

Unit 40: Computer Game Design

Unit code:	H/502/5671
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

The aim of this unit is to provide learners with an understanding of the underlying principles of game design. Learners will examine visual style and gameplay present in games by undertaking structured gameplay. They will generate game design ideas and learn about and prepare initial formal documentation to communicate these ideas.

● Unit introduction

Game design is about daydreams. But these dreams must be communicated to team members, managers and financial backers. They must then be developed and documented for others to implement and this is a matter of engaging with some challenging realities. Consideration has to be given to identifying those unique features that will make them into playable top titles. All ideas must be recorded to provide a starting point and a reference against which entrepreneurs can make judgements on the risk involved in investing in the development of the game.

The unit aims to provide learners with an understanding of the underlying principles of game design that define the way that games work. Learners must appreciate these key game attributes before applying them to their own game ideas.

Ideas generation is a very necessary component of the initial development of every game. Having achieved the unit learners will be able to make decisions about potential audiences and identify potential ideas sources. They will have an opportunity to practise methods to stimulate and capture imaginings, and compare their ideas with existing titles.

Using more formal documentation, game studios record and communicate the concepts they hope to develop. The formal design proposal document (or 'treatment') becomes an initial instrument to inspire development teams and sets out a designer's initial aspirations and vision of the final product. The systematic recording and development of these initial dreams and ideas allows consideration and application of the game design principles. A much briefer 'pitch' or 'high concept' one-page document advertises the new game idea, and is used as a preliminary taster to whet appetite and gain an invitation to develop the treatment document. This unit will introduce learners to both the high concept and the treatment documents.

Modern game development involves the world of finance to provide entrepreneurial backing, enabling tentative ideas to become titles on shelves in stores. These financial backers must be convinced that the risk they take has some chance of returning their investment. This unit provides an opportunity to develop skills in making that all-important pitch to gain the initial contract.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand the principles of game design
- 2 Be able to generate ideas for a game concept
- 3 Be able to prepare game design documentation
- 4 Be able to present a game concept to stakeholders.

Unit content

1 Understand the principles of game design

Visual style: world (terrain, architecture, objects); characters; non-playing characters (NPC); feedback interface; perspectives (2D, 3D, first-person, third-person, scrolling, aerial, context-sensitive); full motion video (FMV)

Gameplay: interaction model, eg avatar, omnipresence; single player; multiplayer; narrative; game setting, eg physical, temporal, environmental, emotional, ethical; goals; challenges; rewards; player actions; rules; difficulty; game mechanics (inventory, scoring, win condition); balance; feedback; game structure (flowchart); addiction

2 Be able to generate ideas for a game concept

Stimulus: brief (original intellectual property (IP), franchised IP)

Genre: sports; adventure; action; simulation; strategy; puzzle; role play; management; educational ('serious'); viral marketing

Market research: audience (age, gender, core, casual, gaming communities, preferred game genre); similar games already in the market

Target platform: desktop computer; console; mobile device; television; online

Ideas: brainstorming; gameplay; visual style; mood boards; storyboards; concept art

3 Be able to prepare game design documentation

Purpose of design documents: high-level concept (unique selling point (USP), one-line sales pitch); game treatment (concept document); design document

Document layout: title; format; genre; market research; audience; language; territories; content, eg overview, objective, theme, structure, features, characters, mechanics, story, environment

Document production: structure; writing style, eg professional language, second person voice; selective graphic content; presentation style, eg word-processed, spellcheck, proofreading, saving, versioning, backups

4 Be able to present a game concept to stakeholders

Presentation: format, eg verbal, individual, group, audio-visual; communication skills (clarity of expression in speech, visual style)

Stakeholders: eg venture capitalists, franchise holders, publishers, producers, design team members

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 describe visual style and elements of gameplay used in game design with some appropriate use of subject terminology	M1 explain visual style and elements of gameplay used in game design with reference to detailed illustrative examples and with generally correct use of subject terminology	D1 critically evaluate visual style and elements of gameplay used in game design with supporting arguments and elucidated examples, and consistently using subject terminology correctly
P2 generate outline ideas for a game concept working within appropriate conventions [CT]	M2 generate detailed ideas for a game concept showing some imagination	D2 generate thoroughly thought-through ideas for a game concept showing creativity and flair
P3 prepare design documents for a game with some assistance [SM]	M3 prepare design documents to a good technical standard with only occasional assistance	D3 prepare design documents to a technical quality that reflects near-professional standards working independently to professional expectations
P4 present a game concept to stakeholders with some appropriate use of subject terminology. [SM]	M4 present a game concept to stakeholders competently and with generally correct use of subject terminology.	D4 present a game concept to stakeholders to near-professional standards and consistently using subject terminology correctly.

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

This unit gives learners an insight into how game ideas can be formalised and communicated to team members and financial backers. It is best taught early in a course programme, allowing the concepts it develops to influence and combine with narrative, concept art and sound, and ending with a study of game engines which offers the possibility of realising some portion of the learner's own ideas for a game.

Successful teaching of this unit requires a blend of tutor-led lecture and practical sessions and individual learner research and reading. Research will include using the internet as well as taking part in the playing of a variety of games on a range of platforms. Learners will need to experience gameplay and discuss their observations in the light of their learning of game design principles. Although gameplay is an essential aspect of research in this unit it must not outweigh the other methods of teaching, and when playing games the learner must understand the specific reason for such play. Internet research should focus on the many essays on design topics available from professional game developers. Learners should be encouraged to debate their readings with their peers and take opportunities to offer their game ideas for peer criticism, as this is excellent preparation for professional practice in the games industry.

It is suggested that teaching follows the order of the learning outcomes, with study of principles being followed by development of a learner's own game ideas, which can be documented formally and finally presented to an audience.

When studying game design principles, learners will need, after initial lectures, to explore and comment on the gameplay they experience in a wide range of game genres in a structured, systematic way. At each stage, therefore, they will experience a game which best exhibits the principle being studied, before focusing attention on a different principle through experience of a different game. In parallel, learners must read widely from the literature available in print and online, and must be encouraged to use technical language in their descriptions of the principle under consideration. Learners could practise integrating their understanding into game reviews which could be offered on a regular basis to a sympathetic editor of a local newspaper (this would have the additional advantage of allowing the class group to have a regular column promoting learners, course and centre). Deconstruction of games is beneficial in consolidating learning of visual style and gameplay.

When studying ideas for game concepts, learners could take a systematic approach, identifying design principles common to games within a genre and then attempting to generate personal ideas for a new game within that genre. Learners should repeat this activity for a number of game genres. They should be encouraged to widen their experience and should consider genres they have previously disliked, since the industry works across many genres. A study of ideas for 'serious' games is commended since this is likely to be a growing area of work in the future.

Exemplars of game design documents are available from the internet and in textbooks; these should be studied to learn the language used and the layouts implemented. No single layout is common across all developers, though many documents have similar elements and structure. Centres are strongly encouraged to seek a close relationship with at least one organisation in the game industry (publisher, design studio, distributor etc) which could be approached to provide a typical design document layout.

In the games industry, many variants of design document are employed, from a single phrase 'hook' encapsulating that spark of innovation that is the reason for the game's being and which makes it special, to a highly technical 100 (or even 1000) page technical design. At this level, learners are required to study and produce only the brief 'hook', the one or two page 'high concept' which describes a game succinctly to outsiders without breaching non-disclosure agreements, and the 15 to 20 page treatment or proposal for internal use in gaining investment capital.

In the games industry, designers must have sound professional presentation skills to convince potential backers to invest in their new design. Team members must debate new ideas and explore how a concept can be realised by artists and developers. During the course of this unit, learners should exercise by making frequent briefer expositions to their peers. For example, learners could present their personal review of a new game demo, or present a reflection on their latest game concept idea. This should have the aim of teaching them to accept constructive criticism from their peers without taking offence or feeling hurt, since highly exercised meetings are common in early design stages within the industry.

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 visual style. Learners follow a sequence: <ul style="list-style-type: none"> • receive lecture explaining particular visual style • play computer game which exhibits the feature, concentrating on its use and effect • make notes on use and effect of the style seen in the game • repeat for next style.
Structured introduction to gameplay features. Learners follow a sequence: <ul style="list-style-type: none"> • receive lecture identifying individual gameplay feature • play computer game which exhibits the feature, concentrating on its use and effect • make notes recording gameplay experience • repeat for next feature.
Assignment 1 – Game Design: What’s in the Game? Learners will write an article for an online games ezine on principles of game design, with deconstructive analysis of chosen games. Article will address visual styles of chosen games and gameplay.
Introduction to commonly agreed genres. Learners: <ul style="list-style-type: none"> • receive lecture highlighting gameplay typical of common game genres • play range of computer games exemplifying the visual style and gameplay typical of the genre, identifying the genre and noting the gameplay.
Introduction to intellectual property sources and market research.
Introduction to methods of ideas generation and recording.

Topics and suggested assignments and activities

Assignment 2 – My Fame: Ideas

Learners will develop a design portfolio for a game concept in response to a given brief.

Portfolio will cover:

- genre of proposed game
- audience
- similar games already in the market
- target platform.

Introduction to game design documentation.

Learners:

- study exemplar design documents
- study hook and high-concept documents.

Assignment 3 – My Game: Design Document

Learners will create a design document treatment for game based on ideas generated in Assignment 2.

Introduction to presentation skills examining software tools and speaking skills.

Assignment 4 – My Game: the Pitch

Learners will prepare and deliver a pitch to promote the game conceived and documented in Assignments 2 and 3.

Unit learning and assessment review.

Assessment

Evidence for assessment

Assessment for this unit is likely to comprise presentations and reports describing visual style and elements of gameplay, though articles for submission to local newspapers reviewing past and current game titles could be suitable assessment instruments. Learning outcome 1 might be evidenced by the deconstruction of a game, commenting on visual style and gameplay.

Assessment evidence for learning outcomes 2 and 3 is likely to be achieved through the production of the design documents. Two documents are required: the 'high concept' (including the 'hook' and 'one sentence marketing statement') and the 'game treatment' (a 15-20 page 'concept document'). A full technical design document is not appropriate at this level. The high concept document is to be aimed at an audience outside the game studio and is expected to be brief, efficient, energetic and inspirational, while the more substantial treatment is expected to cover the concept systematically in depth and be presented to a very high standard using design language fluently. This concept document is not expected to involve complex technical descriptions explaining platform choice or to discuss how ideas are to be implemented; rather it will present a design that can be expanded and worked on later by experts.

Evidence for learning outcome 4 will be gathered in the learners' presentation of their game concept to an audience of their peers and tutors. Good relations with a game company might make it possible to add a professional to the listeners. All audience members could contribute to the grading decision (though, of course, all final assessment decisions must be made by the tutor designated to assess the unit).

Presentations must be recorded for the purposes of internal and external verification.

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.

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: evidence produced will describe both visual style and gameplay elements, though for this grade the evidence will not be related through examples to particular games. As a minimum, to achieve this grade learners must give correct descriptions of a game world and characters, and must mention aspects of gameplay covering goals, rewards and feedback. When describing visual style a learner might note: 'The graphics in this game are not great: they're simply still images of the mountain that you are climbing. The reason for this is that it is probably cheaper to make and when the game was made the technology at the time wasn't the best.' Or, when describing gameplay, 'This game incorporates some of the strategy in mountain climbing as you have to decide how many pots, ropes and tents you want your mountaineers to carry up the mountain.'

P2: ideas will be sketched out roughly and without much detail. Learners will not justify their choice of final ideas for implementation. However, they will present some verbal or visual record of their ideas and will give some indication of where the ideas came from or how they were arrived at. 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 genre within which they are working.

P3: evidence will show limited imagination with a basic approach to documentation. A learner might note, 'Core objective: the main objective for the game is to fight your way past all the enemies on the beautiful moon of Titan. It's a very colourful moon and it should be good to keep the player interested if it's full of colours and interesting objects. What has to be done by the player is they fight their way through the story and game and they have to get to the top of a mountain to disable robots. When the player has done this, they will be given a pass code and a new bigger weapon.' 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.

P4: learners will have made a presentation covering the main points of their concept but will convey little enthusiasm and will not persuade their audience of the value of their ideas.

P1 and P4: 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.

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 refer to game examples, correctly identifying the use of visual style and some game design principles. A merit grade learner might note, 'As Game X was released in 1995 we would have expected graphics similar to that of Sony's PlayStation, due to its release of that year, but the graphics used are very pixelated and lack definition. The visual style is represented in the first images we encounter which are those of two statues, which appear to be set within a temple or monastery. These images give the players a sense of realism, giving atmosphere to the Mount Everest country of Tibet. Another aspect of these images is that the Tibetan people are famous for being mountain dwellers and good climbers. So the simple visual style using realistic ethnic images allows the players to experience a more realistic game world environment.'

M2: ideas will be presented in some detail with consideration being given to such matters as the target audience and the market. They will be presented carefully through, for example, written notes or competently drawn storyboards. The ideas will reveal imagination beyond the conventional ideas of a pass grade. For example, a learner might note, 'The player guides Luco through a mountain town to build up his strength and defence for the challenges that lie ahead up Mount Telj. Luco climbs the mountain using his double-ended pickaxe and rope. He uses these also to fight enemy climbers that are after the gold he must collect. As it turns to night-time, Luco reaches the top of the mountain, being faced with evil werewolves that were climbers during the daytime. On the way down the other side, Luco must dodge tough obstacles like avalanches and chasms without dropping the gold so he can return the gold to the shopkeeper.'

M3: the documentation standard will be good, though limited support may have been sought. Language used will generally be correct and jargon will be used appropriately, as, for example:

'Audience: My targeted audience will be adventurous and like participating in outdoor activities such as hikes or camping. They will enjoy adventure games and role-playing games such as Game X and Game Y.

Language: English, French, German, Italian and Japanese.

Territories: North America, Europe and Japan.

Game overview: Mountain Quest is a side-scrolling RPG adventure game set in Mount Telj in the fictitious alpine country of Veln.'

Learners will need little assistance, though typically they will still need some support when dealing with more complex technology or trying to apply more sophisticated techniques. Like the pass grade learner, they will respond positively to any help given.

M4: learners will give a generally enthusiastic presentation covering all the main points of their concept. Learners will speak with conviction and be able to relate their concept to existing titles, showing how their idea may have value.

M1 and M4: learners will use technical vocabulary for the most part correctly, but may make mistakes or be unsure about usage at times.

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: for this grade learners will evidence confidence and mastery of knowledge of game principles, correctly relating visual style and gameplay through their use of extended examples which are fully clarified. A distinction grade learner might note, 'The game's graphics are derived from pictures taken by (photographer name), who also was the designer and programmer for the game; the images are raster graphics of low quality, evident by the high level of pixel distortion in the games screens. The graphics display: (1) the victory condition, being the summit of the mountain, with lines and dots representing the routes available; (2) the various objective points (known as 'camps') which the player is required to visit and establish a camp at before continuing (in this manner the graphics are used to express the victory condition); (3) the characters, represented by purple squares; and (4) the map along with the boundaries in the form of the routes that may be taken. The interface for the game is a point and click system with menus giving the options available.'

D2: ideas produced will be substantially detailed, coherent, and fully explained, evidencing imagination and flair and revealing an ease of creativity with dash and vigour. A distinction grade learner might note: 'After completing the climb down the mountain to the village opposite their own to meet the client, the pair are confronted by a leprechaun who congratulates them for retrieving their gold, then relays a story of how a group of humans came to him and greeted him with gifts asking for refuge, but on nightfall the men transformed into evil yetis and stole the gold. That is when he put the ad in the paper, knowing a physically able climbing team would be capable of retrieving the gold from the yetis' mountain lair.'

D3: learners will reveal a very high standard of structure and writing skills which will be close to professional standards. These documents will exhibit the achievement of autonomy in content and presentation style as, for example:

Title: Mountain Quest: The Golden Peak.

Format: Mobile; PC.

Genre: RPG. The game will feature a battle system and an inventory system. These gameplay features are representative of the RPG genre.

Gameplay: The main part of the game where the character ascends and descends the mountain will be done in a 2D side-scrolling format. Difficulties will arise in the level layout with crevasses to fall into, avalanches and rock falls to side-step and slippery ice to make climbing slower. This feature is repetitive in the platform genre. Rewards... etc.

Narrative Genre: Sci-fi – the game takes place in a fantasy.'

Distinction grade learners will be capable of working autonomously and effectively. The term 'working independently' 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.

D4: the presentation will be convincing and professional, revealing coolness under pressure, yet will be complete in content and energetic in approach, exhibiting verve and aplomb. It will have been prepared autonomously, though tutors will wish to monitor its development to assure themselves of its authorship.

D1 and D4: technical vocabulary will be secure and used correctly and confidently at all times.

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 Pearson assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, M1, D1	Assignment 1 – Game Design: What’s in the Game?	Article on principles of game design by deconstructive analysis of chosen games for an online games ezine.	<ul style="list-style-type: none"> All preparatory notes. Article as word-processed or electronic document.
P2, M2, D2	Assignment 2 – My Game: Ideas	Working as creative in the industry, response to brief from client to create an advergame.	Design portfolio containing: <ul style="list-style-type: none"> all brainstorming and ideas notes, sketches and drafts market research notes.
P3, M3, D3	Assignment 3 – My Game: Design Document	As above.	Formal design treatment document containing: <ul style="list-style-type: none"> unique selling point one-line sales pitch high-level concept game treatment document.
P4, M4, D4	Assignment 4 – My Game: the Pitch	Working as a creative in the industry, pitch game concept ideas to stakeholders.	<ul style="list-style-type: none"> Pitch slides, speaker’s notes and handouts. Recording of pitch.

Essential resources

Learners will need access to a variety of games mounted on a range of platforms. They will need access to research information when investigating principles of game design; typically this might include: design journals; books; developers and their websites; and game community websites.

Normal office software will permit digital presentation in text and in multimedia; access to some graphics software will permit image manipulation for inclusion in design documents; pencil and paper will be required for concept art, and access to a scanner to digitise concept sketches.

Employer engagement and vocational contexts

Centres should develop links with local computer game development studios which could be approached to provide visiting speakers, study visits or samples of typical documentation.

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 ...
Creative thinkers	generating ideas for their game concept trying out different ways of designing their game and following ideas through to complete a persuasive pitch adapting their ideas as circumstances change
Self-managers	organising time and resources and prioritising actions whilst generating ideas, preparing a proposal, and when preparing to pitch their game concept 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.

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	carrying out research into principles of game design carrying out research to develop ideas for their own game concept design
Reflective learners	setting goals with success criteria for their design document and presentation production work inviting feedback on their own work and dealing positively with praise, setbacks and criticism evaluating their learning and experience to inform future progress
Team workers	if working in a group to produce a game design, taking responsibility for their own role managing their personal contribution to and assimilating information from others in discussions to reach agreements and achieve results.

● 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 systems to author their design documents and prepare their pitch
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	planning for the authoring of their design documents and their pitch
Manage information storage to enable efficient retrieval	managing files created for their design documents and their pitch
Follow and understand the need for safety and security practices	handling systems to author their design documents and prepare their pitch
Troubleshoot	handling systems to author their design documents and prepare their pitch
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	researching game design principles and experiencing gameplay across a range of platforms
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	researching game design principles and experiencing gameplay across a range of platforms
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 	authoring and pitching their design document showing their interpretation of their ideas
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 the principles of computer game design
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	gathering feedback on their design work as part of their personal self-reflective practice

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	taking part in brainstorming sessions to generate ideas as a response to a creative brief
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	studying research on principles of game design
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	creating their report on game design principles, ideas, notes and authoring their game design documents.