

Unit 12: Computers in Art and Design

Unit code:	Y/502/5747
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

This unit will enable learners to develop skills and understanding of the use of computers in art and design. They will research existing applications of computer use, and develop creative responses through their own study and production of computer-based art and design work.

● Unit introduction

The use of computers by artists and designers is firmly established in many fields and disciplines. 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 and keeping up to date with the changing technological needs of the creative industry is critical in order for learners to be flexible, adaptable and employable. It is important that learners engage with new technology and develop the skills, knowledge and understanding necessary to communicate ideas effectively in a highly competitive, technical and innovative sector.

Learners will develop their understanding of how computers are used as new media 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 anticipated that digital techniques, in conjunction with appropriate hardware, will be introduced as a foundation on which to develop skills in using new technology and processes to communicate art and design ideas, concepts and proposals 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 multi-media software facilities.

Learners will need to be given appropriate briefs to focus their work and guide them through investigating and experimenting with hardware and software, in relation to art and design. Briefs will need to be designed within a relevant vocational context and 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 art and design practice
- 2 Be able to select materials for digital experimentation
- 3 Be able to produce work using digital art and design techniques

Unit content

1 Understand the potential of digital media in contemporary art and design practice

Digital media: chosen pathway; specialism eg magazines, film videos, music videos, title sequences, animation, illustration, computer games, architecture, CAD, CAM, fine art, comics, fashion, print, music, graphic design

Contemporary practice: production eg photographic work, fashion styling, fashion, textile design, 3D design, product design, digital fine art, film, graphic communication; digital work eg annotation, printout, sketches, photographs, photocopies, notes, presentation, discussion

2 Be able to select materials for digital experimentation

Materials: art, craft and design work (digital, traditional) eg sketches, prints, paintings, textiles, models, 2D, 3D, writing, photographs, found materials, natural objects, video, audio, recordings, photocopies, printed material; preparation for digitising; qualities eg technical, aesthetic; fitness for purpose

Digitising: digital technology eg scanner, touch screen, graphics tablet, video camera, microphone, digital camera, keyboard; differences in digitising processes

Combining media: traditional media; computers; processes; benefits; properties eg emphasis, characteristics, effects, uses, suitability, limitations, creative potential; considerations eg constraints, memory, speed, size, resources, time

Digital media: backup eg storage, external, internal, devices; specialist hardware; 2D software eg image manipulation, drawing, painting, vector, raster graphics, typography, website design, printing, 3D software eg CAD, CAM, 3D modelling, laser cutting; time-based software eg animation, interactive, multi-media authoring, audio, video

3 Be able to produce work using digital art and design techniques

Digital techniques: editing eg capturing, materials manipulation; ideas generation eg layering, compositing, downloading, recording

Outcomes: images eg paper, screen, audio, projector; pathway or specialism-driven digital techniques eg image manipulation, distortion, pattern making, layering, illustration, mixed media, page layout, drawing, typography; artefacts eg modelling, rotation, turning, milling, lathing, extruding, linking, rendering wire frame, surface textures; interactive eg multi-media, navigation, buttons, type, interactive elements, audio, moving image, cascading style sheets, basic scripting projection, installation; animation eg timelines, key frames, parameters, tweening, onion skinning, continuity, path of movement

Assessment and grading criteria

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

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 review the potential for digital media in contemporary art and design practice [IE, CT, RL, SM, EP]	M1 explain the potential for digital media in contemporary art and design practice	D1 analyse digital media in contemporary art and design practice
P2 select art and design materials for experimentation using digital techniques and processes [IE, CT, RL, SM, EP]	M2 carry out effective experimentation using multi-media techniques and processes purposefully	D2 carry out imaginative experimentation using multi-media techniques and processes independently
P3 produce outcomes using digital art and design techniques. [IE, CT, RL, SM, EP]	M3 present purposeful visual outcomes showing effective use of digital art and design techniques.	D3 present sophisticated and imaginative visual outcomes showing sophisticated use of digital art and design techniques.

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

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

Delivery

This unit is designed to help learners to determine, understand and evidence the potential for digital multi-media in contemporary art and design practice. Learners will have appropriate tutorial, peer and professional support, guidance and formative assessment feedback to be able to research, experiment with produce and present evidence demonstrating the use of digital multi-media in contemporary art and design practice.

Tutors delivering this unit have opportunities to use a wide range of traditional and digital media and techniques. Although the majority of learner work is likely to 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 multi-media resources will inform an essential part of the learner's evidence. An active, experimental approach to media is needed to encourage learners to broaden their creativity. Delivery should stimulate, motivate, educate and inspire learners.

This unit aims to give learners a broad introduction to digital design applications. Tutors should consider integrating delivery and assessment of this unit with any other relevant units learners are taking as part of their programme of study, especially those involving digital art media, hardware and software, photography and interactive media. In planning delivery of project briefs, tutors should be aware of the need to map 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 the 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 research and analysis of digital media in the context of the learner's specialist pathway. Teaching and learning strategies should be varied to introduce a broad range of source media and achieve a comprehensive understanding of the potential for digital media in contemporary art and design practice. The techniques and processes involved in producing digital outcomes, and the combination of traditional art and design with the development of the use of computers in art and design need to be emphasised.

Digital art and design techniques can be introduced, for analysis, through demonstrations, lectures, workshop practice and the use of multi-media resources. At an early stage, tutors should encourage the use of analytical skills through probing questions and discussions about relevant digital resources. It is important to use the correct technical terms when discussing digital media.

Learning outcome 2 covers the preparation and development of ideas, materials and media for selected digital outcomes. Learners should experiment and develop ideas across as broad a range of materials and digital media as possible. It will be valuable to demonstrate the digital working practices of professionals. Learners will need to develop appropriate techniques for using hardware and software to digitise art and design material. Tutors should encourage an experimental approach during the selection, preparation and development process in order that learners are exposed to the maximum impact of digital media manipulation.

Learning outcome 3 covers the exploration of digital techniques and the role played by traditional art and design practice. The breadth of study and eventual proposal will depend on the equipment and materials available in each centre and learners' chosen pathways/specialisms.

Learners should be taught to combine traditional art and design techniques and processes with digital media to understand the benefits of using computers in art and design and discover a new way of working to achieve diverse and unusual results. They should use the correct techniques for using hardware and software and understand how these can contribute to the creative process. Final outcomes can be presented digitally, on screen or online as well as through the more traditional media for example canvas, paper.

The contribution of digital media to the creative process will be emphasised, introducing learners to the reality that computers can be used as a tool to create and enhance the outcomes both traditional and digital practice 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 software applications relevant to their specialism in 2D, 3D, time-based or interactive media.

Learners should be encouraged to investigate a range of multi-media applications in order to demonstrate their new digital skills and present their findings.

Outline learning plan

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

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

Topic and suggested assignments/activities and/assessment
Introduction to unit content.
Analysis and clarification of content, assessment schedule and process.
Learners to identify independently and then discuss as a group obvious and not so apparent sources of digital multi-media appropriate to contemporary art and design practice.
Learners to identify relevant digital, multi-media terminology and discuss as a group.
Invite professionals, engaged with the use of digital multi-media in art and design practice, to formal lectures, portfolio presentations and discussion groups.
Tutors and learners discuss the importance of, and methodology for, carrying out appropriate, independent research, visualising, documenting and recording research, making lecture notes, analysing and evaluating for reference and recall.
Tutors and professionals demonstrate the importance of learner-directed timelines, which will include research, experimentation, recordings, proposals, evaluations and presentations on the potential for using digital multi-media in contemporary art and design practice.
Assignment 1: Researching and Analysing Evidence of Digital Media in Current Art and Design Practice
Developing awareness of the potential for digital media in art and design practice, through group discussion, tutorials and external professional advice and guidance.
Learners plan and outline appropriate research methodology, in a contemporary art and design practice context, (establishing aims and objectives, deliverables and timescales) to be assessed and investigate independent opportunities involving internal and external sources eg specialist digital design tutors, professional exponents of digital media in (their own) art and design practice.
Learners carry out independent research activities involving internal and external sources, building any partnerships to support understanding of the benefits of digital multi-media in art and design practice. Learner document and record research, findings, experimentation, recordings and references regularly in an appropriate format for discussion, storage, recall and assessment.
Learner presentation of research and findings, to peers, professionals and tutors, to propose the potential in art and design practice.

Topic and suggested assignments/activities and/assessment

Assignment 2: Identify a Range of Appropriate Art, Craft and Design Work to Use in Experimenting with Digital Media

Learners review research findings, outcomes, of internal and external discussion parameters and constraints related to using digital media in art and design contemporary practice.

Learners to formulate research findings in the context of specific hardware and software appropriate for digital media experimentation in art and design practice.

Tutorial and group discussion on independent, individual research findings. Learner to present own research review for peer and tutorial assessment.

Learners to experiment with digital media, using samples of art and design work. Experimentation should be appropriately visualised, annotated and include any legislation, references, mandates, health and safety requirements and relevant contact details in an appropriate format for storage, presentation, recall and assessment (eg an electronic sketchbook).

Assignment 3: Present Working Examples of Digital Art and Design Techniques

Finalise and document selection of appropriate hardware and software, which is evidenced through learner experimentation, group discussion, tutorials and external professional advice and guidance.

Learners to present proposals, in an appropriate format including visual annotated evidence, to demonstrate digital, multi-media techniques in art and design practice.

This could involve:

- drawing, image manipulation, distortion, pattern making, layering, illustration, mixed media
- page layout, typography (titling, pixel fonts)
- 3D 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
- creative animation (key frames, parameters, continuity, path of movement)
- editing, materials manipulation.

Learners to present portfolio of evidence to demonstrate the potential for digital, multi-media in art and design practice to tutors, assessors and (any) professionals.

Unit review and assessment.

Assessment

For P1, learners will be able to describe how digital media is used in contemporary art and design practice. They will research and highlight specific examples using appropriate terminology. The range of ideas and examples will tend to be basic. Areas will be identified and described but will lack the explanation of context and application shown in work assessed for M1.

For P2, learners will be able to select a basic range of materials for digital experimentation. Some of the work they produce will be tutor driven. Ideas will be explored and materials selected in an obvious way, without considering of how they may be used in more original or effective ways.

For P3, learners will produce and present art and design outcomes using a basic range of digital art and design techniques. Solutions will match the brief and equipment will be used safely. Work produced will lack the sense of purpose or effectiveness found in work assessed M3. Ideas will be seen through to a conclusion but alternatives may remain largely unexplored.

For M1, learners will understand the purpose of visual research for which will be effective, consistent and relevant, referring to digital techniques. The findings of their analysis will influence the preparation of materials for digital outcomes with consideration and understanding. Learners will be able to explain the use and context of digital media in art and design contemporary practice with more precision and understanding than in work assessed for P1. They will demonstrate the ability to articulate explanations about the use of digital media in contemporary practice that are not purely descriptive.

For M2, learners will demonstrate well-organised exploration and development of multi-media (digital and traditional) techniques and processes, showing a deeper understanding of the effectiveness of hardware and software and traditional techniques, and an ability to refine ideas.

For M3, learners will present purposeful visual outcomes that are effective in meeting the briefs. Ideas will be carried through to a conclusion with a greater sense of purpose than in work assessed for P3. There will be more consideration of alternative ideas and ways of working with digital media. Hardware and software will be handled with more purpose than in pass level work.

For D1, learners need 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. Their work will demonstrate an ability to analyse the purpose, effect and context of contemporary art and design practice in more detail and depth than in work assessed for M1. Analysis will show a greater sense of understanding and confidence in reaching in-depth conclusions.

For D2, learners will be able to find a wide range of sources from which to develop creative ideas that demonstrate an in-depth understanding of hardware and software. Development will be consistent and innovative reflecting on creative decision making. Learners will be able to demonstrate that they have a clear understanding of the benefits of using certain traditional and digital techniques in combination.

For D3, learners will produce and present outcomes that demonstrate an ability to work confidence with hardware and software confidently. Digital outcomes will be produced with greater independence than in work assessed for M3. Learners will be able to relate their outcomes to the specific techniques and equipment they have used and applied. They will show an informed understanding of the potential of using computers in their own art and design work, as well as recognising of the limitations of digital and traditional techniques. Outcomes presented will demonstrate creativity and an imaginative approach to communicating ideas through digital work.

Programme of suggested assignments

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

Criteria covered	Assignment title	Scenario	Assessment method
PI, MI, DI	Assignment 1: Researching and Analysing Evidence of Digital Media in Current Art and Design Practice	An artist/designer/craftworker explores potential uses of digital media.	Portfolio of evidence for assessment and recall, containing: <ul style="list-style-type: none">• electronic filing of appropriate research findings including websites, contact details of peers and practitioners who are using digital media in art and design practice• case studies, electronic sketchbooks/portfolios of successful practitioners, designed to develop insight, understanding and confidence in explaining the benefits of using digital media in art and design practice.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, M1, M2 D1, D2	Assignment 2: Identify a Range of Appropriate Art, Craft and Design Work to Use in Experimenting with Digital Media	An artist/designer/craftworker explores potential uses of digital media linked to their own work.	Portfolio of evidence and verbal presentation, in an appropriate format, for storage, recall and assessment to: <ul style="list-style-type: none"> formally classify and record a range of digital hardware and software appropriate to use with selected art and design work for experimenting with digital media include any legislation, references, mandates, reference health and safety requirements. Electronic or traditional sketchbook including: <ul style="list-style-type: none"> annotated visuals of own and others' work evaluation and analysis of others' work and own experimentation, to support selection of materials to use with digital media.
P2, M2, D2, P3 M3, D3	Assignment 3: Present Working Examples of Digital Art and Design Techniques	An artist/designer/craftworker creates examples of the application of digital media for their portfolio.	Proposal, in portfolio and/or sketchbook format, which can be digitally produced to provide appropriate visual evidence to demonstrate digital, multi-media techniques in art and design practice and could include: <ul style="list-style-type: none"> drawing, mark-making typography, page layout 3D modelling interactive multi-media video animation.

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

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

Level 1	Level 2	Level 3
Introduction to Creative Use of Computers	Working With Digital Art and Design Briefs	Communication Through Art and Design
Introduction to Animation	Working with Moving Image Briefs	Image Manipulation Using Computer Applications
Introduction to Sound Recording	Working with Interactive Media Briefs	3D Computer Modelling

National Occupational Standards

This unit also provides development opportunities for some of the underpinning skills, knowledge and understanding of the following National Occupational Standards:

CCSkills Sector Skills Council

Design (revisions in draft form June 2009)

- DES1 Apply research on the history and theory of design to your own design activities
- DES2 Apply design industry knowledge to inform your own design work practice and work
- DES3 Use Critical Thinking Techniques in your design work
- DES7 Contribute to the production of prototypes, models, mock-ups, samples or test pieces
- DES8 Explore the use of colour in a creative environment
- DES9 Research, test and apply techniques for the design of products
- DES10 Create visual designs
- DES14 Explore the history and social impact of creativity and how it can influence your own design work
- DES15 Research and evaluate the nature of design in a specific industry context
- DES18 Interpret the design brief and follow the design process
- DES23 Create 2D Designs using a Computer Aided Design System
- DES24 Create 3D Models using a Computer Aided Design System
- DES36 Develop and extend your design skills and practices

Skillset Sector Skills Council

Animation

- ANIM2 Manage and Store Assets
- ANIM8 Create Designs
- ANIM11 Create 2D Assets For Production
- ANIM12 Create 2D Animation

Interactive Media and Computer Games

- IM1 Work Effectively in Interactive Media
- IM6 Use Authoring Tools to Create Interactive Media Products
- IM24 Create 2D Animations for Interactive Media Products
- IM27 Create Sound Effects for Interactive Media Products
- IM28 Create Music for Interactive Media Products

Design for the Moving Image

- DM11 Assist With The Technical Design Process
- DM13 Contribute To The Production Of Designs Using I.T.
- DM14 Assess The Technical Implications Of The Design Brief

Photo Imaging

- D1 Create Original Artwork for Digital Images
- D2 Carry Out Specified Image Scanning
- D3 Plan and Produce Scanned Images
- D4 Carry Out Specified Image Editing
- D5 Plan and Produce Edited Images
- D6 Prepare for, and Produce, Image Output
- D7 Contribute to the Effectiveness of Imaging Activities
- D8 Send and Receive Image Data Files by Digital Means
- D11 Edit Images Using a Digital Processing Station

Skillfast-UK Sector Skills Council

Textiles and Material Design

- D1 Research design information and ideas for textiles and materials using a range of techniques.

Essential resources

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

- computers with industry appropriate software and hardware
- projectors
- monitors
- digital cameras
- video cameras
- printers
- scanners
- 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.

Employer engagement and vocational contexts

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

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

Vocational learning support resources includes:

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

Business and finance advice:

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

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

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

Skillset, the sector skills council for creative media (www.skillset.org), provide details (www.skillset.org/careers) about careers advice and industry information, plus a regularly updated news and events page.

Skillfast-UK, the sector skills council for fashion and textiles (www.skillfast-uk.org), provide details on (www.skillfast-uk.org/justthejob) about careers advice and industry information, plus regularly updated news and events pages.

Indicative reading for learners

Textbook

Dormor R, Holmes S, Mott T, Schofield J, Thomas L, Wicks S, Wilson G – *BTEC Level 3 National Art and Design Student Book* (Edexcel, 2010) ISBN 978-1846906374

Dormor R, Holmes S, Mott T, Schofield J, Thomas L, Wicks S, Wilson G – *BTEC Level 3 National Art and Design Teaching Resource Pack* (Edexcel, 2010) ISBN 978-1846906374

Armstrong J, Armstrong W and Ivas L – *From Pencil to Pen Tool: Understanding and Creating the Digital Fashion Image* (Fairchild Books, 2005) ISBN 978-1563673641

Caplin S and Banks A – *The Complete Guide to Digital Illustration* (Ilex, 2003) ISBN 978-1904705000

Chapman Dr N and Chapman J – *Digital Multimedia* (John Wiley and Sons, 2009) ISBN 978-0470512166

Danaher S – *The Complete Guide to Digital 3D Design* (Premier Press, 2004) ISBN 978-1904705383

Heller S and Ilic M – *Handwritten: Expressive Lettering in the Digital Age* (Thames & Hudson Ltd, 2006) ISBN 978-0500285954

Jones G and Shaner P – *Real World Digital Video* (Peachpit Press, 2004) ISBN 978-0321127297

Michael A – *Animating with Flash 8: Creative Animation Techniques* (Focal Press, 2006) ISBN 978-0240519661

Walsh Macario J – *Graphic Design Essentials: Skills, Software and Creative Solutions* (Laurence King, 2009) ISBN 978-1856695992

Wands B – *Art of the Digital Age* (Thames & Hudson, 2007) ISBN 978-0500286296

Journals

Computer Art Magazine

Computing & IT week

Creative Review

Design Magazine

Design Week

Journal of Information Technology

Websites

www.adobe.com

digital media software

www.computerarts.co.uk

tutorials and examples of digital media

www.digitmag.co.uk

links and news on digital media

www.good-tutorials.com

tutorials on digital media

www.nsead.org/ict/index.aspx

case studies, examples of practice and links, related to new media and education in art and design

Delivery of personal, learning and thinking skills

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

Skill	When learners are ...
Independent enquirers	selecting information to gain an understanding of using computers in art and design
Creative thinkers	exploring dynamic ways of using digital media for art and design practice
Reflective learners	reviewing, reflecting on and evaluating a range of information relevant to using computers in art and design
Self-managers	allowing for own and others' opinions, suggestions and proposals to be respected, considered, reviewed and actioned where appropriate
Effective participators	selecting and processing information appropriate to writing a proposal for using computers in art and design.

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

Skill	When learners are ...
Independent enquirers	planning and carrying out research to understanding the importance of using computers in art and design
Creative thinkers	trying out alternative ways of developing relevant information to make proposals appropriate to using digital media in art and design practice adapting their ideas as based on advice and guidance from tutors, peers and professionals
Reflective learners	setting appropriate goals for identifying, understanding, explaining and presenting information on using computers in art and design inviting feedback on research and proposals dealing positively with praise, setbacks and criticism evaluating their experiences and learning to inform development and confidence-building goals
Self-managers	creating opportunities to use appropriate digital media applications, allowing for own and others' suggestions and proposals to be respected, considered, reviewed and actioned where appropriate allowing project scheduling to encompass implementation of action points, guidance parameters and submission deadlines
Effective participators	planning and carrying out research to justify using computers in art and design practice.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use digital media independently for a complex task to meet a variety of needs	researching related criteria, content and opportunities for using computers in art and design
Use ICT to effectively plan work and evaluate the effectiveness of the digital media they have used	understanding and implementing IT systems and business platforms appropriately to justify using computers in art and design
Manage information storage to enable efficient retrieval	developing appropriate methods of storing visual, recorded and written materials relating to IT hardware and digital software
Follow and understand the need for safety and security practices	understanding security in using computers in art and design
Troubleshoot	exploring, extracting and assessing the relevance of information from digital professionals, artists and designers
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	creating and finding appropriate resources, materials, techniques, processes, content and adapting them in making justifying using computers in art and design
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	exploring and assessing the relevance of information from art and design digital, multi-media-related websites
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • records • visual communication 	sourcing, evaluating and testing appropriate information to meet guidelines, with effective and secure use of appropriate data and information, to implement requirements, mandates and protocols
Bring together information to suit content and purpose	implementing draft or actual proposals, bringing together a variety of requirements, mandates and protocols gathered through research and development from self and others' guidance
Present information in ways that are fit for purpose and audience	using appropriate mechanisms for producing and presenting a proposal to justify using computers in art and design
Evaluate the selection and use of digital media to present information	evaluating the appropriate use of hardware, tools and software in the development and presentation of information to understand and justify using computers in art and design
Select and use computers to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	communicating with tutors, advisers and professional and successful exponents of using computers in art and design

Skill	When learners are ...
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	being part of proposal reviews and critiques presenting conclusions attending mock and realistic presentations
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	reading information gathered from a range of visual, written and electronic sources to gather ideas, in the context of using computers in art and design
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	recording written research, analysis and evaluation producing written and visual evidence to confirm ideas and justify using computers in art and design.