appreciate works connected with the themes, and to develop the ability to produce their own work around the themes.

Building towards divergent and convergent end points in the curriculum

When leaders set ambitious end goals for the curriculum, it is important that they do not confuse the content pupils need to know with the artwork that they create. As in other subjects that promote original thought, when pupils study art and design, they will make interesting and unexpected connections between content and generate their own creative ideas. The curriculum sets out what pupils need to know. It may or may not also specify ways for them to use that knowledge or to perform with it. Sometimes the work that pupils do is static or fixed, for example all pupils:

- practise mixing secondary and tertiary colours
- follow the same steps to become competent in making reduction prints

At other times, pupils may create artwork that is diverse and radically different from

other pupils' work. For example, they may produce work where they have:

- used different materials
- applied different techniques
- created a single object, while other pupils have created multiple objects

The first examples are outcomes that have been prescribed so that pupils learn a specific curriculum object. In the second examples, pupils use what they have learned as well as drawing on their personal and creative thoughts and feelings to produce individual work.^[footnote 90]

The distinction above draws on research in art and design that considers both the convergent (more prescribed) and divergent (less prescribed) goals of the art curriculum.^[footnote 91] Sometimes, art educators also use the language of pupils learning 'about', 'with', 'in', and 'through' art.^[footnote 92] When pupils achieve convergent goals in art education, we describe them as learning 'about' and 'with' art. When pupils achieve divergent goals, we describe them as learning 'in' and 'through' art. Subject leaders and curriculum designers may need to be clear about which type of goal the art curriculum is building towards. We will briefly explore convergent goals, and then divergent goals.

First, pupils can acquire knowledge to achieve a convergent goal. This is when we are aware of how pupils will apply this information, which may be specific to a certain context. The national curriculum mentions more prescribed outcomes (convergent goals) in its reference to proficiency in art, craft and design techniques.^[footnote 93] For example, pupils may learn:

- colour theory and knowing that mixing red and yellow makes orange
- specific techniques to command a particular skill

Second, pupils can acquire knowledge to achieve a divergent goal. This is when we do not know how pupils will use the knowledge. In such cases, pupils draw on the knowledge to create their own artwork, combining what they know in sometimes experimental contexts. The national curriculum mentions this in its reference to producing creative work.^[footnote 94] For example, pupils may learn how:

- colour can depict and change the mood of art
- the use of different media or visual cues can convey a personal style

In high-quality art and design curriculums, subject leaders and curriculum designers structure the content in 2 ways:

- At some points of the curriculum, it is important for pupils to work towards 'convergent' points (such as specifying the crucial concepts that they need to learn at a particular point of the curriculum)
- At some points of the curriculum, it is important for pupils to work towards 'divergent' points (such as ensuring that they have enough knowledge to draw on when forming their own particular slant or style)^[footnote 95]

In the second way, pupils' own understanding of the world contributes to what they produce or learn. This is because it interacts with what they have learned about how art and design knowledge is formed and used.^[footnote 96]

Leaders of art and design should think carefully about which end points of the curriculum need to be convergent, and which should be divergent. The rationale for this choice is important. It will depend on the nature of the content and the point in the sequence of the curriculum. High-quality art and design curriculums identify pertinent and useful knowledge that pupils need in order to make or view particular kinds of art.

Building in practice along the way

Practice is vital if pupils are to achieve the goals of the curriculum. It is often associated with pedagogical approaches to teaching particular aspects of art in lessons (see [‘Teaching the curriculum’ section](#)). However, it is important for subject leaders and curriculum planners to recognise that practice needs to be ‘built in’ to the curriculum.

The structure of the curriculum should enable pupils to achieve particular goals. This is not the same as planning activities in steps to produce a particular creative product (such as recording initial ideas, then developing a response to an artist, and then experimenting with different media). Important as that kind of sequencing is, it is not the same as sequencing that makes sure sufficient practice is built in. Instead, ‘sequencing for practice’ occurs when subject leaders give pupils enough regular opportunities to work with related content to help them learn that content in the long term.

One example is learning how to use watercolours. For pupils to understand this, they need to be taught that the traditional transparent technique involves layering colour washes. To build their control and confidence, they may practise adding and removing washes and glaze with one type of tool (such as a brush) until that technique is secure. They then try a range of tools (such as adding or removing water with a sponge, or tissue). Next, they may practise mixing primary colours by overlaying washes. This prepares them to go on to experiment with the effects of watercolour to achieve their goals.

Pupils can build expertise in this way through the planned curriculum, and by having time and instruction to practise and master content ‘in the moment’ in lessons. Given the richness of art and design, it is perfectly possible to structure the curriculum so that pupils can re-encounter subject components in different contexts.

‘Sequencing for practice’ in art and design is the process of thinking through how to support pupils’ learning by breaking down the main components that they need to practise. These components of art, craft and design are then sequenced, with links highlighted between practical knowledge, theoretical knowledge and disciplinary knowledge. This enables pupils to become knowledgeable about art. Their own expressive works also become examples of the knowledge they have learned. [\[footnote 97\]](#)

Creativity

‘Creativity’ is a word frequently associated with the arts, including art, craft and design. In this section, we explore 2 ideas about the concept of ‘creativity’ that may be helpful when applied to the art curriculum:

- The casual use of the term ‘creativity’ is unhelpfully broad. It is too general to be functionally useful in determining curriculum content and how art is taught.
- A subject-specific use of the term ‘creativity’ includes the central idea that pupils can make creative contributions in art, craft and design if their knowledge and skills in a particular area (domain) are sufficiently developed.

Often, the term ‘creativity’ is used in a non-specific way. For example, national curriculum documents for various subjects, including art and design, design and technology, mathematics and computing contain references to ‘creativity’ or ‘creative outcomes’. [\[footnote 98\]](#) Art and design educators have made the point that the subject of art should not be confused or conflated with creativity. [\[footnote 99\]](#) Some reviewers of art, craft and design literature claim that the non-specific, casual use of the word ‘creativity’ in the subject literature is generally ‘under-theorised’. [\[footnote 100\]](#) ‘Creativity’ is therefore less helpful when establishing subject-specific goals of the art curriculum. For these reasons, in the previous sections on the art curriculum, we have explored subject-specific forms of progression and end points.

Nevertheless, a subject-specific conception of creativity may be useful when

describing the kinds of outputs, dispositions and aptitudes that emerge as pupils journey through the art curriculum. In 2019, the Durham Commission described creativity as the ‘capacity to imagine, conceive, express, or make something that was not there before’.^[footnote 101] This builds on a definition from the National Advisory Committee on Creative and Cultural Education (NACCCE) 2 decades before.^[footnote 102] It is important to move beyond everyday assumptions about creativity in art and recognise that, when pupils generate ‘creative contributions’, they draw on the knowledge and skills they have developed within the domain they are learning.^[footnote 103] It is also important to note that, just as the kinds of practical knowledge that pupils build through the art curriculum relate to multiple areas of making (such as printing, sculpture, photography, textiles and drawing), so each area has its own conception of what constitutes creativity within that tradition.^[footnote 104] Creativity is therefore most usefully thought of in subject-specific terms, and particularly in relation to specific traditions in areas of making. It is the practical, theoretical and disciplinary knowledge that pupils build through the curriculum that provides them with the capacities to create in art, craft and design in a variety of ways.

Based on the above, high-quality art and design education may have the following features:

- Curriculum content is chosen specifically to enable pupils to build practical, theoretical and disciplinary subject-specific knowledge
- Curriculum content includes different ways of making and together these choices are cumulatively sufficient and provide pupils with a coherent understanding of art
- The curriculum concentrates in enough depth on chosen areas of making for pupils to gain proficiency in those areas
- Curriculum content includes practical knowledge about the methods, techniques, and styles related to these ways of making
- Curriculum content enables pupils to understand the journey of art throughout history and culture, including established, contested and neglected stories of art (theoretical knowledge)
- Curriculum content is grounded in the kinds of questions that artists, critics and scholars ask (disciplinary knowledge)
- The curriculum sequences knowledge components to help pupils work towards more complex, subject-specific end goals
- There are identified points in the curriculum where it is clear whether pupils are working towards ‘convergent’ or ‘divergent’ goals
- Practice is built in throughout the curriculum and is sufficient to ensure pupils learn a curriculum that will build receptive and productive expertise as intended



Pedagogy

Summary

Effective pedagogical choices help to develop pupils' subject expertise, in practical, theoretical and disciplinary domains, over time. Pupils need many opportunities to practise, to receive feedback and to revisit previous knowledge in contexts that are fresh, but connected. When teachers model work effectively, provide clear explanations and point out connections between content, they support pupils, including pupils who need the most support, to learn the curriculum in the long term.

Teaching the curriculum

In this section on pedagogy, we explore teaching methods, approaches and means of teaching art and design. We consider which principles help pupils to learn and to remember the art and design curriculum.

Research on art and design education often blends the areas of curriculum (what pupils learn) and pedagogy (how the curriculum is taught). For instance, some literature discusses curriculum and pedagogy as a single integrated learning process.^[footnote 105] Our education inspection framework recognises that, although curriculum and pedagogy (and also assessment) are clearly connected, they each have distinctive roles.^[footnote 106] Art educators have emphasised the importance of making sure pupils' learning experiences have real educative value that extends beyond engagement or interest.^[footnote 107] One approach involves teachers making pedagogical choices that follow from the curriculum content they want pupils to learn. This helps them to avoid choices that focus on pupils being superficially engaged, but do not actually help them to learn crucial subject knowledge in the long-term.

In high-quality art and design education, teachers recognise that the curriculum

content related to practical, theoretical and disciplinary domains is interconnected.
[\[footnote 108\]](#)

Consider these examples:

- Pupils are exploring the concept of 'movement' in their painting work. This requires teachers to think carefully about the kind of pedagogical activity that would develop pupils' capacities in this aspect of practical knowledge. Teachers have also planned for pupils to learn about relevant materials and processes, and to learn about artists' intentions by studying Op Artists such as Bridget Riley. This second type of knowledge-building (in this case theoretical knowledge) may require teachers to make different pedagogical choices about the content they want pupils to learn.
- Pupils are studying the Dada art movement. Teachers introduce them to content such as Marcel Duchamp's 'ready-mades'. The pedagogical choices made to help pupils remember this type of theoretical (in this case, art history) knowledge may be different from the pedagogical choices made to develop, challenge and shape their emerging aesthetic judgements (a form of disciplinary knowledge).

When leaders recognise that different domains are involved in teaching content, they can see that pedagogical approaches should be well calibrated to the type of knowledge taught. In high-quality art education, teachers recognise that specific pedagogies will be necessary to teach different forms of subject knowledge (practical, theoretical and disciplinary).

Pedagogical considerations when teaching practical knowledge

When teachers make pedagogical decisions, they should be clear about what they want pupils to learn (the curriculum object). They should also make sure that pupils practise the building blocks of subject knowledge along the way. Just as pupils need to have sufficient repeated encounters with concepts, they also need sufficient practice 'in the moment' when learning practical knowledge. Teachers can support this through their pedagogical choices, drawing on insights from cognitive science about how humans learn.

Pupils need opportunities to practise techniques in order to become proficient. In art, craft and design, any technique is only one part of what pupils need to learn to develop their capacities in an area of making.[\[footnote 109\]](#) For instance, teachers may have planned for pupils to become proficient in art, craft and design techniques (such as in painting, drawing and sculpture, which are outlined in the national curriculum).[\[footnote 110\]](#) They will have thought carefully about which aspects of those techniques they need to teach in the curriculum. Teachers might choose pedagogical activities that are more likely to give pupils the chance to get used to that technique, by automating the motor operations needed for it.[\[footnote 111\]](#) This process can be thought of as purposeful, deliberate practice.[\[footnote 112\]](#) Teachers should plan activities that do not vary much, particularly when introducing new techniques for the first time. For example, pupils may:

- repeat particular shading techniques, such as producing tonal scales for graphite, pencil and ink
- repeat and reinforce the sequences of steps required to edit images with computer software
- use sewing machines to practise the same stitch techniques repeatedly

Teachers may adopt other pedagogical approaches to support pupils who are in the early stages of acquiring practical knowledge in art, craft and design. For example, they could provide:

- more guided instruction by breaking down tasks into smaller parts
- worked examples that model and exemplify key techniques or aspects of techniques
- more structured tasks, for example by limiting the choice of materials, or confining practice to the production of maquettes (preliminary models or sketches) rather than 'finished' final outcomes

Activities that isolate the technique that pupils are in the early stages of learning are especially important. People can only deal with between 4 and 7 pieces of new information at one time.^[footnote 113] Research from cognitive science also highlights the importance of learning some knowledge to the point of 'automaticity'. This knowledge can be recalled quickly and easily. This is especially important when pupils are learning new content and/or carrying out more complex tasks.^[footnote 114] These insights draw on theories of cognitive load, which consider the limitations of mental efforts required to perform operations and tasks.^[footnote 115] If pupils in the early stages of learning a technique are given an activity that requires them to use too many aspects of the technique that have not been learned to automaticity, they will experience cognitive overload and will be unlikely to succeed.^[footnote 116]

However, as pupils get better at techniques over time, this kind of deliberate practice may no longer be enough to help them improve further.^[footnote 117] Some literature suggests that pupils with greater expertise can benefit from varied practice. This helps them to build a 'broad schema' that is connected, 'building more rounded, deep and durable learning'.^[footnote 118] Examples might include:

- activities that begin by focusing on what pupils already know before gradually including newer knowledge. For example, an activity may start by revisiting pupils' knowledge of a technique. The teacher then focuses pupils' attention on the relationship between the technique and the media or material.^[footnote 119]
- a series of activities in which pupils use variants of the same technique in a range of media. For example, they might apply a particular drawing technique with a pen, with light and with wire. This helps them to learn both the limits and possibilities of using the same technique with different media
- a series of practice tasks that gradually increase pupils' independence. For example, a teacher might demonstrate a sequence of steps in a process. The pupils then practise those steps repeatedly with some guidance, and then independently with less guidance

When pupils have developed greater expertise, teachers may use pedagogical activities that reflect this. Pupils who have developed sufficient expertise may benefit from:

- seeing examples of unfinished work, and suggesting how to resolve them
- tasks that encourage them to draw on other forms of knowledge built through the curriculum, to consider how to demonstrate a personal response by applying a combination of techniques, media or material
- longer tasks and projects that allow pupils to apply their knowledge of practical techniques to come to artistic conclusions
- tasks and projects that require pupils to apply specific techniques but with undetermined end points or outcomes (see '[Building towards divergent and convergent points in the curriculum](#)' section)^[footnote 120]

Teachers can help pupils to become more autonomous by choosing pedagogical activities that build their competency and security in practical knowledge early in the curriculum.

Pedagogical considerations when teaching theoretical

knowledge

The theoretical knowledge that pupils learn in the subject (including the history of art, craft and design) is vast, abstract and nuanced. This means that when teachers design and plan activities, they need to be clear about the knowledge want pupils to learn. Teachers should use the teaching methods that will best enable pupils to know and remember this content in the long term.

Teachers need to consider which approaches will focus pupils' attention on the ideas, concepts and principles they want them to learn. Directing pupils' attention in this way makes it more likely that pupils will learn the important ideas in the theoretical domain.^[footnote 121] Some approaches that may help teachers to focus pupils' attention include:

- using technology to isolate portions of the art, craft or design work that illustrate the content they want pupils to learn. For example, when teaching knowledge about pointillist styles of painting, the teacher could use technology to select the distinct dots of colour in Paul Signac's 'Femmes au Puits' (1892) and contrast these with the pixels and subpixels of colour on a computer monitor
- highlighting connections, similarities and conflicts in art, craft or design work that may not be immediately apparent to pupils. For example, teachers in key stage 2 or 3 may explain the connections between artefacts from Baule and Guro cultures of what is today Côte d'Ivoire, and the work of European artists such as Amedeo Modigliani. Teachers may highlight that the 'intentions' of the objects in their indigenous context differ from the 'intention' of the European artwork, even though the former has influenced the latter
- juxtaposing 2 pieces of art in a deliberate way, explaining and asking pupils about their similarities and differences. For example, teachers at key stage 3 might juxtapose 2 pieces by Bridget Riley, such as 'Pink Landscape' (1960) and 'Kiss' (1961). They could then show how Riley's art shifted from using small patches of colour to represent tonal shift in her earlier work, to using stark contrasting shapes in her later work
- using analogies or stories to draw pupils' attention to specific developments in technology, materials and processes that have been used by artists, designers, and craft-makers. For example, teachers might use stories about the origins of 2 different examples of textiles, such as the Bayeux Tapestry and Grayson Perry's tapestry series 'The Vanity of Small Differences'. Teachers can use these stories to focus pupils' attention on how each piece was created. For example, they might emphasise the way Perry used computer-controlled machines to create his tapestry work

Pedagogical considerations when teaching disciplinary knowledge

While theoretical knowledge is about specific forms and works of art, disciplinary knowledge is about the way that art conceives of itself as a discipline (see ['Disciplinary knowledge' section](#)). This means that disciplinary knowledge is not bound to specific artworks, media or areas of making. As discussed in the curriculum section, to learn disciplinary knowledge, pupils must already have secure knowledge of enough concrete examples to support knowledge of more abstract concepts. Insights from cognitive science highlight the way that pupils' rich and diverse schemas lay the groundwork for their future learning. When pupils learn something new, or carry out complex operations, they draw on these webs of knowledge.^[footnote 122] When teachers plan a classroom activity to teach disciplinary knowledge, for example, a discussion about the nature of art, they need to be very clear about which concrete examples they require pupils to use. It is likely that pupils will have learned these concrete examples earlier in the curriculum.

When teachers want pupils to learn disciplinary knowledge about art, craft and design, they may wish to take them on trips and to events. This will show pupils what kind of art, craft and design work is currently being created and celebrated in galleries, industry and the fields of new and emergent technology. Teachers may therefore plan alternative sites for learning, such as galleries, exhibitions, community projects and/or the studios of practising artists, designers and craft-makers.^[footnote 123] They may also plan activities that teach pupils about the 'real-life' roles, jobs and work of critics, commentators and curators. These sorts of activities give pupils a broader appreciation of contemporary art, craft and design, to help them overcome misconceptions about the subject. However, they rely on pupils already having the knowledge necessary to make sense of the experience.

As discussed previously, disciplinary knowledge also develops pupils' capacity to interpret art.^[footnote 124] Although disciplinary knowledge includes some of the most abstract concepts in the subject, it is also closely related to the human condition and to human experiences. Once teachers have planned the concepts in the curriculum that they want pupils to learn, they can choose explanations and activities that connect these concepts to pupils' own experiences. In this way, pupils' everyday knowledge, ideas, representations of the world and experiences can help them to learn concepts in the subject. The activities are effective because they help pupils remember this important content by explicitly connecting it to the experiences they have in their everyday lives.^[footnote 125] For instance:

- Teachers can use 'in the moment' questioning to draw out examples of pupils' experiences of abstract concepts. They can then choose the best examples to illustrate aspects of the concept being taught. For example, teachers could ask pupils studying Kehinde Wiley's 'The Yellow Wallpaper' series of paintings to bring examples of family photographs. The pupils could then see how these compare and contrast with traditional forms of portraiture, to consider the concept of portraiture in Wiley's paintings.
- Teachers may use examples of curriculum content that pupils have remembered from other areas of the curriculum, such as history, religious education (RE) and geography, to explain connections that might exist across different places, periods of time, traditions of thought and human practices. For example, teachers may refer to curriculum content from history and/or RE that explores concepts of 'church', 'state' and 'society' when studying Bruegel's 'The Fight Between Carnival and Lent'.
- Teachers may find out about pupils' own values and assumptions about worth, value and richness when exploring how artists, craft-makers and designers incorporate other ideas about worth, value and richness in their work. For example, teachers may compare Andy Warhol's 'Dollar Sign' series of prints (which communicate that the owner of the work literally has money) with Holbein's 'The Ambassadors' (which, in addition to the trappings of wealth, uses images of a globe, lute and scientific equipment to communicate wealth of culture and education). Pupils can then use these examples to reflect on what they associate with wealth and success.
- Teachers may ask pupils to reflect on their own interests, passions and experiences so that they can incorporate these into their personal responses. This is likely to happen at the point in the curriculum journey when teachers are helping pupils to work towards divergent end points. For example, at key stage 4, teachers may use a textiles activity to illustrate how folds, ways of joining fabrics, or leaving fabrics unattached could be used to express pupils' own experiences of concepts in a theme such as 'apart or together'.

These examples show how teachers can draw on pupils' experiences and knowledge when choosing appropriate activities to teach disciplinary knowledge. In doing so, teachers' 'in the moment' classroom teaching enables pupils to make further connections between complex and abstract subject ideas, and to see how they may fit within the entangled relationship between art and human life.

Supporting pupils with special educational needs and/or disabilities

Special educational needs and/or disabilities (SEND) is an umbrella term, and the needs and/or disabilities of individual pupils can differ significantly. It would be inappropriate to adopt a single, generic approach to SEND in the art classroom. Nevertheless, it is important that the art curriculum is ambitious for all children and pupils. Pupils with the most complex needs may require curricular goals to be adapted for them. But the aims and specified end points set out in the national curriculum apply to all.

The general principles from research into effective teaching outlined in this review are just as relevant for pupils with SEND, whether they are learning art and design or any other subject. Research shows that pupils with SEND do not generally benefit from differentiated teaching, activities or resources to achieve a curriculum goal. [\[footnote 126\]](#) Differentiation is not the same as targeted teaching to break down or reinforce aspects of the curriculum, for example repetition of important knowledge. Some pupils may therefore need to learn and practise different components of the curriculum when studying the same content areas.

It is particularly important for teachers to be mindful of theories of cognitive load when working with pupils who have additional needs or face barriers to learning. [\[footnote 127\]](#) Our previous research highlighted how children struggle to retain knowledge and develop schemas if their working memory is overloaded. [\[footnote 128\]](#) It may be useful for teachers to isolate the important aspects of a piece of work when teaching the works of artists, craft-makers and designers. [\[footnote 129\]](#)

Sometimes, teachers unnecessarily lower their expectations for pupils with SEND. For example, they remove parts of the art curriculum instead of adapting them so that pupils with SEND can study the same areas as other pupils. Art educators have suggested that, when introducing pupils to the works of contemporary artists, it can be useful to start with works that have identifiable subject matter rather than less concrete imagery. [\[footnote 130\]](#) This supports pupils who struggle to make sense of abstract ideas, while enabling them to study the same works of contemporary artists as their peers.

Teachers should think carefully about which teaching approaches and activities are both subject-specific and will enable all pupils, including pupils with SEND, to learn and to remember what they have been taught in the long term. [\[footnote 131\]](#) For example:

- teachers can consider the most appropriate medium for exploring and recording pupils' ideas about specific content, such as in written, photographic, film or sound form. In all cases, when teachers choose the medium, they need to make sure that the medium itself does not require excessive additional (and perhaps untaught) knowledge about how it works, which would distract pupils from the task
- teachers may provide an alternative, quieter space for some pupils with specific sensory needs to complete expressive tasks such as a complex painting
- teachers may provide pupils who work from wheelchairs or other modified seating with a vertical easel, so that they are able to access their artwork easily [straightforwardly]
- when teaching painting with acrylics, teachers can adapt tasks for pupils with visual impairments, such as getting them to touch and feel the paint to help them learn the specific properties of acrylic paints

Recent research has drawn attention to the idea of 'ability' in art education, and what it means for teachers and educators. [\[footnote 132\]](#) Much of the discussion considers the implications of words such as 'disability' and 'ableism' for teacher practice. As a related matter, some writers have also noted that it is important for all pupils to have a range of positive role models included in the curriculum. As discussed previously

(see [‘Curriculum’ section](#)), pupils should learn about as broad a range of artists as possible. Leaders of art may consider including specific artists such as Yinka Shonibare, Nnena Kalu or Linda Bell in the curriculum. [\[footnote 133\]](#)

Based on the above, high-quality art and design education may have the following features:

- pedagogical choices are designed to develop the particular practical, theoretical and disciplinary knowledge intended in each lesson
- classroom activities are clear about what is to be learned (the curriculum object) and enable pupils to practise it
- teaching approaches take account of pupils’ level of expertise
- when pupils learn techniques for the first time, teachers make sure they have enough opportunities to practise crucial components of these techniques
- as pupils become more proficient in areas of practical knowledge, classroom activities become increasingly varied and open ended
- teachers direct pupils’ attention to the main concepts, themes and ideas that they are exploring
- when learning in other locations, such as galleries, pupils have enough prior knowledge to make these experiences meaningful
- teachers make subject-specific adaptations to activities for pupils with SEND, where appropriate, instead of excessive adaptations to the curriculum or lowering expectations



Assessment

Summary

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High-quality assessment in art and design uses different types of assessment for different purposes. Formative assessment provides important feedback to teachers so that they can adapt their teaching if necessary. Summative assessment checks how much of the art and design curriculum pupils have learned. To make sure their assessments are valid, teachers need to be clear about what they are assessing and why they are assessing it. Effective assessment in art and design uses various forms of information (products) and provides feedback to pupils in the moment (process). Teachers need to be mindful of the limitations of summative assessment, especially when making evaluative judgements about artistic outcomes.

Assessment in art and design

Assessment can be a contentious issue for art educators.^[footnote 134] Many have found that the nature of art and design presents unique challenges.^[footnote 135] For example, if assessment is based on aesthetic judgement, this raises questions about the basis of those judgements (how valid the assessment judgement is) and the extent to which those judgements reflect the likes or dislikes of an individual (how reliable the assessment judgement is). It is important that teachers design assessment approaches that are sensitive to the nature of subject, but remain both sufficiently valid and reliable.^[footnote 136] It is important to note that there is no absolute validity and reliability, not least because, in art and design, issues about subjectivity can challenge both the validity and reliability of assessment practices. Aspects of art such as 'creativity', 'authenticity' and 'personal responses' are often associated with 'inner processes'. As a result, many teachers feel that assessing these is counterintuitive or overly difficult.^[footnote 137] What is most important is that the assessment fulfils its purpose.

Formative assessment

Formative assessment, sometimes known as assessment for learning, plays an important role in providing feedback to pupils and teachers.^[footnote 138] It helps teachers to assess whether pupils know what has been taught, and tells pupils what they could improve. Formative assessment approaches that are based around dialogue between teachers and pupils is particularly beneficial when pupils learn practical knowledge.^[footnote 139] This type of feedback focuses on improvement in the immediate task. It identifies ways that pupils can modify and refine the way they are applying component knowledge. Effective dialogue between teachers and pupils is likely to be timely, frequent and bite size.^[footnote 140]

Importantly, the form or type of assessment has to be appropriate for checking whether pupils have learned the components of the art, craft and design curriculum. The form of knowledge can determine whether the assessment type is appropriate.^[footnote 141] For instance:

- at primary level, teachers could check pupils' written work to see if they have used the words for formal elements of art correctly (practical knowledge). They might also use formative assessment of pupils' knowledge when re-showing images of artworks previously studied in the curriculum, to check whether pupils remember the artists (theoretical knowledge)
- at secondary level, low-stakes quizzing can help teachers to establish whether pupils can correctly identify a particular type of stitch (practical knowledge), or know elements of art history (theoretical knowledge). The same assessment technique would be less appropriate for checking pupils' grasp of aesthetic value

and judgement (disciplinary knowledge)

There are a variety of subject-specific ways that teachers can check whether pupils have grasped individual components of practical knowledge in the art, craft and design curriculum. This assessment does not have to be limited to producing a 'final piece'.^[footnote 142] Some of the ways teachers can check whether pupils have learned components include:^[footnote 143]

- explanatory notes
- excerpts from sketchbooks
- vignettes from portfolios
- observations of the pupils practising the component
- explanations from pupils about practising the component

Teachers can make better inferences about whether pupils have learned components of the curriculum by aggregating insights from a range of sources. This also gives them a wider range of opportunities to give feedback to help pupils improve.

Summative assessment

Assessment can be used for summative purposes (assessment of learning) in art, craft and design. This serves a different purpose from formative assessment.^[footnote 144] The purpose of summative assessment, broadly, is for teachers to determine how well pupils have learned, over time, what teachers have planned for them to learn. When pupils have learned the expanding 'domain' of the curriculum, they have made progress. This is what we mean by 'the curriculum is the progression model'.^[footnote 145]

High-quality assessment in art, craft and design is well calibrated to the content of the curriculum.^[footnote 146] High-quality art curriculums contain practical, theoretical and disciplinary knowledge. To be effective, summative assessment needs to be able to determine how well pupils have learned and remembered these different strands of knowledge over time.

Often, summative assessment in art is linked to a complex final output. When teachers use these pieces of work for assessment, it is important that they are clear about what is being assessed.^[footnote 147] They must consider how well the pupils have remembered, and put into practice, the knowledge that is being applied in the piece.^[footnote 148] Teachers can use final pieces to identify which aspects of the curriculum the pupils have remembered and applied. For example, they can assess:

- the elements of practical knowledge applied to the piece, such as texture, colour, line and tone
- the artistic processes used to create the piece, such as how it has been assembled, the materials, processes and techniques used, and whether these choices were appropriate
- how well the pupil has communicated meaning, for example whether there are clear links between the methods used and the interests or problems that are the focus of commentary, or the extent to which the piece conveys insights or emotions

When pupils complete final pieces, they will also draw on the theoretical and disciplinary knowledge they have learned in the art, craft and design curriculum. These forms of knowledge can also be assessed summatively. Sometimes they will be integrated into portfolio examples alongside the final piece. For example, pupils may explain their choices by referring to a range of historical or current creators of art, craft or design.

Teachers can use more simple assessment tasks, such as multiple-choice questions, to isolate specific aspects of pupils' knowledge. These might include vocabulary, particular processes or techniques, or particular pieces (or portions of pieces) of art, craft or design work. However, these simpler approaches to assessment may sometimes be a blunter instrument when used to assess more complex knowledge, for example theoretical knowledge (such as the interpretation of individual art, craft and design pieces) or disciplinary knowledge (such as exploring questions about value in art, craft and design).

When the curriculum is treated as the progression model, teachers use summative assessments to determine how much of the curriculum pupils know and remember. They can do this by sampling from the knowledge that they expect pupils to retain through the curriculum journey. Teachers may construct summative assessments that use a mixture of assessment techniques to identify how much of the art curriculum pupils have remembered overall. It is important that summative assessments take place at sufficiently long intervals to allow time for enough curriculum content to be taught and learned. [\[footnote 149\]](#)

Based on the above, high-quality art and design education may have the following features

- Formative assessment approaches help teachers to check and accurately identify gaps in pupils' knowledge of specific content
- Summative assessment is used judiciously and is clear about the forms of knowledge being assessed



Systems, culture and policies

Summary



Various factors affect the quality of education in art and design in schools. Some of these are determined by the culture, systems and policies in that particular institution. Leaders should be aware of the impact of whole-school policies and how well they promote high-quality art and design. There are 2 specific areas of the subject that leaders' actions can affect significantly. First, school leaders determine the scope of art and design education, including whether there is an appropriate amount of art taught in the curriculum. Second, they can promote or hinder high-quality art and design through the extent to which they develop teachers' professional knowledge about the subject. This is important, especially given the extent to which choices about the content of the art curriculum depend on teachers' discretion and expertise.

Do leaders' actions support art and design through subject-specificity?

The school's systems and policies can have a negative effect on art and design education if they do not take into account the aspects of subject education that are specific to art and design. For example, whole-school teaching strategies or assessment practices are likely to be too generic to capture the forms of knowledge that pupils build through the art and design curriculum. In some cases, the models underpinning these approaches are based on core subjects. They use pedagogical or assessment approaches that are incompatible (or less compatible) with the forms of progress in art and design.^[footnote 150]

Leaders can avoid this issue by ensuring that their curriculum, pedagogy and assessment policies, procedures and practices can be adapted to specific subjects. This allows subject leaders to apply their subject knowledge to the school context. School leaders can also avoid this issue by making sure they understand how pupils make progress in art and design. This will help to inform subject-specific discussions with subject leaders.

Do leaders prioritise art and design sufficiently?

School leaders who want to develop an ambitious art, craft and design curriculum need to consider whether they have allowed enough time for the subject. This is important if pupils are to learn a school curriculum that at least meets the high-level outcomes of the national curriculum. Concerns about the amount of curriculum time given to art, craft and design are not unwarranted. Research has found that a majority of primary school teachers think there is insufficient emphasis on the arts.^[footnote 151]

School leaders in primary and secondary schools have to balance many subjects in the timetabled curriculum. Whether they choose to teach art discretely or integrate it with other subject areas, leaders can make informed decisions when they recognise that:

- they must plan adequate time for art, craft and design. This will give pupils the opportunity to encounter and re-encounter key learning across the subject curriculum
- content in primary school art, craft and design is often linked and connected with content from other subjects, such as mathematics, religious education and history. In secondary schools, art, craft and design might be blended into work around well-being in personal, social and health education. A well-sequenced curriculum can help pupils make links and connections between different subject areas. But there are risks to the quality of art, craft and design when they are taught in carousel or lumped together with all content in the visual and performance

curriculum

- lengthier blocks of time given over to art and design can make up for the teaching time given over to 'housekeeping', such as cleaning, organising and maintaining equipment
- removing art from the timetabled curriculum and teaching it optionally through after-school clubs does not give all pupils an equal opportunity to learn a full art, craft and design curriculum. This risks giving pupils a narrow curriculum

Do leaders ensure that there is sufficient support for teachers, including non-specialists?

Subject knowledge is important. Research has explored the development of teachers' subject knowledge about art, craft and design, particularly in primary education.^[footnote 152] Many art and design teachers may be practising artists. This enriches and supports their work as teachers and continually promotes their own learning. However, school leaders need to ensure that they give teachers and subject leaders enough time and support to develop their subject content knowledge and pedagogical content knowledge. If teachers lack this knowledge, they will struggle to provide a rich, subject-specific curriculum that develops pupils' knowledge and capacities.^[footnote 153]

Challenges at primary level include teachers' confidence levels. Some research suggests that around two thirds of primary trainees did not feel confident about teaching arts subjects.^[footnote 154] Other research has highlighted limitations in initial teacher education provision to help trainees develop the subject-specific content and pedagogical content knowledge they need for art teaching.^[footnote 155]

Based on the above, high-quality art and design education may have the following features

- School leaders understand how pupils make progress in art and design. This enables them to offer art teachers appropriate challenge and support
- School policies are not unnecessarily generic. They enable leaders to match the curriculum, pedagogical practice, and assessment to the subject. This makes sure pupils can learn the subject-specific forms of knowledge in art and design
- Teachers have enough professional development opportunities to acquire a wide range of knowledge about art education that will inform ongoing curriculum development. They also have opportunities to improve their pedagogical content knowledge about ways of making and teaching art and design
- There is enough time in the timetable for teachers to teach an ambitious curriculum that empowers pupils to build broad, rich and detailed knowledge in art and design

Conclusion

In this review, we have shown that the content of the curriculum really matters, just as much as the pedagogical approaches to teaching it and the experiences of pupils learning it. The content of the curriculum affects the quality of art, craft and design education. By making sure the art, craft and design curriculum has sufficient scope,

coherence and rigour, educators and curriculum designers can improve the quality of subject education in this area.

This review rests on the assumption that there are both intrinsic and extrinsic reasons for studying art and design. We have explored the inherent value in studying art and design, and the belief that all children are better for having studied the subject. We also recognise that the art, craft and design curriculum enables pupils who may move into a professional contexts, and how this is supported by a well-sequenced curriculum that builds towards complexity.

High-quality art, craft and design curriculums work towards end goals that are defined clearly. These end goals are ambitious when they reflect the complexity and diversity of the subject matter. School leaders can support teachers and subject leaders with sufficient training and support that is appropriately attuned to the curriculum. A high-quality curriculum in art, craft and design, together with teachers who have sufficient expertise to teach it well, enables pupils to develop sophisticated knowledge about subject content, as well as love of a subject that is genuinely fascinating and a source of inspiration.

The vastness, plurality and richness of the subject can sometimes present challenges for subject leaders and curriculum planners. Leaders can mitigate these challenges by making clear decisions, based on subject-specific reasons, about what to include in the curriculum. In art and design curriculums of the highest quality, leaders will engage intellectually with complexities at the heart of the subject, and, on that basis, will make thoughtful and sensitive decisions about curriculum construction.

This review sets out a broad conception of curriculum quality that draws on art education research, as well as traditions and associated pedagogies from art history, art criticism, aesthetics and art practice. We hope that the way that we have shown how these elements can come together in high-quality subject education will be useful to curriculum leaders and designers who are thinking through what is necessary to achieve high-quality art, craft and design education.

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1. In this research review, we use the term 'art' to refer collectively to the curriculum content and related pedagogy that could be used in teaching 'art and design' and 'art, craft and design' as school subjects. Our starting point for what constitutes this subject is the national curriculum in England. It also relates to all phases of learning from the early years to post-16 study of the subject. This broad, collective and inclusive use of the term also reflects the way that teachers differently interpret official definitions of the subject and that teachers' understanding of the subject may be seen to be 'fluid and vernacular'. See P Thompson and L Maloy, ['The benefits of art, craft and design education in schools: a rapid evidence review'](#), National Society for Education in Art and Design, February 2022, page 10.↵
 2. ['Making a mark'](#), Ofsted, March 2012.↵
 3. ['Amanda Spielman's speech at the 2022 ASCL Annual Conference'](#), Ofsted, March 2022.↵
 4. ['School inspection handbook'](#), Ofsted, July 2022.↵
 5. ['Principles behind Ofsted's research reviews and subject reports'](#), Ofsted, March 2021.↵
 6. ['Education inspection framework: overview of research'](#), Ofsted, January 2019; ['Curriculum research: assessing intent, implementation and impact'](#), Ofsted, December 2018, ['HMCI commentary: curriculum and the new education inspection framework'](#), Ofsted, September 2018; ['HMCI's commentary: recent primary and secondary curriculum research'](#) Ofsted, October 2017.↵
 7. N Walton, 'There are no formal elements', in 'Debates in Art and Design Education', edited by N Addison and L Burgess, Routledge, 2020, page 77.↵
 8. ['Education inspection framework \(EIF\)'](#), Ofsted, May 2019.↵

9. M Szpakowski, 'On art and knowledge', in 'International Journal of Art & Design Education', Volume 38, Issue 1, 2019, page 10. Note also that Lindström explores the purpose of art education and argues that the importance of the subject goes beyond generic skills and character development, for example art as therapy. See L Lindström, 'Art education for understanding: Goodman, Arts PROPEL, and DBAE', in 'International Journal of Art & Design Education', Volume 13, Issue 2, 1994, pages 189 to 201.↵
10. [Education Act 2002](#) and [Academies Act 2010](#).↵
11. ['Education inspection framework \(EIF\)'](#), Ofsted, May 2019.↵
12. ['Statutory framework for the early years foundation stage'](#), Department for Education, September 2021, page 8.↵
13. ['Statutory framework for the early years foundation stage'](#), Department for Education, September 2021, page 10.↵
14. See ['National curriculum'](#), Department for Education.↵
15. Cooper's 2018 report for the Fabian Society highlighted the overall decrease in arts education (where the 'arts' were understood to include art (and design), music, drama and dance). The report suggested that there was insufficient emphasis on the subject: 'a majority of teachers in England (59 percent) believe their school does not give enough emphasis to the arts'. See B Cooper, ['Primary colours: the decline of arts education in primary schools and how it can be reversed'](#), Fabian Society Report, 2018. See also P Thompson and L Maloy, 'The benefits of art, craft and design education in schools: a rapid evidence review', National Society for Education in Art and Design, February 2022, p.14↵
16. C Farquharson, L Sibieta, I Tahir and B Waltman, ['Annual report on education spending in England'](#), Institute for Fiscal Studies, 2021.↵
17. Our own research highlighted the problem of curriculum narrowing, especially in upper key stage 2, with lessons disproportionately focused on English and mathematics. See ['HMCI commentary: curriculum and the new education inspection framework'](#), Ofsted, September 2018. See also P Thompson and L Maloy, 'The benefits of art, craft and design education in schools: a rapid evidence review', National Society for Education in Art and Design, February 2022, p.14↵
18. B Cooper, ['Primary colours: the decline of arts education in primary schools and how it can be reversed'](#), Fabian Society Report, 2018, page 11.↵
19. ['School workforce in England, reporting year 2021'](#), Department for Education, June 2022. Notably, in this data set, teachers were counted once against each subject and key stage they taught, irrespective of the time spent teaching. Therefore, teachers may be counted against multiple subjects and key stages so sums of these categories will be greater than the number of secondary school teachers. See also a report by the Cultural Learning Alliance that cited headcount of teachers in art and design as 13,200 in 2021 and 12,160 in 2020: ['Hours of arts teaching and number of arts teachers in England's secondary schools continue stable after years of decline'](#), Cultural Learning Alliance, June 2021.↵
20. ['School workforce in England, reporting year 2021'](#), Department for Education, June 2022.↵
21. A report by the Cultural Learning Alliance cited the number of recorded hours in the November of 2010 as 159,800 and the number of recorded hours in November of 2020 as 138,136. This reflected a percentage change of -14% between 2010 and 2020. The report also noted a slight increase of +2% between 2019 and 2020. ['Hours of arts teaching and number of arts teachers in England's secondary schools continue stable after years of decline'](#), Cultural Learning Alliance, June 2021.↵
22. ['GCSE, applied GCSE and entry level certificate results summer 2010'](#), Joint Council for Qualifications, August 2010, page 38; ['Provisional GCSE \(full course\) results – summer 2022'](#), Joint Council for Qualifications, June 2022. Notably, JCQ

caveats this provisional data with this statement: 'Comparisons to previous years should be approached with caution'.[↵]

23. ['GCSE, Entry Level, GNVQ Results Summer 2002'](#), Joint Council for Qualifications, Summer 2002, p.37.[↵]
24. ['GCSE, Entry Level, GNVQ Results Summer 2002'](#), Joint Council for Qualifications, Summer 2002, p.37; ['GCSE, applied GCSE and entry level certificate results summer 2010'](#), Joint Council for Qualifications, August 2010, page 38; ['Provisional GCSE \(full course\) results – summer 2022'](#), Joint Council for Qualifications, June 2022. Notably, JCQ caveats this provisional data with this statement: 'Comparisons to previous years should be approached with caution'.[↵]
25. ['DCMS economic estimates 2019 \(provisions\): gross value added'](#), Department for Digital, Culture, Media & Sport, December 2020.[↵]
26. ['Employability and enterprise: briefing paper 2'](#), Cultural Learning Alliance, 2018, page 2.[↵]
27. ['School inspection handbook'](#), Ofsted, July 2022.[↵]
28. ['School inspection handbook'](#), Ofsted, July 2022, paragraph 203.[↵]
29. ['National curriculum in England: art and design programmes of study'](#), Department for Education, September 2013.[↵]
30. For instance, it does not set out how key stage 1 content (for example, 'use a range of materials creatively to design and make products') connects and builds to key stage 2 content (for example, 'develop their techniques, including their control and their use of materials, with creativity, experimentation, and an increasing awareness of different kinds of art, craft and design'), to culminate in key stage 3 study (for example, 'develop their creativity and ideas, and increase proficiency in their execution. They should develop a critical understanding of artists, architects, and designers, expressing reasoned judgements that can inform their own work'). See ['National curriculum in England: art and design programmes of study'](#), Department for Education, September 2013.[↵]
31. Ross, for instance, highlights that a lack of understanding of what is being taught makes it challenging to 'identify where they might be on a sequence, as it does not easily translate into a criterion for achievement or attainment'. M Ross, 'National curriculum art and music', National Society for Education in Art and Design, 1995.[↵]
32. The EIF considers a curriculum that contain sufficient knowledge and skills that would amount to a high standards of subject education, given that it is impossible to cover everything, it has implication for the specific content and concepts which are taught in art and design. See ['Education inspection framework: overview of research'](#), Ofsted, January 2019.[↵]
33. B Green 'Revisiting the conceptual domain', in International Journal of Art & Design Education 2021[↵]
34. Reference to discipline-based art education: see G A Clark, 'Examining discipline-based art education as a curriculum construct', ERIC Clearinghouse, 1991. See also M Day, 'Discipline-based art education secondary classrooms', in 'Studies in Art Education', Volume 28, Issue 4, 1987, pages 234 to 242. See also W D Greer, 'Discipline-based art education: approaching art as a subject of study', in 'Studies in Art Education', Volume 25, Issue 4, 1984, pages 212 to 218.[↵]
35. For instance, Elliot Eisner's work highlights the importance of 3 domains of learning in art education (productive, critical and cultural) which overlap in many ways with the domains of the practical, theoretical and disciplinary that we have highlighted. See E Eisner 'Educating artistic vision', Macmillan, 1997, page 65.[↵]
36. L Lindström, 'Aesthetic learning about, in, with and through the arts: a curriculum study', in 'International Journal of Art & Design Education', Volume 31, Issue 2, 2012, pages 166 to 179.[↵]
37. ['Education inspection framework \(EIF\)'](#), Ofsted, May 2019.[↵]

38. M Londesborough, [‘Knowledge: a dirty word in arts education?’](#), Royal Society for Arts, 2018.↵
39. [‘School inspection handbook’](#), Ofsted, July 2022, paragraph 222.↵
40. R A Smith, ‘The changing image of art education: theoretical antecedents of discipline-based art education’, in ‘Journal of Aesthetic Education’, Volume 21, Issue 2, 1987, pages 3 to 34.↵
41. R A Smith, ‘The changing image of art education: theoretical antecedents of discipline-based art education’, in ‘Journal of Aesthetic Education’, Volume 21, Issue 2, 1987, pages 3 to 34.↵
42. [‘National curriculum in England: art and design programmes of study’](#), Department for Education, September 2013.↵
43. [‘National curriculum in England: art and design programmes of study’](#), Department for Education, September 2013.↵
44. L Lindström makes a distinction between convergent and divergent goals in art education. His work is influenced by Guildford’s theory of creativity which envisions that multiple solutions to a problem lay at the core of creativity. Lindström suggests that when pupils possess some knowledge, it can lead to goals that are ‘already known’, such as knowing that mixing red and yellow makes orange. These are known as ‘convergent’ goals. Other goals are ‘divergent’, where knowledge is acquired for unknown results, such as how colour can depict and change mood. See L Lindström, ‘Aesthetic learning about, in, with and through the arts: a curriculum study’, in ‘International Journal of Art & Design Education’, Volume 31, Issue 2, 2012, pages 166 to 179.↵
45. Lonsdale explains that ‘school is not interested in preserving the child’s ability to express herself in the way she already can, but in providing the dexterity, the vocabulary, the knowledge with which she might go beyond instinct, accident and play and be expressive in ways that can resonate more deeply with others’. M Londesborough, [‘Knowledge: a dirty word in arts education?’](#), Royal Society for Arts, 2018.↵
46. Green highlights that ‘If art students, too, are to stand on the shoulders of giants, they must have access to the reservoir of knowledge that organises their discipline. This kind of organised knowledge cannot be acquired piecemeal by, for example, browsing the Internet, it requires a structure like a school curriculum’. See B Green, ‘Revisiting the conceptual domain’, in ‘International Journal of Art & Design Education’, Volume 40, Issue 2, 2021, pages 436 to 448.↵
47. The National Society for Education in Art and Design sets out more detailed guidance to accompany the Department for Education’s art and design national curriculum. See [‘Parallel curriculum’](#), National Society for Education in Art and Design, 2019.↵
48. [‘National curriculum in England: art and design programmes of study’](#), Department for Education, September 2013.↵
49. [‘National curriculum in England: art and design programmes of study’](#), Department for Education, September 2013.↵
50. In their review of subject literature, Thompson and Maloy’s review of over 400 pieces of literature in the field of art, craft and design education included the claim that ‘all skills are underpinned by specialist knowledges, although these may be tacit or not systematically codified’. See P Thompson and L Maloy, [‘The benefits of art, craft and design education in schools: a rapid evidence review’](#), National Society for Education in Art and Design, February 2022, pages 22 to 23.↵
51. The phrase originates from the scientist and philosopher Michael Polanyi, who refers to this idea through the phrase ‘we know more than we can tell’. This corresponds to the assumption that corporal senses and experiences are crucial for the development and use of tacit knowledge. M Polanyi, ‘The tacit dimension’, University of Chicago Press, 1983, page 4. See also R Sennett, ‘The craftsman’,

- Yale University Press, 2008, page 178. See also P Thompson and L Maloy, [‘The benefits of art, craft and design education in schools: a rapid evidence review’](#), National Society for Education in Art and Design, February 2022, pages 22 to 23.↵
52. Sennett R. *The Craftsman*. Yale University Press. 2008 p. 77.↵
 53. [‘Making a mark’](#), Ofsted, March 2012.↵
 54. [‘National curriculum in England: art and design programmes of study’](#), Department for Education, September 2013.↵
 55. An international example might be the work of Jolley and Zhang, who explore how pencil grip to aid controlled lines is an important aspect of the development of fine motor skills. See R Jolley and Z Zhang, ‘How drawing is taught in Chinese infant schools’, in ‘International Journal of Art & Design Education’, Volume 31, Issue 1, 2012, pages 30 to 43.↵
 56. A range of researchers and theorists suggest that mark making can be intentionally acquired by children. They claim that when toddlers learn to draw, they proceed through a sequence of dynamic circles, dynamic verticals and enclosed space ‘shapes’. See C Athey, ‘Extending thought in young children: a parent teacher partnership’, SAGE Publications, 1990, pages 61 to 63.↵
 57. Anning highlights the crucial shift that children make from random marks to using marks and symbolic systems and semiotic codes as a result of feedback and recognition: See A Anning, ‘Learning to draw and drawing to learn’, in ‘International Journal of Art & Design Education’, Volume 18, Issue 2, 1999, pages 163 to 172.↵
 58. Elements and principles of art and design. Arthur Dow is originally cited for having introduced such specific principles into the teaching of art, which influenced modernist approaches to teaching throughout the twentieth century. See A Dow, [‘Composition’](#), Dover Publications, 1913.↵
 59. M Cox, D Griffin and G Cooke, ‘Teaching children to draw in the infants’, *International Journal of Art & Design Education*, Volume 14, Issue 2, 1995, pages 153 to 163. The study suggests that pupils need language of shape, scale, placement and orientation to adequately engage in teacher–child interaction, such as discussing the process of drawing, making judgements or evaluating, and providing or receiving tuition.↵
 60. Eisner highlights that while techniques are a kind of habitual motor skill, we also must acknowledge that technical skills do not operate independently. Pupils’ repertoire of techniques is broadened as a result of them learning about the ‘qualitative relationships of materials which can be guided by aesthetic considerations. See E Eisner, ‘The arts and the creation of the mind’, Yale University Press, 2002, pages 109 to 110.↵
 61. Willingham highlights that in order for anything to be remembered, it requires effortful thought and attention be given to it. Therefore, in order for pupils to acquire the components of an art curriculum, pupils attention is a necessary condition. D Willingham, ‘What will improve a students memory?’, *American Educator*, 2008.↵
 62. M Cox, D Griffin and G Cooke, ‘Teaching children to draw in the infants’, *International Journal of Art & Design Education*, Volume 14, Issue 2, 1995, pages 153 to 163. This article suggests the importance of tuition for all children, as drawing a skill not naturally acquired. The article highlights that even those recognised as great artists required tuition and instruction to get to ‘grips with basic drawing techniques to give expression’. Also see B Edwards, ‘Drawing on the right side of the brain’, HarperCollins, 1979, page 3.↵
 63. Research shows that in China, 3 hours a week was dedicated to art and design in infant school. See R Jolley and Z Zhang, ‘How drawing is taught in Chinese infant schools’, in ‘International Journal of Art & Design Education’, Volume 31, Issue 1, 2012, pages 30 to 43. This differs to studies that highlight significantly less teaching time, highlighting the constraint it places on teaching the curriculum. See

E W Eisner and M D Day (editors), 'Handbook of research and policy in Art Education', Routledge, 2004, page 478. See also E Eisner, 'Educating artistic vision', Macmillan, 1997, page 159.[↵](#)

64. Some art educators, for instance, make distinctions within drawing traditions in the following way: traditional (drawing as skilful copying of nature or pre-established models), modern (drawing as experimentation with formal elements and the development of an individual expressive style) and contemporary (drawing as a performance or social activity which questions the boundaries of art and non-art). Here, the term 'contemporary' is not intended to be used in its ordinary, literal sense, but is used here to mark out an approach to art which calls into question received artistic conventions and institutional frames. In drawing, examples might include drawing as performance or as a collaborative act beyond the confines of a classroom or gallery. For the 3-fold distinction of traditional, modern and contemporary, see N Walton, 'There are no formal elements', in 'Debates in art education', edited by N Addison and L Burgess, Routledge, 2020, page 72.[↵](#)
65. R Glaser, 'Thoughts on expertise', ERIC Clearinghouse, 1985.[↵](#)
66. Concerning the way that artists 'draw on personal experience and on the work of colleagues and predecessors and make creative decisions based on a wealth of expertise and conceptual understanding', Bridget Green comments that 'art education in schools has become divorced from this knowledge-rich tradition and tends to emphasise practical skills over declarative knowledge in ways that mystify practice, maintain misconceptions and exclude many students from accessing this realm'. See B Green, 'Revisiting the conceptual domain', in 'International Journal of Art & Design Education', Volume 40, Issue 2, 2021, pages 436 to 448.[↵](#)
67. L Cunliffe, 'Forms of knowledge in art education and the corollary of authenticity in the teaching and assessment of such forms of knowledge', in 'International Journal of Art & Design Education', Volume 24, Issue 2, 2005, pages 199 to 208.[↵](#)
68. Cunliffe comments: 'As art is always part of a historically specific community, art education needs to engage with the way art practices are embedded in socio-cultural matrices constituted by 'knowing how' and 'knowing that'. Anything less than this approach will have the tendency to lead art education back to the dualistic thinking and essentialism that has been responsible for misrepresenting the way human beings make and understand art.' L Cunliffe, 'Forms of knowledge in art education and the corollary of authenticity in the teaching and assessment of such forms of knowledge', in 'International Journal of Art & Design Education', Volume 24, Issue 2, 2005, pages 199 to 208.[↵](#)
69. For instance, research found that in art-rich schools (in contrast to the findings in a random selection of schools) the curriculum included a wide range of art forms, including by female and global artists. By contrast, findings from a random selection of schools suggested the art curriculum mainly focused on male, European artists with little content on contemporary art. See D Downing and R Watson, 'School art. What's in it? Exploring visual art in secondary schools', National Foundation for Educational Research, 2004, page 25.[↵](#)
70. E Eisner, 'Educating artistic vision', Macmillan, 1972, pages 64 to 71.[↵](#)
71. E Eisner, 'Educating artistic vision', Macmillan, 1972, pages 67 to 68.[↵](#)
72. Chila Kumari Singh Burman, 'If There is No Struggle, There is No Progress – Uprisings' (etching, lithograph and paint on paper), Tate Archive, 1981 © Chila Kumari Burman.[↵](#)
73. David Adjaye, 'Gwangju River Reading Room', Adjaye Associates, 2013.[↵](#)
74. This highlights one key difference between theoretical and disciplinary knowledge in art, craft and design. Theoretical knowledge in art, as we have defined it, is mainly linked to 'knowledge and understanding of the artform and its context'. However, disciplinary knowledge as we have defined it is more concerned with 'the development of pupils' ability to view and understand an artistic product'. In particular, disciplinary knowledge refers 'specifically to the growth in capacities to

- interpret or 'decode' artistic products'. J Harland, K Kinder, P Lord, A Stott, I Schagen, J Haynes and others, 'Arts education in secondary schools: effects and effectiveness', National Foundation for Educational Research, 2000, pages 40 and 51.↵
75. Greer suggests that art education 'is grounded in a number of disciplines, namely, the disciplines of artistic creation, the history of art, art criticism, and aesthetics'. W Greer, 'A discipline-based view of art education: approaching art as a subject of study', in 'Studies in Art Education', Volume 25, Issue 4, 1984, pages 212 to 218.↵
76. See J Harland, K Kinder, P Lord, A Stott, I Schagen, J Haynes and others, 'Arts education in secondary schools: effects and effectiveness', National Foundation for Educational Research, 2000, page 51.↵
77. For instance, Allison and Hausman comment that although the inclusion of theoretical content in art education is well established in the UK and US, there are limitations to approaches which only seek to find 'fixed, all-encompassing generalisations'. They say that art theories should 'balance their coherence with a multiplicity of competing emphases and differing circumstances'. B Allison and J Hausman, 'The limits of theory in art education', in 'International Journal of Art & Design Education', Volume 17, Issue 2, 1998, page 126. Content that prompts pupils to wrestle with contested and debated ideas in art is precisely what disciplinary knowledge is all about.↵
78. Walton states that teachers 'need a critical awareness of the historicity of the subject, to be aware of blind spots, biases and exclusions' because this is itself essential to understanding the subject. See N Walton, 'There are no formal elements', in 'Debates in art and design education', edited by N Addison and L Burgess, Routledge, 2020.↵
79. Greer says, 'The notions about a discipline embodied in practice within particular roles do not refer to particular people or models, but instead to the manner of thinking and acting generally ascribed to the prototypical aesthete, artist, art historian, and art critic.' W Greer, 'Discipline-based art education: approaching art as a subject of study', in national art education association, Volume 25, Issue 4, 1984, page 214.↵
80. ['School inspection handbook'](#), Ofsted, July 2022, paragraph 222.↵
81. Our education inspection framework draws upon the insights of cognitive science. The development of expertise is considered to be made possible because pupils draw on the rich and complex schemas (interconnected webs of knowledge) in their long-term memory. See ['Education inspection framework: overview of research'](#), Ofsted, January 2019.↵
82. The second aim outlined in the national curriculum is to 'become proficient in drawing, painting and sculpture and other art, craft and design techniques'. ['National curriculum in England: art and design programmes of study'](#), Department for Education, September 2013.↵
83. B Green, 'Revisiting the conceptual domain', in 'International Journal of Art & Design Education', Volume 40, Issue 2, 2021, pages 436 to 448. See also J Muller, 'On the shoulders of giants: verticality of knowledge and the school curriculum', in 'Knowledge, power and educational reform: applying the sociology of Basil Bernstein', edited by R Moore, M Arnot, J Beck and H Daniels, Routledge, 2006, pages 11 to 27.↵
84. C Winch, 'Curriculum design and epistemic ascent', in 'Journal of Philosophy in Education', Volume 47, Issue 1, 2013, pages 128 to 146.↵
85. A key idea explored in the book and a grounding principle for learning is that 'all new learning requires a foundation of prior knowledge'. P Brown, H Roediger and M McDaniel, 'Make it stick: the science of successful learning, Harvard University Press, 2014, pages 5 and 100.↵
86. J Bruner, 'The process of education', Harvard University Press, 1960, pages 17 to

32.↵

87. J Bruner 'The process of education', Harvard University Press, 1960, pages 31 to 32.↵
88. E Eisner, 'Structure and magic in discipline-based art education', in 'Journal of Art and Design Education', Volume 7, Issue 2, 1988, page 192.↵
89. W Greer, 'Discipline-based art education: approaching art as a subject of study', in 'International Journal of Art & Design Education', Volume 25, Issue 4, 1984, pages 212 to 218.↵
90. On the idea of pupils' own personal and reflexive creativity, see E Eisner, 'The arts and the creation of the mind', Yale University Press, 2002, pages 46 to 69.↵
91. L Lindström, 'Aesthetic learning about, in, with and through the arts: a curriculum study', in 'International Journal of Art & Design Education', Volume 31, Issue 2, 2012, pages 166 to 179.↵
92. L Lindström, 'Aesthetic learning about, in, with and through the arts: a curriculum study', in 'International Journal of Art & Design Education', Volume 31, Issue 2, 2012, pages 166 to 179. See also R Hickman 'Critical studies in art and design', Intellect, 2005, page 25. See also M Barkan, 'Transition in art education: changing conceptions of curriculum content and curriculum', in 'Art Education', Volume 15, Issue 7, 1962, pages 12 to 18.↵
93. The second aim outlined in the national curriculum is to 'become proficient in drawing, painting and sculpture and other art, craft and design techniques' ['National curriculum in England: art and design programmes of study'](#), Department for Education, September 2013.↵
94. The first aim outlined in the national curriculum is to 'produce creative work, exploring their ideas and recording their experiences'. ['National curriculum in England: art and design programmes of study'](#), Department for Education, September 2013.↵
95. When pupils undertake more complex creative tasks on an informed basis because of the knowledge they have learned in the art and design curriculum, they can do so with confidence. Addison refers to this as the creative action that is made possible as a result of the gradual knowledge of and immersion in the field of art, craft and design. See N Addison 'Developing creative potential', in 'Understanding art education: engaging reflexively in practice', by N Addison, L Burgess, J Steers and J Trowell, Taylor and Francis, 2010, pages 3 to 64. In addition, Eisner also states, 'Children who feel a sense of mastery seldom need to be motivated by a teacher.' See E Eisner 'Educating artistic vision', Macmillan, 1997, page 161.↵
96. Eisner refers to the different forms of representation that children hold about the world that make meaning possible. See E Eisner, 'Curriculum and cognition', Teachers College Press, 1994, pages 87 to 89.↵
97. Making the case for a discipline-based approach to the subject, Greer states, 'Activities and skills presented in sequence produce an evolution from naive (untutored) to a sophisticated (knowledgeable) understanding of art, taking into account children's level of maturation and tasks ordered from simple to complex... The art works of children become examples of concepts learned, in addition to being expressive efforts.' W Greer, 'Discipline-based art education: approaching art as a subject of study', in 'International Journal of Art & Design Education', Volume 25, Issue 4, 1984, pages 212 to 218. See also W Soep 'Visualizing judgement: Self-assessment and peer assessment in arts education', in E W Eisner and M D Day (editors), 'Handbook of research and policy in Art Education', Routledge, 2004, pages 667 to 691.↵
98. ['National curriculum in England: art and design programmes of study'](#), Department for Education, September 2013. The national curriculum programmes of study for design and technology, mathematics, music and computing all make reference to creativity or the creative discipline within the purpose or aims of the subject.

[‘National curriculum’](#), Department for Education, October 2013.↵

99. Thompson and Maloy assert, ‘Creativity is often associated with the arts but it is not the same as the arts.’ They also state, ‘Creative education is a separate field of research and political activity.’ P Thompson and L Maloy, [‘The benefits of art, craft and design education in schools: a rapid evidence review’](#), National Society for Education in Art and Design, February 2022, page 11. It is particularly important to recognise when it is clear that various traditions in art problematise or reject certain dimensions of creativity. For instance, some traditions in art are built around scepticism about novelty and creativity, such as in some traditions of Islamic art. Put simply, it would be a misconception to assert that creativity is always and in every case the goal of art, craft and design.↵
100. P Thompson and L Maloy, [‘The benefits of art, craft and design education in schools: a rapid evidence review’](#), National Society for Education in Art and Design, February 2022, page 11.↵
101. National Advisory Committee on Creative, Cultural Education, Great Britain. Dept. for Education, Employment, Great Britain. Dept. for Culture, Media and Sport, 1999. All our futures: Creativity, culture & education, page 3.↵
102. ‘Imaginative activity fashioned so as to produce outcome that are both original and of value’ National Advisory Committee on Creative, Cultural Education, Great Britain. Dept. for Education, Employment, Great Britain. Dept. for Culture, Media and Sport, 1999. All our futures: Creativity, culture & education, pages 31 to 33. Interestingly, the more recent Durham Commission definition of ‘capacity to imagine, conceive, express, or make something that was not there before’ picks up 3 features of the NACCCE’s conception of creativity (using imagination, pursuing purposes and being original, which it broadly sees as generative modes of thought), but not the fourth (judging value, which it sees as a ‘reciprocal’ and ‘evaluative’ mode of thought). In this review, pupils’ subject-specific capacities for evaluating, judging and determining value are considered through the ‘disciplinary’ form of knowledge that pupils build in high-quality art curriculums.↵
103. ‘To gain the knowledge one needs to make creative contributions, one must develop knowledge and skills within a particular domain in which one is to make one’s creative contribution.’ J Kaufman, and R Sternberg, ‘The International Handbook of Creativity’, Cambridge University Press, 2006, page 2. There are of course proponents on both sides of a much wider debate on whether creativity is more domain-general or more domain-specific. See, for instance, J Plucker, M Runco and C Hegarty, ‘Enhancement of creativity’, in ‘Encyclopaedia of creativity’, Elsevier, 2011, pages 456 to 460; J Baer, ‘The importance of domain-specific expertise in creativity’, in ‘Roepers Review’, Volume 37, Issue 3, 2015, pages 165 to 178.↵
104. For instance, Tillander writing on art, technology and creativity, reflects on the idea that creative acts, ideas and products can change existing domains into new entities. Newer and emerging domains will have, accompanying them, newer practices that are themselves considered creative: ‘Information technology is forming a powerful alliance with creative practices in the arts and design to establish new domains in information technology and creative practices.’ M Tillander, ‘Creativity, technology, art and pedagogical practices’, in ‘Art Education’, Volume 64, Issue 1, 2015, page 40.↵
105. N Addison and L Burgess, ‘Learning to teach art and design in the secondary school: second edition: a companion to school experience’, 2015.↵
106. [‘Education inspection framework: overview of research’](#), Ofsted, January 2019.↵
107. E Eisner, ‘Structure and magic in discipline-based art education’, in ‘Journal of Art and Design Education’, Volume 7, Issue 2, 1988, pages 185 to 196.↵
108. Beyond just superficial connections, Eisner notes that the incorporation of art disciplines in the curriculum can be done in such a way as to ‘illuminate the relationships between concepts, skills and generalisations’. E Eisner, ‘Structure and magic in discipline-based art education’, in ‘Journal of Art and Design

- Education', Volume 7, Issue 2, 1988, pages 185 to 196.↵
109. Anderson writes, 'Intelligence is the simple accrual of and tuning of many small units of knowledge that in total produce complex cognition. The whole is no more than the sum of its parts, but it has a lot of parts.' See J Anderson 'A simple theory of complex cognition', in 'American Psychologist', Volume 51, Issue 4, 1996, pages 355 to 365.↵
 110. '[National curriculum in England: art and design programmes of study](#)', Department for Education, September 2013.↵
 111. In their book, Addison and his co-authors note that in school art, creative work is underpinned by 'teaching technical procedures and by providing opportunities for students to imitate, rehearse and consolidate practice through repetition and limited variation; creative work does not mean that technical competence can be ignored or overruled in the name of "freedom"'. N Addison, L Burgess, J Steers and J Trowell, 'Understanding art education: engaging reflexively with practice', Taylor and Francis, 2010, page 45.↵
 112. The phrase 'deliberate practice' refers to the work of K Ericsson. See K Ericsson, 'The influence of experience and deliberate practice on the development of superior expert performance', in 'The Cambridge handbook of expertise and expert performance', edited by K Ericsson, N Charness, P Feltovich and R Hoffman, Cambridge University Press, 2012, pages 683 to 704.↵
 113. G Miller, 'The magical number seven, plus or minus two: some limits on our capacity for processing information', in 'Psychological Review', Volume 63, Issue 2, 1956, pages 81 to 97; N Cowan, 'The magical number 4 in short-term memory: a reconsideration of mental storage capacity', in 'Behavioral and Brain Sciences', Volume 24, Issue 1, 2001, pages 87 to 114.↵
 114. S Dehaene, 'How we learn: the new science of education and the brain', Penguin, 2020.↵
 115. A Baddeley, 'Oxford psychology series, No. 11. Working memory', Clarendon Press/Oxford University Press, 1986; N Cowan, 'The magical number 4 in short-term memory: a reconsideration of mental storage capacity', in 'Behavioral and Brain Sciences', Volume 24, Issue 1, 2001, pages 87 to 114; K Ericsson and W Kintsch, 'Long-term working memory', in 'Psychological Review', Volume 102, Issue 2, 1995, pages 211 to 245.↵
 116. J Sweller and P Chandler, 'Why some material is difficult to learn', in 'Cognition and Instruction', Volume 12, Issue 3, 1994, pages 185 to 233.↵
 117. Didau and Rose note that by repeatedly practising procedures, pupils will become competent in a skill. However, to move on to new levels of mastery they must engage in purposeful practice, preferably in a variety of conditions. See D Didau and N Rose, 'What every teacher needs to know about psychology', John Catt Educational Limited, 2016, pages 71 to 72.↵
 118. P Brown, H Roediger and M McDaniel, 'Make it stick: The science of successful learning', Harvard University Press, 2014, page 65.↵
 119. L Lindström, 'Aesthetic learning about, in, with and through the arts: a curriculum study', in 'International Journal of Art & Design Education', Volume 31, Issue 2, 2012, pages 166 to 179.↵
 120. L Lindström, 'Aesthetic learning about, in, with and through the arts: a curriculum study', in 'International Journal of Art & Design Education', Volume 31, Issue 2, 2012, pages 166 to 179.↵
 121. B Rosenshine, 'Principles of instruction: research-based strategies that all teachers should know', in 'American Educator', 2012, pages 12 to 20.↵
 122. K Ericsson and W Kintsch, 'Long-term working memory', in 'Psychological Review', Volume 102, Issue 2, 1995, pages 211 to 245; S Dehaene, 'How we learn', Penguin, 2020.↵
 123. For example, J Adams, K Wormwood, D Atkinson, P Dash, S Herne and T Page,

- 'Teaching through contemporary art', Tate Publishing, 2008, pages 38 to 39. Downing and Watson point out that, for the teachers they interviewed, galleries and artistic studios were seen as 'key resources'. Some interviewees experienced restrictions, such as shortage of funding to access to them. Others, however, suggested that resources did not impede taking pupils to galleries and artists' studios. D Downing and R Watson 'School Art: What's in it?', in 'Research in art and design education: issues and exemplars', Intellect Books, 2008, page 63.↵
124. See J Harland, K Kinder, P Lord, A Stott, I Schagen, J Haynes and others, 'Arts education in secondary schools: effects and effectiveness', National Foundation for Educational Research, 2000, page 51.↵
 125. For recent discussions on how knowledge by acquaintance might connect with other forms of knowledge in the curriculum, see C Winch, 'Curriculum Design and the epistemic ascent', in 'Journal of Philosophy of Education', Volume 47, 2013, pages 128 to 146.↵
 126. J Hattie, 'Visible learning: a synthesis of meta-analysis relating to achievement', Routledge, 2009; J Scheerens and R Bosker, 'The foundations of educational effectiveness', Pergamon, 1997.↵
 127. A Baddeley, 'Oxford psychology series, No. 11. Working memory', Clarendon Press/Oxford University Press, 1986; N Cowan, 'The magical number 4 in short-term memory: a reconsideration of mental storage capacity', in 'Behavioral and Brain Sciences', Volume 24, Issue 1, 2001, pages 87 to 114; K Ericsson and W Kintsch, 'Long-term working memory', in 'Psychological Review', Volume 102, Issue 2, 1995, pages 211 to 245.↵
 128. ['Education inspection framework: overview of research'](#), Ofsted, January 2019.↵
 129. For example, work with pre-service teachers in the USA included the development of instructional tools to support pupils with certain presentations of SEND in the classroom. For example, cutting out aspects of the artwork 'help[s] the students focus on the key elements of the piece'. J Dorff, 'The importance of collaboration in art classrooms for success of students with special needs', in 'The intersection of arts education and special education: exemplary programs and approaches', Kennedy Center, 2012, p.16.↵
 130. Educators who have suggested this include P. Yenawine, 'Jump-starting visual literacy: thoughts on image selection', in 'Art Education', Volume 56, Issue 1, 2003, pages 6 to 12. Dorff applies this in a SEND context. See J Dorff, 'The importance of collaboration in art classrooms for success of students with special needs', in 'The intersection of arts education and special education: exemplary programs and approaches', Kennedy Center, 2012, page 14.↵
 131. This could also have implications for curriculum choices. Concerning curriculum, teachers may wish to include specific content about how disability features in the history of art, as part of the art curriculum, in order to build pupils' knowledge of how art develops and changes over time. They may also wish to include 'broader experiential art forms within contemporary art'. See J Adams, K Wormwood, D Atkinson, P Dash, S Herne and T Page, 'Teaching through contemporary art', Tate Publishing, 2008, page 28. For further discussion about the content of the curriculum, see the ['Curriculum' section](#).↵
 132. See, for example, C Penketh, 'Towards a vital pedagogy: learning from anti-ableist practice in art education', in 'International Journal of Education Through Art', Volume 16, Issue 1, 2020, pages 13–27.↵
 133. P Morrow, 'Contemporary art practice and anti-ableist pedagogy', in 'AD Magazine', Issue 35, 2022, pages 13 and 14. Morrow discusses looking at art and artists through an 'anti-ableist' lens.↵
 134. N Addison, 'Assessment and learning', in 'Understanding art education: engaging reflexively with practice', by N Addison, L Burgess, J Steers and J Trowell, Taylor & Francis, 2010. See also M Fleming, 'Assessment', in 'The arts in education', Taylor and Francis, 2012.↵

135. M Fleming, 'Assessment', in 'The arts in education', Taylor and Francis, 2012. See also M Ross, 'The creative arts', Heinemann, 1978, pages 258 to 268.↵
136. M Fleming, 'Assessment', in 'The arts in education', Taylor and Francis, 2012, pages 86 to 95. See also E Eisner, 'The arts and the creation of the mind', Yale University Press, 2002, pages 178 to 195.↵
137. M Fleming, 'Assessment', in 'The arts in education', Taylor and Francis, 2012.↵
138. M Fleming, 'Assessment', in 'The arts in education', Taylor and Francis, 2012. See also '[Assessment for learning](#)', Assessment Reform Group, 2002. See also D Wiliam, 'What is assessment for learning?', in 'Studies in Educational Evaluation', Volume 37, Issue 1, 2011, pages 3 to 14.↵
139. N Addison, 'Assessment and learning', in 'Understanding art education: engaging reflexively with practice', by N Addison, L Burgess, J Steers and J Trowell, Taylor and Francis, 2010, page 93.↵
140. T Ericsson, R Krampe and C Tesch-Romer, 'The role of deliberate practice in the acquisition of expert performance', in 'Psychological Review', Volume 100, 1993, pages 363 to 406.↵
141. L Cunliffe, 'Forms of knowledge in art education and the corollary of authenticity in the teaching and assessment of such forms of knowledge', in 'International Journal of Art & Design Education', Volume 24, Issue 2, 2005, pages 199–208.↵
142. M Fleming, 'Assessment', in 'The arts in education', Taylor and Francis, 2012.↵
143. Boughton, Doug. "Assessing art learning in changing contexts: High-stakes accountability, international standards and changing conceptions of artistic development." in E W Eisner and M D Day (editors), 'Handbook of research and policy in Art Education', Routledge, 2004, page 589.↵
144. M Fleming, 'Assessment', in 'The arts in education', Taylor and Francis, 2012.↵
145. '[HMCI commentary: curriculum and the new education inspection framework](#)', Ofsted, September 2018.↵
146. When assessment practices are insufficiently related to the curriculum content, then inferences about pupils' artistic abilities from summative assessments are not well founded. Boughton, writing in the context of standardised tests in the USA, comments that using standardised knowledge tests, without due consideration to forms of knowledge such as practical knowledge and without sufficient thinking about what pupils are building up over time, can lead to a 'point where assessment information gathered is virtually meaningless'. See D Boughton, 'Assessing art learning in changing contexts' in E W Eisner and M D Day (editors), 'Handbook of research and policy in Art Education', Routledge, 2004, page 587.↵
147. Research into effective practices in art education has highlighted a perceived problem associated with summative assessment, such as common concerns about the 'subjectivity of marks and grades' in art. Harland et., 'Arts education in secondary schools', p. 372.↵
148. In a higher education context, some have asserted that when 'the quality of learning output' is used 'as the measure' of success, then effective assessment requires clarity about 'what quality learning consists in and how it can be achieved'. Students can only improve in their subject-specific abilities 'if they understand what progression means and looks like'. See A Davies, 'Effective Assessment in Art and Design: writing learning outcomes and assessment criteria in art and design', University of the Arts London, 2000, page 8; The report goes on to explore how criterion-referenced approaches are preferable to norm-referenced approaches, because they are more precise about what the given strands of progress would mean for students.↵
149. Art educators have recognised that the overuse of summative assessment is unhelpful. See B Allison, 'Some aspects of assessment in art and design education', in 'Assessment in arts education: a necessary discipline or a loss of happiness?', edited by M Ross, Pergamon, 1986, pages 113 to 128.↵

150. For example, a report on arts education in primary schools suggests that non-specialists may struggle to plan and to teach for subject-specific progression. B. Cooper, 'Primary colours: the decline of arts education in primary schools and how it can be reversed', Fabian Society, 2018, page 17.↵
151. Cooper's 2018 report for the Fabian Society highlighted the overall decrease in arts education, where the 'arts' were understood to include art (and design), music, drama, and dance. The report suggested that there was insufficient emphasis on the subject, and said 'a majority of teachers in England (59%) believe their school does not give enough emphasis to the arts'. See B Cooper, 'Primary colours: the decline of arts education in primary schools and how it can be reversed', Fabian Society, 2018.↵
152. For example, see: D Downing and R Watson, 'The STAR project and initial teacher training : an evaluation', National Foundation for Educational Research, 2004, page 11.↵
153. Teachers do not feel prepared to teach. B Cooper, 'Primary colours: the decline of arts education in primary schools and how it can be reversed', Fabian Society, 2018. In addition, schools are needing to adopt different ways to tackle this issue, see T Hatfield, 'Who teaches art? What is learned?' in 'Arts Education Policy Review', Volume 108, Issue 5, 2007.↵
154. L Green and R Mitchel, 'The effectiveness of an initial teacher training partnership in preparing students to teach art in the primary school', in 'Journal of Art & Design Education', Volume 17, Issue 3, 2002, pages 245 to 254. More recent research on the place of foundation subjects in initial teacher education may suggest that this situation has not changed significantly. See '[Building great teachers? Initial teacher education curriculum research: phase 2](#)', Ofsted, January 2020.↵
155. '[Building great teachers? Initial teacher education curriculum research: phase 2](#)', Ofsted, January 2020.↵

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