Unit 78: Digital Graphics for Computer Games

Unit code: A/600/6621

QCF Level 3: BTEC National

Credit value: 10

Guided learning hours: 60

Aim and purpose

The aim of the unit is to introduce learners to the basic tools and techniques of digital graphics software used to produce images for computer game products. Learners will develop skills in digital imaging software by producing digitally manipulated visual material. They will experiment with graphic styles used to set mood and theme in computer games and reflect critically on their own work.

Unit introduction

Anyone considering a career in the computer games industry needs to be aware of the various disciplines and skills relevant to the industry which may be outside their own particular interest or career goals. For example, anyone involved in computer games development must be familiar with the creation of digital images, digital graphics being the basis on which computer games are sold. The creation of digital graphics is relevant to all aspects of design and these skills are highly sought after in the games industry. Those who aspire to work in this industry should therefore gain basic practical experience in the production and development of digital graphics for use in computer games in order to communicate ideas or develop a specialism.

In this unit learners will become familiar with the basic tools and techniques of the digital graphics software used to produce images for computer games. These techniques form the basis of the development of graphics for game poster production, game packaging, in-game graphics such as head up display graphics, sprite graphics, background graphics, image textures and concept art graphics – in short for all print and screen graphics for computer games. This unit is therefore fundamental to the development of digital design skills for the production of computer games.

The digital graphics process includes enhancing or transforming digitally captured images by means of specialist image editing software. Through following this unit learners will develop skills in using digital imaging software by producing digitally manipulated visual material. Learners will also have opportunities to experiment with graphic styles used to set mood and theme in computer game products.

Since this unit encourages learners to express imaginative skills, it is appropriate that some critical self-reflective practice is undertaken. This professional skill will be of value in any future career.

● Learning outcomes

On completion of this unit a learner should:

1   Understand theory and applications of digital graphics used for computer games

2   Be able to generate concept art ideas for computer game graphics

3   Be able to create digital graphics for a computer game following industry practice.

Unit content

1 Understand theory and applications of digital graphics used for computer games

Artistic styles used in computer games: photorealism; cel-shading; abstraction; exaggeration, eg anime, manga

Computer game graphics: pixel art (2D sprites, 3D isometric sprites); concept art, eg character, weapon, vehicle, environment; texture art; background graphics, eg walls, forests, clouds; in-game interface, eg head up display; print media art, eg game packaging, box cover, manual, label, poster

Pixel: picture element, image resolution, intensity

Types of digital graphics: raster images (bmp, gif, tiff, jpg); vector images (psd, wmf, fla, ai)

File extensions: eg bmp, png, gif, tiff, jpg, psd

Compression: lossy; lossless

Image capture: scanner; digital camera; tablet

Optimising: target image output; image bit depth; image resolution; image dimensions; compression

Storage of image assets: file size; file-naming conventions; asset management

2 Be able to generate concept art ideas for computer game graphics

Stimulus: eg client brief, own brief, from market research

Ideas: brainstorming; mood boards; thumbnail sketching; concept drawings, eg character, weapon, vehicle, environment

Legal and ethical considerations: legal, eg copyright, libel; ethical, eg confidentiality, decency; representation, eg race, gender, religion, sexuality

Computer game graphics: print media graphics, eg game poster, game packaging; in-game graphics (head up display graphics, sprite graphics, background graphics, image textures); concept art graphics

Graphics specification: client needs; audience; thumbnail sketching; visual style, eg colour, style, photorealistic, cel-shaded, anime; composition; typography; technical considerations, eg file format, file size, optimisation, file naming conventions, asset management, intended output

3 Be able to create digital graphics for a computer game following industry practice

Plan: asset management (file storage and retrieval, naming conventions); workflow (scheduling, efficient time management); deadlines (production milestones, deliverables, quality assurance)

Software interface: eg work area, tool box, status bar, file information, window control, floating palettes, palette docking, tabs

Asset management: export filepath; file format; compression; file naming conventions; file backup

Workflow: eg reference images, plug-ins, optimising (bit depth, resolution, dimensions)

Menus: open; save; new; import; export; edit; view; help

Image settings: size; resolution, width; height; colour mode; background; transparency; aspect ratio; file name

Drawing tools: tool options; brush; pencil; duplicate; clone; fill; text; line; stroke; shape; zoom; guides and rulers; grid; snap; palettes, eg colour, gradients, layers, object, brushes, history, actions, size, resolution; layers, eg copying, saving, arranging; flattening; colour selection, eg foreground, background, colour swatch, eyedropper

Editing tools: selection, eg marquee, lasso, magic wand, magnetic lasso, deselect; transform, eg scale, rotate, skew, flip; cut; copy; paste; crop; trim; erase; undo; fill

Advanced tools: effects, eg layer effects, filters, channels; image adjustments, eg brightness, contrast, hue, saturation, colour balance, gradients, transparency, invert; masks; paths, eg vector paths, converting text to paths; brushes, brush plug-in

In-game graphics: head up displays; sprite graphics; gif animation; image textures; asset creation from concept art, eg character, weapon, vehicle, environment backgrounds

Print media graphics: eg game packaging, box cover, manual, label, poster, concept artwork

Production stages: original development files; final flattened optimised image

Aesthetic qualities: composition; colour palettes; typography; creation of meaning

Industry practice: reflect on finished product (compared with original intentions, fitness for purpose, technical qualities, aesthetic qualities); production skills (ideas generation, graphics specification, workflow and time management, technical competence, teamwork)

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 summarise accurately theory and applications of digital graphics used for computer games with some appropriate use of subject terminology [IE]	**M1** explain theory and applications of digital graphics used for computer games with reference to detailed illustrative examples and with generally correct use of subject terminology	**D1** comprehensively explain theory and applications of digital graphics used for computer games with elucidated examples and consistently using subject terminology correctly
P2 generate outline concept art ideas for computer game graphics working within appropriate conventions and with some assistance [CT; SM]	**M2** generate detailed concept art ideas for computer game graphics, showing some imagination and with only occasional assistance	**D2** generate thoroughly thought-through concept art ideas for computer game graphics, showing creativity and flair and working independently to professional expectations
P3 create digital graphics for a computer game following industry practice, working within appropriate conventions and with some assistance. [CT; SM; RL]	**M3** create digital graphics for a computer game to a good technical standard following industry practice, showing some imagination and with only occasional assistance.	**D3** create digital graphics for a computer game to a technical quality that reflects near-professional standards following industry practice, showing creativity and flair and working independently to professional expectations.

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

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

Essential guidance for tutors

Delivery

In this unit learners should be encouraged to produce designs for a range of computer game purposes. For example, learners could produce digitally manipulated images for head up displays, sprite graphics, gif animations, image textures, game packaging and asset creation from concept art – the possibilities are extensive.

Directing learners to create graphics for a range of purposes will create a context for their technical investigations. Understanding the difference between bitmap and vector graphics will have much greater meaning if learners were comparing the results from a photo editing programme and a vector drawing programme when designing game packaging. Comparing file sizes and quality is much more meaningful when learners are investigating the reasons for optimising graphics for computer game production.

These examples show that an active experimental approach is required to encourage learners to broaden their technical understanding. Equally, they should be encouraged to be experimental creatively. Interesting examples of professional work should be made available for discussion, which can inspire learners in their own work. An important foundation to any digital graphics project is the ideas generation and planning, so time spent on this away from the computer will pay dividends. Learners must be encouraged to think about how ideas are generated and to apply techniques such as brainstorming, mood boards, and concept drawings. Learners should be encouraged to undertake visual research by examining existing professional computer game products related to their client or own brief, and by looking at existing artists, game artists, game designers and publishers for inspiration.

Workshops and demonstrations are recommended when teaching software applications. Learners should then be encouraged to apply these software techniques to their own assignment work. It is useful for learners to monitor and review their work during production, creating a quality control process which will help them to improve technical and creative decisions, thus enabling them to assess their successes in both the production processes and the qualities of their finished products.

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 of planning the teaching and assessment of this unit.

Topics and suggested assignments and activities	
Introduction to unit and unit assessment.	
Introduction to digital graphics techniques. Learners will attend lectures, discussions and demonstrations to: • examine the applications of digital graphics used for computer games • examine pixels and image resolution and their relationship • explain raster and vector images and their associated file extensions • explain graphic file extensions and their relationship to file compression • explain how to capture an image when using a scanner, digital camera and a tablet • explain how to optimise an image for an indented image output and the storage of image assets.	

Topics and suggested assignments and activities

Assignment 1 – What Is Digital Graphics Technology?

Learners will write an article for an online computer game art ezine on theory and applications of digital graphics technology used to create digital graphics for computer games. The article will focus on the technology behind digitally generated images and associated compression and optimisation techniques that can be employed for a particular image output.

The article must cover:

- styles of graphic art in computer games
- the applications of digital graphics used for computer games
- picture element and image resolution
- types of digital graphics used to create digital images
- file extensions used in digital graphics, file compression and optimisation
- image capture, image output and storage of image assets.

Introduction to ideas generation.

Learners will attend lectures, discussions and demonstrations to:

- examine methods to assist with ideas generation
- explain how to develop ideas
- explain how to develop a graphics specification.

Assignment 2 – Ideas Generation for Digital Computer Game Graphic Assets

Learners will generate ideas for digital computer game graphic assets for a new computer game in response to a client's brief.

Learners will generate:

- ideas for print media graphics, in-game graphics and concept art graphics for a game
- report on the ideas generation process
- concept drawings
- graphics specifications.

Introduction to creating digital graphic images for computer games using digital graphics software and hardware.

Learners will attend lectures and demonstrations, and hold discussions to:

- examine file types and screen image resolution
- examine digital imaging creation tools used for computer game graphics
- examine techniques used in the creation of in-game graphics such as head up displays, sprite graphics, gif animations, image textures and asset creation from concept art
- examine techniques used in the creation of print media graphics such as game packaging, box cover, manual, label, poster, concept artwork
- examine image output options
- explain the importance of reviewing finished production work.

Topics and suggested assignments and activities
Assignment 3 – Digital Image Creation for Computer Games
Learners will create digital graphics as proposed in Assignment 2.
Learners will:
• generate in-game graphics such as head up displays, sprite graphics, gif animations, image textures and asset creation from developed ideas, graphics specifications and concept drawings produced in Assignment 2
• generate print media graphics such as game packaging, box cover, manual, label, poster, concept artwork from developed ideas and graphics specifications produced in Assignment 2
• produce a report reviewing the finished digital images and their technical and aesthetic qualities, comparing them with original intentions.
Unit learning and assessment review.

Assessment

Evidence for assessment

The grading criteria for learning outcome 1 require that learners 'demonstrate understanding'. This can be done through a statement in written or oral form (such as a report, presentation, or a structured audio or audio-visual statement) or through learners' investigations into and experimentation with digital graphics technologies. Notes from lectures, research from the internet, books and periodicals can all contribute to the evidence. Reports based on learners' experiments will allow them to demonstrate their understanding and come to their own conclusions on such issues as which resolution to use for which purpose.

Alternatively, understanding can be demonstrated through the application of the relevant concepts or procedures in a practical context. In this case, in order to achieve the merit grade, learners will need to explain, with reference to specific aspects of their work or examples of what they have done, why they have acted as they have. In order to achieve the distinction grade they will need to show precisely how this exemplification demonstrates the application of the concept or procedure, and will not only explain but also justify their actions. Evidence for the achievement of the higher grades might be in the form of audio or audio-visual recordings of conversations between a tutor (or assessor) and the learner. If the conversations are recorded in writing (as witness or observation reports) care must be taken to ensure that at least 50 per cent of such assessments are subject to internal verification.

Tutors should note that it is possible, of course, to combine verbal description of some elements of the content with practical demonstration of others.

Evidence for the achievement of learning outcome 2 could be notes on the creative process, including brainstorming, mood boards and concept drawings.

Evidence for the achievement of learning outcome 3 should be generated in response to a given brief and the planning process, including schedules, asset management and meeting production milestones. Evidence could be made up of notes accompanied by digital documents showing work in progress and finished images, tutor observation of software use and a formally written evaluative review of their finished images.

For some elements of this unit, and for some learners, a formal viva voce assessment might be appropriate. When more than one learner in a cohort is assessed in this way, care must be taken to ensure that all learners are asked equivalent questions, and that all are given equal opportunities to expand or clarify their answers. Interviewers must also ensure that questions are not phrased in such a way as to provide or suggest an answer. Formal vivas should be recorded for the purposes of internal and external verification and at least 50 per cent of such assessments must be internally verified.

Application of grading criteria

When applying the grading criteria, tutors should follow the advice given below. Please note that any examples of evidence given here are indicative only. This advice is not inclusive and the examples need not be included in a learner's work in order for that learner to achieve the exemplified grade. For each of the criteria learners must present evidence that addresses each italicised sub-heading of the content for the learning outcome.

Pass

To achieve a pass grade, learners must achieve all the criteria at pass level. For each of the criteria learners must present evidence that addresses each italicised sub-heading of the content for the learning outcome.

P1: learners will describe correctly, and with substantial but not necessarily complete coverage, the key characteristics of digital graphics technology. They will accurately identify technical issues such as image resolution, compression and optimisation using subject terminology to a limited degree. Alternatively, they will demonstrate the application of these techniques though they will be unable to explain how they have been applied in their own work. Evidence will show a basic understanding of technical terminology but learners will generally be unsure about this vocabulary and will make fairly frequent mistakes when they do use it.

P2: learners will originate and design a digital graphics project which uses some of the key characteristics of digital graphics in simple and conventional ways, but the conventions applied will be appropriate to the form or genre within which they are working. There will be limited evidence of the development process, such as basic visualisations.

P3: learners will achieve some finished images working with basic digital graphics software techniques, but the outcomes will not be particularly successful. The work on the production will be purposeful and the outcome will have some shape, some sense of design, or the deliberate application of some technique behind it. Following industry practice, learners will review their finished digital graphics work in such a way that they move beyond merely describing it. They will make evaluative comments upon what they have done but these comments will be assertions that are not supported by evidence or exemplification.

P2 and P3: in terms of the aesthetic or imaginative qualities of their work, learners will not move beyond the conventional, but the conventions applied will be appropriate to the form or genre within which they are working. When engaged in practical activities, learners will need frequent assistance and support, though they will take note of and make use of this help when it is given. If they are in frequent need of such help but fail to make positive use of it, they should not be considered for a pass grade for this unit.

Merit

To achieve a merit grade, learners must achieve all the pass and all the merit grade criteria. For each of the criteria learners must present evidence that addresses each italicised sub-heading of the content for the learning outcome.

M1: learners will explain the key characteristics of digital graphics technology through detailed illustrative, relevant examples which show how particular technologies are used. However, learners will not elucidate these examples to show fully how they illustrate the point they support. Learners will accurately discuss technical issues such as image resolution, compression and optimisation, using subject terminology for the most part accurately. Learners will use technical vocabulary for the most part correctly, but may make mistakes or be unsure about usages at times. Demonstration in a practical context will be competent and learners will explain how they have used the relevant techniques, pointing to instances of where they have done so in their work.

M2: learners will originate and design a digital graphics project which combines the key characteristics of digital graphics in an imaginative way, making use of conventions but not slavishly copying them and reflecting in their ideas an understanding of the form. So, learners will still be working within recognisable generic conventions, but there will be some imaginative thought behind the work so that codes and conventions will be employed with some inventiveness.

M3: learners will achieve competently produced finished images working with digital graphics software techniques, showing some confidence in the application of skills. The successes of the outcomes will reflect a facility for digital graphics production. Work will be approached methodically, processes undertaken with care and, generally speaking, thought will be put into the work. Following industry practice, learners will review their work through explanation of what they have tried to accomplish and how they have worked to try to achieve what they have set out to do. They will explain decisions made and exemplify these explanations through relevant and detailed reference to their own work.

M2 and M3: learners will still be working within recognisable generic conventions, but there will be some imaginative thought behind the work so that technical skills and codes and conventions will be employed with some inventiveness. When engaged in practical activities, learners will need occasional support, particularly when dealing with more complex technology or trying to apply more sophisticated techniques.

Distinction

To achieve a distinction grade, learners must achieve all the pass, all the merit and all the distinction grade criteria. For each of the criteria learners must present evidence that addresses each italicised sub-heading of the content for the learning outcome.

D1: learners will analyse in depth the characteristics of digital graphics technologies through examples which illustrate clearly the breadth of technologies used in digital graphics. They will draw out of each example precisely what it is about it that exemplifies the point it illustrates. Learners will fully explain technical issues such as image resolution, compression and optimisation, and justify points made using supporting arguments or evidence. The fuller and more extensive explanation, provision of argument to support points made, and the higher quality expression will all discriminate between this grade and the merit. Technical vocabulary will be secure and used correctly and confidently at all times. Demonstration in a practical context will be to a very high technical standard and learners will give detailed explanations of how the techniques have been applied, exemplifying these explanations with fully elucidated instances of where they have done so in their work.

D2: learners will originate and design a digital graphics project which combines the key characteristics of digital graphics not just in an imaginative way but with ingenuity, using codes and conventions with occasionally surprising results.

D3: learners will achieve high quality finished images working with complex digital graphics software techniques, showing technical excellence in relation to skills. To reach 'near-professional standards' does not mean learners have to achieve actual professional standards – that would be unrealistic at Level 3. The word 'near' means that technical and production skills are beginning to approach the professional standard and bear comparison with it. Following industry practice, learners will review their work by making an accurate and critically objective assessment of their own achievement with detailed reference to examples taken from that work.

D2 and D3: learners will apply their technical skills not just with imagination but with ingenuity and even elegance, and codes and conventions will be used with occasionally surprising results. In all practical activity learners will be capable of working autonomously and effectively. The term 'working independently' should not be understood to mean producing poor quality work autonomously, nor that the learners do what they want, when they want, how they want. It means that they are able to work on their own initiative, do not need constant support or supervision, give the work their full commitment, work positively and cooperatively with others, and meet deadlines. In other words, they have the kind of self-management skills that would be expected of them in a professional context. Note also that this criterion should not be taken to mean that learners do not seek advice or that they work without discussing things with their tutor, but rather that they are not dependent upon the support of others and that when they take advice they weigh it carefully for themselves.

Programme of suggested assignments

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

Criteria covered	Assignment title	Scenario	Assessment method
P1, M1, D1	Assignment 1 – What Is Digital Graphics Technology?	Article on theory and applications of digital graphics technology for an online computer game art ezine.	• Collated research data. • Research log. • Ezine article.
P2, M2, D2	Assignment 2 – Ideas Generation for Digital Computer Game Graphic Assets	Brief from producer to generate ideas for and create digital graphics for a new computer game.	Development log containing: • all ideas notes, brainstorming, mood boards, thumbnail sketching • concept drawings • graphics specifications.
P3, M3, D3	Assignment 3 – Digital Image Creation for Computer Games	As above.	Project portfolio containing: • all stages in the creation of the digital images • finished images • personal review comments on the finished digital images.

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

This unit forms part of the BTEC Creative Media Production suite. This unit has particular links with the following units in the BTEC Creative Media Production suite:

Level 2	Level 3
Digital Graphics for Interactive and Print-based Media	Digital Graphics for Print
2D Digital Art for Computer Games	Digital Graphics for Interactive Media
	Drawing Concept Art for Computer Games

There are opportunities to relate the work done for this unit to Skillset National Occupational Standards in Interactive Media and Computer Games, and Photo Imaging as follows:

Interactive Media and Computer Games

IM1   Work effectively in interactive media

IM2   Obtain assets for use in interactive media products

IM3   Prepare assets for use in interactive media products

IM9   Provide creative and strategic direction for interactive media projects

IM11   Manage intellectual property rights

IM16   Plan content for web and multimedia products

IM29   Direct asset production for interactive media products

Photo Imaging

PI-1   Apply copyright and other laws relating to usage and licensing of images

PI-3   Plan and organise photographic assignments

PI-15   Produce scanned images

PI-16   Undertake technical adjustment of images

PI-17   Prepare image output

PI-18   Send and receive data digitally

PI-21   Undertake image asset management

PI-22   Plan, set up and control the digital workflow

PI-23   Research and access images

PI-24   Source and acquire images.

Essential resources

Centres should develop their own library of up-to-date resources to include print and digital images (from computer game products, websites, image libraries or professional journals, for example). Because of the practical nature of this subject learners need access to appropriate, industry standard hardware and software.

Employer engagement and vocational contexts

Centres should develop links with local interactive media production studios which could be approached to provide visiting speakers, study visits or samples of typical products.

Skillset, the Sector Skills Council for the creative media sector, has a substantial section of its website dedicated to careers, including job descriptions – www.skillset.org/careers/.

Further general information on work-related learning can be found at the following websites:

● www.aimhighersw.ac.uk/wbl.htm – work-based learning guidance

● www.businesslink.gov.uk – local, regional business links

● www.nebpn.org – National Education and Business Partnership Network

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

- www.warwick.ac.uk/wie/cei/– Centre for Education and Industry, University of Warwick – work experience and workplace learning frameworks.

Indicative reading for learners

Textbooks

Baylis P, Freedman A, Procter N et al – *BTEC Level 3 National Creative Media Production, Student Book* (Pearson, 2010) ISBN 978-1846906725

Baylis P, Freedman A, Procter N et al – *BTEC Level 3 National Creative Media Production, Teaching Resource Pack* (Pearson, 2010) ISBN 978-1846907371

Adobe Creative Team – *Adobe Photoshop CS3 Classroom in a Book* (Adobe, 2007) ISBN 978-0321492029

Adobe Creative Team – *Adobe Photoshop CS4 Classroom in a Book* (Adobe, 2008) ISBN 978-0321573797

Adobe Creative Team – *Adobe Photoshop Elements 7.0 Classroom in a Book* (Adobe, 2008)
ISBN 978-0321573902

Gordon B and Gordon M (editors) – *The Complete Guide to Digital Graphic Design* (Thames & Hudson, 2005)
ISBN 978-0500285602

Kloskowski M – *Layers: The Complete Guide to Photoshop's Most Powerful Feature* (Peachpit Press, 2008)
ISBN 978-0321534163

Lea D – *Creative Photoshop: Digital Illustration and Art Techniques* (Focal Press, 2007) ISBN 978-0240520469

Williams R – *The Non-Designer's Design Book* (Peachpit Press, 2008) ISBN 978-0321534040

Journals

Computer Arts Magazine

Creative Review

Websites

www.adobe.com – the website of this software manufacturer contains useful information and resources, including training materials, forums, downloadable trial software and players, news etc

www.commarts.com – US-based communication arts magazine featuring articles, profiles, portfolios etc focusing on graphic design

www.computerarts.co.uk – the website for the magazine *Computer Arts* has useful tutorials as well as reviews, competitions, forums and downloads

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	generating ideas to be used to assist in the creation of digital graphics for a computer game
	trying out different ways of creating their digital graphics, following ideas through to complete a digital representation of their developed ideas
	adapting their ideas as circumstances change
Creative thinkers	reviewing and reflecting on their digital graphics work and acting on the outcomes to modify and improve their work
	setting goals with success criteria for their digital graphics work
	inviting feedback on their own work and dealing positively with praise, setbacks and criticism
	evaluating their learning and experience to inform future progress
Reflective learners	creating and developing digital graphics to be used in a computer game
	if working in a group to produce digital graphics for an interactive media product, taking responsibility for their own role
	managing their personal contribution to and assimilating information from others in discussions to reach agreements and achieve results
Self-managers	carrying out research into theory of digital graphics technology
	carrying out research to develop ideas for their digital graphics work
	trying out different ways of creating their digital graphics, following ideas through to complete a digital representation of their developed ideas
	adapting their ideas as circumstances change.

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 …
Team workers	seeking out challenges or new responsibilities and showing flexibility when circumstances change
	dealing with competing pressures, including personal and work-related demands
	responding positively to change, seeking advice and support when needed.

● Functional Skills – Level 2

Skill	When learners are …
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	handling digital graphics systems to create their digital graphics
Manage information storage to enable efficient retrieval	managing assets for their digital graphics
Follow and understand the need for safety and security practices	handling digital graphics systems to create their digital graphics
Troubleshoot	handling digital graphics systems to create their digital graphics
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	sourcing assets for their digital graphics
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	researching types of digital graphics and compression techniques for use with the creation of their digital graphics
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: • text and tables • images • numbers • records	building and presenting their project portfolio showing their interpretation of the brief and generation of ideas, documenting the management of their chosen assets and reviewing their own work
Bring together information to suit content and purpose	
Present information in ways that are fit for purpose and audience	
Evaluate the selection and use of ICT tools and facilities used to present information	preparing a report on tools used in the creation of their digital graphics and reviewing their own work
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	gathering feedback on their digital graphics as part of their review
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	studying manufacturers' manuals to research digital graphics software
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	creating their project portfolio incorporating ideas, notes, production documentation and review comments
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	gathering feedback on their digital image as part of their review.