

# Unit 12: Computers in Art and Design

**NQF Level 3: BTEC National**

**Guided learning hours: 60**

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## Unit abstract

The use of computers by artists and designers is becoming essential for industrial and traditional purposes. This area of art and design is exciting and dynamic, with new technologies continually advancing, enabling the development of new ways to communicate and combine different art and design forms. Understanding the changing technological needs of the art and design industry is critical in order for learners to be flexible and adaptable. It is important that learners embrace new technology and they develop skills, knowledge and understanding necessary to communicate ideas effectively in a highly competitive and progressive sector.

Learners will develop their understanding of how computers are used in contemporary art and design. They will also develop an understanding of the potential benefits of combining digital and traditional art and design techniques and processes to develop their own work. It is expected that digital techniques and use of equipment will be taught as a foundation upon which to build understanding and skills in new technology and processes in order to produce art and design work which communicates in contemporary and innovative ways.

The extent to which the full range of digital techniques can be covered will depend on the centre's access to computer hardware and software facilities.

Learners will be given themes and specific briefs to focus their work and guide them through investigations and experimentation with hardware and software in relation to art and design. Briefs will be designed within a relevant vocational context and will take into consideration new industrial developments in computer hardware and software technology. These skills will help learners progress and adapt to a vocational environment where computers play a key role.

## Learning outcomes

**On completion of this unit a learner should:**

- 1 Understand the potential of digital media in contemporary practice
- 2 Be able to prepare suitable materials for digital outcomes
- 3 Be able to combine traditional and digital art and design media
- 4 Be able to produce various examples of work using digital art and design techniques.

## Unit content

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### 1 Understand the potential of digital media in contemporary practice

*Digital media:* research a variety of sources showing use of digital technology in chosen pathway or specialism, eg magazines, films and video, music videos, title sequences, animation, illustration, computer games, architecture, CAD, CAM, fine art, comics, fashion, print, music, graphic design

*Analysis and evaluation:* the contribution of computers to the production of art and design; the use of computers in others' digital work in visual ways, eg annotation, printout, sketches, photographs, photocopies, notes, presentation and discussion

### 2 Be able to prepare suitable materials for digital outcomes

*Materials:* technical and aesthetic qualities and fitness for purpose of primary and secondary materials, eg sketches, prints, paintings, textiles, models, 2D and 3D work, writing, photographs, found materials, natural objects, video and audio recordings, photocopies, printed material; preparation of materials for digitising; exploration of sources using digital and traditional techniques

*Digitising:* use of digital technology, eg scanner, touch screen, graphics tablet, video camera, microphone, digital camera and keyboard; differences between the effects of the digitising processes

### 3 Be able to combine traditional and digital art and design media

*Combining media:* combine a range of traditional media with computers; consider benefits of combinations; explore properties eg emphasis, characteristics, effects, uses, suitability, limitations and creative potential; considerations and constraints, eg memory, speed, size, resources, time; combine techniques and processes

*Digital media:* backup and storage on external or internal devices; software and hardware that is relevant to pathway or specialism, eg image manipulation, drawing, painting, vector and raster graphics, typography, website design, printing; CAD, CAM, 3D modelling, laser cutting; animation, interactive and multi-media authoring, audio, video

**4 Be able to produce various examples of work using digital art and design techniques**

*Digital techniques:* edit and manipulate material; develop ideas using combinations of digital and traditional art and design techniques

*Preparation of outcomes:* eg paper, screen, audio, projector; use digital techniques that are relevant to pathway or specialism, eg image manipulation, distortion, pattern-making, layering, illustration, mixed media, page layout, drawing, typography, modelling with simple objects, rotation, turning, milling, lathing, extruding, linking, rendering wire frame and surface textures, interactive and multi-media (navigation, buttons, type, interactive elements, audio, moving image, cascading style sheets, basic scripting), projection and installation, animation (key frames, parameters, tweening, onion skinning, continuity, path of movement)

## Grading grid

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

Grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 explain the potential of digital media in contemporary practice	M1 show an in-depth understanding of the potential of digital media in contemporary practice and use findings to prepare a variety of suitable materials for digital outcomes	D1 effectively use in-depth understanding of the potential of digital media in contemporary practice to inform imaginative preparation of digital outcomes
P2 prepare suitable materials for digital outcomes	M2 effectively and skilfully combine traditional and digital art and design techniques and processes	D2 show independence in producing work that recognises the potential and limitations of digital and traditional art and design techniques.
P3 combine traditional and digital art and design media	M3 produce a variety of examples of work using suitable digital art and design techniques competently and creatively with skill and understanding.	
P4 produce examples of work using digital art and design techniques.		

## Essential guidance for tutors

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### Delivery

Tutors delivering this unit have opportunities to use a wide range of media and techniques both traditionally and digitally. Although the majority of learners' work will be carried out in a studio or workshop environment, it will be helpful to include demonstrations, visits to galleries and events and informal discussions between professional practitioners, tutors and learners.

Research using the internet, library and multimedia resources will inform an essential part of the learning programme. An active experimental approach with media is required to encourage learners to broaden their creativity. Delivery should stimulate, motivate, educate and inspire the learner.

This unit aims to give art learners a broad introduction to digital design applications. Tutors should consider integrating the delivery and assessment of this unit with any other relevant units learners are taking as part of the programme of study, especially those involving digital art media, hardware and software, photography and interactive media. In planning the delivery of project briefs, tutors should be aware of the need to track the relevant criteria of the units being covered.

Health and safety issues relating to workshop practice must be stressed, as working in studios and workshops that combine technology and traditional media can be dangerous. Learners should be aware of health and safety issues relating to the equipment and learning resources they use and how to reduce risks to themselves and others.

Learning outcome 1 covers the research and analysis of digital media depending on the specialism. Delivery strategies should be varied to avoid all examples of digital media coming from the same source and in order to give a comprehensive understanding of the potential for digital media in contemporary practice. Particular attention will have to be given to the techniques and processes involved in producing digital outcomes and to the contribution of traditional art and design to the development of the use of computers in art.

At this stage it is recommended that learners become familiar with digital art and design techniques so they can analyse digital material through the use of demonstrations, lectures, workshop practice and the use of multi-media resources. At an early stage, tutors should encourage learners' analytical skills through probing questions, discussions and relevant digital resources. It is appropriate to use the correct technical terms when discussing digital media.

Learning outcome 2 covers the preparation and development of ideas and media for digital outcomes. Learners should familiarise themselves with the need to experiment and develop work and ideas in as broad a range as possible. It may be helpful to demonstrate the working practices of professionals through the deconstruction of digital material, which would add vocational relevance. Learners will need to use the correct techniques for using hardware and software to digitise material. The actual process of digitising material can have dramatic effects on work and tutors are encouraged to take an experimental approach during the preparation and development process.

Learning outcomes 3 and 4 are closely linked and cover the exploration of digital techniques and the role traditional art and design practice plays in these. The areas studied will depend on the equipment and materials available in each centre and the chosen pathway/specialism.

Learners should be taught how to combine and develop traditional techniques and processes and understand the benefits of using computers in art and design. They should employ the correct techniques for using hardware and software and understand how these can contribute to the creative process. However, an active and experimental approach in combining traditional techniques, processes and media will encourage learners to find new ways of working and achieving unusual results. This is especially relevant for learners who are unused to working with digital media. Final outcomes do not have to be digital and can be presented on the screen or on paper.

The contribution of digital media to the creative process has to be stressed and computers can be used as a tool to help achieve both traditional and digital outcomes such as fashion prints and designs, 3D models and sculpture, and mixed media artwork.

Learners should be taught how to use a range of hardware devices, for example computer, scanner, graphics tablet, digital camera, video camera, external and internal storage devices, microphone, laser cutter, printer. Learners should also be taught how to use a range of relevant software applications relevant to their specialism in 2D, 3D, time based or interactive media.

### Assessment

To achieve a **pass** grade, learners must achieve the four pass criteria listed on the grading grid.

For P1, P2, P3 and P4 they will be expected to use hardware and software in combination with traditional media to communicate various ideas. Investigations will bring together skills with understanding of the field at a basic level. Learners are expected to use a range of computer and traditional skills to achieve these criteria.

Evidence for P1, P2 and P3 should show a body of work that demonstrates how digital skills have developed and been combined with traditional techniques. Evidence for P4 should show how learners have used techniques and technology correctly and with a degree of creativity.

To achieve a **merit** grade, the learner must achieve all of the pass grade criteria plus the three merit grade criteria.

For M1, learners will understand the purpose of visual research and this will be effective, consistent and relevant, with references to digital techniques. The findings of analysis will influence the preparation of materials for digital outcomes with forethought and understanding.

For M2 and M3, learners will demonstrate some independent and well-organised exploration and development of digital and traditional techniques and processes. For M3, learners must show a deeper understanding of the effectiveness of hardware and software and traditional techniques and an ability to refine ideas.

The tasks could be similar to those undertaken for P1, P2, P3 and P4, but tutors would expect a greater independence and more consistency when carrying out experimentation in order to communicate ideas.

To achieve a **distinction** grade, the learner must achieve all of the pass and merit grade criteria plus the two distinction grade criteria.

For D1, learners are required to undertake a complex analysis of the potential of digital media and use the findings to inform imaginative preparation of ideas and work for digital outcomes. Learners will be able to find a wide range of sources from which to develop creative ideas that will demonstrate an in-depth understanding of hardware and software. Development will be consistent and innovative with an ability to reflect on creative decision-making.

For D2, learners will demonstrate that they have a clear understanding of the benefits of using certain traditional and digital techniques in combination. Work will show confidence with hardware and software and recognition of the limitations of digital and traditional techniques.

The tasks could be similar to those undertaken for M1, M2 and M3, but tutors should expect fluency and confidence when communicating ideas through digital work.

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

It is possible to link this unit to other BTEC National and Certificate courses depending on whether courses include the Computers in Art and Design unit. Although this unit could be linked with most units, particularly constructive links may include: *Unit 17: Understanding Video Technology, Unit 29: Image Manipulation Computer Applications, Unit 30: 3D Computer Modelling, Unit 31: 2D Animation Production, Unit 32: Desktop Publishing Computer Applications, Unit 34: Typographic Design, Unit 39: Website Design, Unit 41: Mixed Media Image Making, Unit 42: Design for Advertising, Unit 43: Graphics for 3D Applications, Unit 65: Specialist Illustration Computer Applications, Unit 83: CAD/CAM for the Fashion Industry and Unit 87: Computer Applications in Fashion.*

There are opportunities for the development of key skills in this unit.

### Essential resources

The computer software and hardware resources required will vary according to the specific pathway or specialism, but are likely to include:

- computers with appropriate software and hardware,
- projectors
- monitors
- digital cameras
- printers
- scanner
- graphics tablets
- external storage devices
- internet access.

Learners will also need access to a range of traditional media and associated tools and equipment together with adequate work and storage space. Library and learning facilities that enable learners to access examples of digital media should be available.

### Indicative reading for learners

#### Books

Armstrong J, Armstrong W and Ivas L – *From Pencil to Pen Tool: Understanding and Creating the Digital Fashion Image* (Fairchild Books, 2006)

Caplin S and Banks A – *The Complete Guide to Digital Illustration* (Ilex, 2003)

Chapman N and Chapman J – *Digital Multimedia* (John Wiley and Sons Ltd, 2004)

Colussy M and Greenberg S – *Rendering Fashion, Fabric and Prints with Adobe Photoshop 7* (Prentice Hall, 2003)

Cullen K – *Layout Workbook: A Real-world Guide to Creating Powerful Pieces* (Rockport Publishers Inc, 2005)

Danaher S – *The Complete Guide to Digital 3D Design* (Ilex, 2004)

Heller S and Ilic M – *Handwritten: Expressive Lettering in the Digital Age* (Thames & Hudson Ltd, 2004)

Jones G and Shaner P – *Real World Digital Video* (Peachpit Press, 2004)

Kerlow I – *The Art of 3-D Computer Animation and Effects* (John Wiley and Sons Ltd, 2003)

Lhotka B, Krause D, and Schminke K – *Digital Art Studio: Techniques for Combining Inkjet Printing with Traditional Art Materials* (Watson-Guptill Publications Inc, 2004)

Lupton E – *DIY: Design it Yourself* (Princeton Architectural Press, 2006)

McCelland D and Fuller L – *Photoshop CS2 Bible* (Hungry Minds Inc, 2005)

Odling-Smee A and For H – *The New Handmade Graphics: Beyond Digital Design* (RotoVision, 2003)

Plazm – *100 Habits of Successful Graphic Designers: Insider Secrets from Top Designers on Working Smart and Staying Creative* (Rockport Publishers Inc, 2003)

Pohlmann K – *Principles of Digital Audio* (McGraw-Hill Education, 2005)

Williams R – *The Animator's Survival Kit: A Working Manual of Methods, Principles and Formulas for Computer, Stop-motion, Games and Classical Animators* (Faber and Faber, 2001)

Zeegan L – *Digital Illustration: A Masterclass in Digital Image-Making* (RotoVision, 2005)

### **Other reading**

Appropriate software manuals

### **Journals**

*Computer Art Magazine*

*Creative Review*

*Design Magazine*

### **Websites**

[www.adobe.com](http://www.adobe.com)

[www.computerarts.co.uk](http://www.computerarts.co.uk)

[www.dafont.com](http://www.dafont.com)

[www.digitmag.co.uk](http://www.digitmag.co.uk)

[www.good-tutorials.com](http://www.good-tutorials.com)

[www.graphicdesignforum.com](http://www.graphicdesignforum.com)

## Key skills

Achievement of key skills is not a requirement of this qualification but it is encouraged. Suggestions of opportunities for the generation of Level 3 key skill evidence are given here. Tutors should check that learners have produced all the evidence required by part B of the key skills specifications when assessing this evidence. Learners may need to develop additional evidence elsewhere to fully meet the requirements of the key skills specifications.

Application of number Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> <li>preparing, producing, optimising, storing and printing digital material.</li> </ul>	<p>N3.2 Use this information to carry out multi-stage calculations to do with:</p> <ul style="list-style-type: none"> <li>a amounts or sizes</li> <li>b scales or proportion</li> <li>c handling statistics</li> <li>d using formulae.</li> </ul>
Communication Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> <li>discussing their own, their peers' and others' views on their work and the work of artists, craftspeople and designers</li> <li>presenting their views on their own work and the work of artists, craftspeople and designers</li> <li>analysing different types of primary and secondary research material</li> <li>writing up research work produced, for example, for a formal presentation with reference material.</li> </ul>	<p>C3.1a Take part in a group discussion.</p> <p>C3.1b Make a formal presentation of at least eight minutes using an image or other support material.</p> <p>C3.2 Read and synthesise information from at least <b>two</b> documents about the same subject.</p> <p>Each document must be a minimum of 1000 words long.</p> <p>C3.3 Write <b>two</b> different types of documents, each one giving different information about complex subjects.</p> <p>One document must be at least 1000 words long.</p>

<b>Information and communication technology Level 3</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>researching a variety of sources including the internet, CD ROMS and DVDs</li> <li>presenting research findings, perhaps in the form of PowerPoint presentation.</li> </ul>	<p>ICT3.1 Search for information, using different sources, and multiple search criteria in at least one case.</p> <p>ICT3.3 Present combined information such as text with image, text with number, image with number.</p>
<b>Improving own learning and performance Level 3</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>modifying ideas and proposed outcome as a result of ongoing research and renegotiating timelines, production and resources where necessary</li> <li>reviewing work and its relation to the needs of the brief using art and design methodologies to produce effective outcomes</li> <li>obtaining feedback from presentations or discussions with reference to the brief and the production of outcomes.</li> </ul>	<p>LP3.1 Set targets using information from appropriate people and plan how these will be met.</p> <p>LP3.2 Take responsibility for your learning, using your plan to help meet targets and improve your performance.</p> <p>LP3.3 Review progress and establish evidence of your achievements.</p>

<b>Problem solving Level 3</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>researching the requirements of a brief and investigating the appropriateness of creative solutions</li> <li>planning, developing and implementing creative solutions</li> <li>critically reviewing the development process, outcomes and creative solutions in relation to their performance.</li> </ul>	<p>PS3.1 Explore a problem and identify different ways of tackling it.</p> <p>PS3.2 Plan and implement at least one way of solving the problem.</p> <p>PS3.3 Check if the problem has been solved and review your approach to problem solving.</p>
<b>Working with others Level 3</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>planning and managing a visit or planning a group or class activity</li> <li>researching a common topic as part of a group, with each group member exploring a different aspect of the topic and discussing outcomes at intervals</li> <li>discussing and evaluating their contribution to the group project with their peers.</li> </ul>	<p>WO3.1 Plan work with others.</p> <p>WO3.2 Seek to develop co-operation and check progress towards your agreed objectives.</p> <p>WO3.3 Review work with others and agree ways of improving collaborative work in future.</p>