

Unit 69: Sound for Computer Games

Unit code:	L/502/5776
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

The aim of this unit is to introduce learners to how sound is designed and produced for games. Learners will investigate the use of sound and music in games and explore sound production methods. Learners will design and produce appropriate original sounds for a game and will integrate these sounds and stock audio content into a scene of a game.

● Unit introduction

The games industry can be a very exciting and dynamic place for musicians and sound designers. Video games have become a new way of telling stories and game audio is fundamental to this. Game audio is there to drive the action. Through sound and music, a game can completely immerse a player in another universe or reality. The creative freedom to manipulate moods and environments is limited only by the technical capabilities of the machine and a composer's imagination. While being creatively liberating, interactive game audio can also be technically demanding. Designing audio and composing music for games can often be much more challenging than designing for motion pictures.

Games technology changes constantly and with every new development each new game title tries to outperform the previous one. As technology improves, every game title attempts to implement new ways of making games faster, bigger and louder than before; this means constantly adapting to new techniques of producing sound and music for games. Soundtrack for games is becoming like that of feature film music in that developers are using techniques where characters have personal themes and signature instruments. Game world locations and destinations with highly recognisable ambient and musical settings will begin to develop and expand, including the implementation and development of interactive (true adaptive) music to next-generation games.

More processor memory is being devoted to sound and music in video games, allowing sound designers to match the richness of the visuals and make a more epic sound experience for the player. A future of game audio lies in the addition of Foley. The introduction of Foley to game audio creates a more complex sound experience which captures increasingly realistic human sounds. A character moving around in a first-person shooter game has the illusion reinforced by having the armour jingling, the gun clinking, the sound of boots on the hard crunching snow and the use of music to create mood and provide audio cues.

In this unit learners will understand how sound and music are used in a game. They will develop an understanding of how sound is designed and produced for games. Learners will design and produce appropriate original sounds for a game and will integrate these sounds and stock audio content into a scene of a game.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand the use of sound and music in games
- 2 Understand methods and principles of sound design and production
- 3 Be able to create sound assets for a computer game following industry practice
- 4 Be able to apply sound assets to a computer game following industry practice.

Unit content

1 Understand the use of sound and music in games

Theory of sound: waveform (wavelength, amplitude, frequency); pitch; Hertz (Hz); decibel level (dB); sound generator (loudspeaker)

Psychology of sound: emotion; mood; perception; loudness; timbre; film and game parallels (early cinema, contemporary cinema); sound as information eg speech, iconic, symbolic, metaphoric

Audio environment: creating ambience; atmosphere; communicating what producer wants the listener to know or experience; 3D audio; surround sound; interactive adaptive audio

Sources: Foley artistry; sound libraries; original development; stock music assets

Game music: purpose eg mood, action, suspense; intro sequence; closing sequence; credit sequence; plot advancement; interactive adaptive music

Legal issues: copyright; licences; ancillary rights; royalties; property rights; talent release contract

2 Understand methods and principles of sound design and production

Sound design methodology: Foley artistry; sound libraries; original development

Sound file formats: uncompressed eg wav, aiff, au, smp, voc; lossy compression eg mp3, ra, vox

Audio limitations of game platforms: sound processor eg sound processor unit (SPU), digital sound processor (DSP); random access memory (RAM); storage; software development kit; sample rate; file format; audio output (mono, stereo, surround); direct audio (pulse code modulation (PCM)); adaptive delta pulse code modulation (ADPCM); file size

Audio recording systems: analogue; digital eg MiniDisc™, compact disc (CD), digital audiotape (DAT), hard disc; computer audio workstation; multi-track systems; musical instrument digital interface (MIDI); software sequencers; software plug-ins; sound editors; sound modules; midi keyboard instruments

Audio sampling: file size constraints (resolution, bit-depth); sample rate; mono; stereo; surround

3 Be able to create sound assets for a computer game following industry practice

Plan: considerations eg genre, sample rate, resolution, stereo or mono, processor effects, ambient sound, speech, voiceover; sound list eg audio storyboard; asset management (file storage and retrieval, naming conventions); workflow (scheduling, efficient time management); deadlines (production milestones, deliverables, quality assurance)

Recording sound: recording log; recording (fieldwork, Foley effects, voiceovers, studio)

Audio levels and metering: meters eg VU meter, peak program meter; standard operating level

Sound manipulation: editing eg cut, copy, paste, trim, channel mixer, cue points, markers; effects eg amplify, chorus, cross fade, delay, echo, fade in/out, invert, envelope, normalise, pan, reverb, reverse, resample, silence; time and pitch eg Doppler, stretch; filters eg pass (band, high, low), notch, noise reduction, pop/click, equalisation; layering; loops; cue list; play list; mix down

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

4 Be able to apply sound assets to a computer game following industry practice

Asset management: importing; organising (file storage and retrieval, naming conventions)

Edit audio: audio library material eg sound libraries, stock music assets; studio produced audio eg Foley effects, voiceovers, fieldwork

Integrate audio: synchronising sounds eg actions, on-screen movement, cut-scene; lip-synching

Audio production: mixing; rendering

Industry practice: reflect on finished product (compared with original intentions, fitness for purpose, technical qualities); production skills (ideas generation, 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 describe uses of sound and music in games using some subject terminology appropriately	M1 explain use of sound and music in games with reference to detailed illustrative examples and with generally correct use of subject terminology	D1 comprehensively explain use of sound and music in games with elucidated examples and consistently using subject terminology correctly
P2 describe methods and principles of sound design and production using some subject terminology appropriately	M2 explain methods and principles of sound design and production with reference to detailed illustrative examples and with generally correct use of subject terminology	D2 comprehensively explain methods and principles of sound design and production with elucidated examples and consistently using subject terminology correctly
P3 create sound assets for a computer game following industry practice, working within appropriate conventions and with some assistance [CT; SM]	M3 create sound assets for a computer game working to a good technical standard following industry practice, showing some imagination and with only occasional assistance	D3 create sound assets for a computer game working to a technical quality that reflects near-professional standards following industry practice, showing creativity and flair and working independently to professional expectations
P4 apply sound assets to a computer game following industry practice, working within appropriate conventions and with some assistance. [CT; RL]	M4 apply sound assets to a computer game working to a good technical standard following industry practice, showing some imagination and with only occasional assistance.	D4 apply sound assets to a computer game working 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

This unit is designed to provide learners with knowledge of how sound and music are used in a game to enhance the player's experience. Learners will develop an understanding of why sound and music are used and how each is designed and produced for games and for game elements.

The unit could be taught with a variety of activities within the teaching sessions. There will be a need for lectures, discussion and demonstrations as well as practical sessions. Learners will need to experience the use of sound and music in games. This is best achieved via structured gameplay using a wide variety of game genres on a range of platforms. Research will include the internet as well as taking part in the playing of a wide variety of games. Learners should focus on how sound and music are used to enhance the player's experience. Although this game playing is an essential aspect of research in this unit it must not outweigh the other methods of learning. When playing games, the learner must understand the specific reason for such play. Viewing films from a wide spectrum of cinema and experiencing their use of sound and musical score will support learners' understanding of the use of Foley artistry and how musical score is central to creating mood for a given scene or situation.

It is suggested that teaching follows the order of the learning outcomes, first addressing the use of sound and music, followed by the way sound is designed and produced. Learners should then produce original game audio content, finally using this audio content by synchronising the sounds into a game element. A game element in this context is a cut-scene animation, on-screen movement, actions or lip-synching.

Following initial lectures, learners will need to comment on the use of sounds and music they have experienced during structured gameplay sessions. A wide range of game genres should be used to show how genre may affect the type of sounds and music used. It may be desirable to focus the learner's attention systematically by experiencing a game which best exhibits the use of sounds or design methodology being studied, before focusing attention on a different use of music or sound design methodology of a different game. In parallel, learners must read widely from the literature available in print and online, and should be encouraged to use technical language in their descriptions of the use of sound and music in games or the sound design and production theory under discussion.

It is essential that learners produce original audio content from their interpretation of a creative brief. The brief will give the learner essential information on the general theme of the game, its genre, musical moods, ambience, sound effects, voiceovers etc that may be required for the game. To promote best practice, centres are strongly encouraged to ensure that learners use file naming conventions and produce sound lists using audio storyboards.

To produce original game audio content, learners must have the opportunity to generate sounds from fieldwork, Foley artistry and voiceovers using a range of audio recording systems. Recording logs should be encouraged as they are a fundamental tool used in the games industry to document essential information of recording sessions. Learners must manipulate their original audio content using sound editing software to produce a personal audio library.

Learners must have the opportunity to integrate and synchronise audio content for a game element. Where possible, learners should be encouraged to use their original game audio content, synchronising it to a game element. For example, learners could synchronise audio content to actions, on-screen movement, or a cut-scene.

All projects in this unit should be supported with ongoing technical exploration of the use, design and production of sound in games. Visits to game development studios and talks by industry professionals should be included where appropriate.

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 use of sound and music in games. Learners: <ul style="list-style-type: none">• receive lectures, hold discussions and attend demonstrations to examine how sound is used to create atmosphere in a game• receive lectures and hold discussions to explain how musical score is central to creating mood in a game• receive lectures to explain the legal issues to be considered when producing sound for computer games• play computer games which exhibit the use of sound and music to good effect, make notes and discuss observations.
Assignment 1: Noise Art: the Use of Sound and Music in Games Learners will write an article for an online computer game ezine on sound in computer games and how game designers use sound and music to enhance a player's gameplay experience. Article will cover: <ul style="list-style-type: none">• theory of sound• psychology of sound• game music• creating the audio environment• sources of sound and associated legal issues.
Introduction to sound design and its production. Learners: <ul style="list-style-type: none">• receive lectures and hold discussions to explain the processes involved in producing sound and music for games.
Assignment 2: Sound Design and Production Learners will write an article for an online computer game ezine on the processes involved in producing sound and music for games. Article will cover: <ul style="list-style-type: none">• sound design methodology• sound file formats• audio limitations of game platforms• audio recording systems• audio sampling.

Topics and suggested assignments and activities

Workshop sessions to develop practical sound recording and manipulation skills:

- introductory lecture covering skill to be developed in session
- interpreting creative briefs to plan audio content
- sound generation
- sound manipulation.

Introduction to integrating and synchronising audio content for a game element using original game audio content.

Learners undertake exercises in:

- editing audio library materials
- integrating and synchronising sounds.

Assignment 3: Sounds for 2D Casual Game Demo

Working individually learners will respond to a brief to create sound for a computer game.

Learners will:

- plan sound in response to given brief
- create sound assets required
- edit, manipulate and integrate game audio
- complete audio production
- give presentation of work including review of own game audio work.

Unit learning and assessment review.

Assessment

Evidence for assessment

To produce evidence for assessment of achievement of learning outcomes 1 and 2, learners could collate and present researched information via a presentation or a report explaining, in relation to learning outcome 1, how game designers use sound and music to enhance a player's gameplay experience and, in relation to learning outcome 2, the processes involved in producing sound and music for games. Research may include extracts from books, journals, articles, material published on the internet or trade publications. 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.

Evidence to assess achievement of learning outcome 3 will be original audio content generated using each of the three sound generation methods specified in the unit content. 'Original' means that it is the learner who has generated the sound, not that the sound has never been used before in a game. It is expected that a minimum of ten original sounds would be produced in total.

For learning outcome 4 the sound will be game audio content derived from audio library and studio-produced sounds.

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.

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 both the use of sound and the use of music in games, though the evidence will not be related through examples to particular games. As a minimum to achieve this grade, learners must give correct descriptions of how sound and music are used in games and must address, albeit at a basic level, the psychology of sound, audio environment, sources and game music. A learner might note, for example, 'Music sets the mood, the themes and the emotions of a game, whilst the sound effects bring the movements and actions to life.'

P2: learners will correctly describe processes involved to produce sound and music for games using some appropriate subject terminology, though for this grade the evidence will be basic and not related to examples. For instance a learner might comment, 'Sound for games only became important with the arrival of the 8-bit consoles. Early game consoles used a 1-bit processor and could only create a single sound like a beep... Cartridge-type games do not require much space for sound.'

P1 and P2: 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.

P3: the original audio content to be generated will be identified through learners' interpretation of a creative brief and through consultation with the client. To achieve this grade, the audio must be produced with some consideration of the brief. A learner might produce, for example, a Foley gunshot effect in response to a brief requiring gunfire for a game, but the Foley effect when recorded will include inappropriate background noise. Learners will keep a basic log of their recorded content (their 'recording log') and will document their use of sound editing software to manipulate each sound recorded. Learner's use of the manipulation tools used to produce their original audio content will be basic – for example, cut, copy, paste, silence, fade, trim, echo and pan. This evidence could be presented via a document with screen grabs and annotation or screen capture software with voiceover.

P4: learners will use sounds sourced from both audio library and studio-produced sounds, though they will have integrated audio only into a game element without making any attempt to further edit sounds to ensure they fully match with overall actions, on-screen movement, or cut-scene. For example, where dialogue has been used in a scene portraying a character speaking in a large hall, the pass grade learner may have correctly applied and integrated the sound but without any echo effect to give a sense of atmospheric context.

P3 and P4: 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.

M1: learners will refer to both the use of sound and the use of music in games. The evidence will involve explanation drawn from detailed illustrative examples of particular games. Learners will talk about the audio content of games in such a way as to show how or why they are used, and will show how the psychology of sound, audio environment, sources and game music contribute to the player's experience of the game. For example a learner might comment, 'Ever watched a film or television show without sound? Well, not so great is it? It's the same for games. Music sets the mood, the themes and the emotions of the game, whilst the sound effects bring the movements and actions to life. Seeing someone running through snow or across a gravel track etc just doesn't seem right unless you can hear the sound of their feet making a noise.'

M2: learners will correctly explain processes involved in the production of sound and music for games. These will be explained clearly, using generally appropriate subject terminology. The evidence will include explanations drawn from detailed illustrative examples. For example a learner might note, 'Early game consoles like console X used 1-bit processors and could only create a single sound like a beep. Although they were monophonic sounds they were there to serve a purpose. Sound for games only became important to enhance gameplay with the arrival of the 8-bit consoles. Cartridge-type games do not require much space for sound. They use small files that tell the internal sound device what notes to play and when.'

M1 and M2: learners will use technical vocabulary for the most part correctly, but may make mistakes or be unsure about usage at times.

M3: the original audio content to be generated will be identified through the learners' interpretation of a creative brief and through consultation with the client. The audio will be produced with careful consideration of the brief. For example, a Foley gunshot effect will be produced in response to a brief requiring gunfire for a game. The Foley effect when recorded should be free from inappropriate background noise or interference. Learners will keep a detailed log of their recorded content (their 'recording log') and will document their use of sound editing software to manipulate each sound recorded. Learners will use the manipulation tools necessary to produce their original audio content competently. This should be evident from their wider use of complex tools, such as normalise, channel mixer, envelope, time and pitch, notch, noise reduction, and equalisation. This evidence could be presented via a document with screen grabs and annotation or screen capture software with voiceover.

M4: learners will use sounds sourced from both audio libraries and studios. They will have integrated audio into a game element and will have made an attempt to edit the sounds to ensure they fully match with the overall actions, on-screen movement, or cut-scene. For example, where dialogue has been used in a scene portraying a character speaking in a large hall, the merit grade learner will have correctly integrated the sound and applied an echo effect to give a sense of atmosphere and context.

M3 and M4: learners will show facility and some confidence in relation to skills. Work will be approached methodically and with adequate preparation, and ideas will be worked out and presented neatly. Processes will be undertaken with care and, generally speaking, thought will be put into the work. 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 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.

D1: learners will address both the use of sound and the use of music in games. The evidence will be lucid, using explicit examples of particular games to provide clear explanation for points being made to support their opinions. Learners will justify points made using supporting evidence, developing ideas critically (that is, comparing and discriminating) and drawing out of an example precisely what it is about it that exemplifies the point it illustrates. Learners at this grade will talk about the audio content of games in such a way as to evaluate the way they are used, addressing the psychology of sound, audio environment, sources and game music and might note, for example, 'Ever watched a film, for example Jaws, without sound? Well – not so great is it? It's the same for games. Music will set the mood, the themes and the emotions of players if used well in a game, whilst sound effects bring movements and actions in the game world to life. Seeing someone running through snow or across a gravel track just doesn't seem right unless you can hear a crisp snow sound or crunching gravel beneath their feet. Pong, the hugely popular arcade game from 1972, had just one sound – 'pong' – hence the name. It had no music, ambient sounds or other sound effects, just the 'pong', yet during gameplay this single sound was able to depict the pace of the ball as it moved across the screen, promoting excitement and a sense of urgency for the player to move the paddle to hit the ball, thus proving sound is an important factor in enhancing a player's experience.'

D2: learners will fully explain the processes involved in the production of sound and music for games. The evidence will be lucid and drawn from explicit examples. Fuller and more extensive explanation, the better application of examples and the provision of argument to support points made will discriminate between this grade and the merit. A learner might note, for example, 'The early game console X used a 1-bit processor and could only create a single sound like a beep. This was due to the limited memory, storage capacity and processor speed of the console. Although they were monophonic sounds, they were there to serve a purpose. Sound for games only became important to enhance gameplay with the arrival of the 8-bit systems. Later, Atari released a line of 8-bit computers featuring 4 channels of mono sound using an innovative sound chip called "Pokey". It had four independently controllable sound channels, all able to play simultaneously. Each channel had a frequency register determining the note, and a control register regulating the volume and the noise content. Later they incorporated the Yamaha YM2149 chip, which also allowed three voices.'

D1 and D2: technical vocabulary will be secure and used correctly and confidently at all times.

D3: the original audio content to be generated will be identified through the learners' interpretation of a creative brief and through consultation with the client. The audio will be produced with full consideration of the brief. For example, a Foley gunshot effect will be produced in response to a brief requiring gunfire for a game. The Foley effect when recorded will be free from inappropriate background noise or interference and the learner will have taken care to choose the appropriate type of microphone. Learners will keep a detailed log of their recorded content (their 'recording log') and will document their use of sound editing software to manipulate each sound recorded. To achieve this grade, the learner should be able to use the manipulation tools necessary to produce their original audio content with facility. The learner will be able to discover ways to generate original game audio creatively. For instance, 'The sound of bones breaking – this sound will be used each time your player gets hit but not killed. It will signal to the gamer that she has just been hit. To generate this sound effect I recorded a carrot being snapped in half quickly and refined the sound using envelope effects provided in sound editing software X.' This evidence could be presented via a document with screen grabs and annotation or screen capture software with voiceover. The distinction grade learner will have evidence of meeting client deadlines.

D4: learners will use sounds sourced from both audio libraries and studios. The learner will have integrated audio into a game element and will have, where necessary, edited the sounds to ensure they fully match with the overall actions, on-screen movement, or cut-scene. For example, where dialogue has been used in a scene portraying a character speaking in a large hall, the learner will have correctly integrated the sound and applied an echo effect to give a sense of atmosphere and context. The learner will continue to refine this until all sounds and music are accurately synchronised and of a near-professional technical quality that blends them together seamlessly. The distinction grade learner will typically have evidence of self-evaluation, comparing their work with their original intentions through critical reflective practice.

D3 and D4: technical and production skills will be approaching a professional standard. 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, 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.

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: Noise Art: the Use of Sound and Music in Games	The learner is commissioned to write an article for a computer game ezine on the use of sound and music in games.	<ul style="list-style-type: none"> All preparatory notes. Article as word-processed or electronic document.
P2, M2, D2	Assignment 2: Sound Design and Production	The learner is commissioned to write an article for a computer game ezine on sound design and production in computer games.	<ul style="list-style-type: none"> All preparatory notes. Article as word-processed or electronic document.
P3, M3, D3 P4, M4, D4	Assignment 3: Sounds for 2D Casual Game Demo	Brief from client to produce sound for a 2D casual game demo.	Development log containing: <ul style="list-style-type: none"> planning notes project portfolio containing: <ul style="list-style-type: none"> recording log unedited sounds manipulated sound assets edited sounds integrated into interactive CD all production documentation development log personal reflective comment.

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 suite. This unit has particular links with the following units in the BTEC Art and Design suite:

Level 2	Level 3
Working with Interactive Media Briefs	Audio Production Processes and Techniques
Working with Moving Image Briefs	Sound in Interactive Media
	Soundtrack Production for Television and Film

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

Editing

- E21 Select and assemble sound to support visual images

Interactive Media and Computer Games

- IM27 Create sound effects for interactive media products

Sound

- S2 Identify, devise and manage the sound requirements
- S14 Mix recorded sound
- S16 Make sound recordings
- S20 Edit sound.

Essential resources

Learners will need access to a range of games on a variety of platforms. Access to the internet is essential for research. Learners will also need access to a range of professional-standard audio recording systems and sound editing software.

Employer engagement and vocational contexts

Centres should develop links with game development studios that 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

Brandon A – *Audio for Games: Planning, Process, and Production* (New Riders, 2004) ISBN 978-0735714137

Case A – *Sound FX: Unlocking the Creative Potential of Recording Studio Effects* (Focal Press, 2007) ISBN 978-0240520322

Marks A – *The Complete Guide to Game Audio: For Composers, Musicians, Sound Designers and Game Developers, 2nd Edition* (Focal Press, 2008) ISBN 978-0240810744

McCuskey M – *Game Audio Programming* (Course Technology, 2003)

Millward S – *Fast Guide to Cubase SX* (PC Publishing, 2005) ISBN 978-1870775984

Riley R – *Audio Editing with Adobe Audition* (PC Publishing, 2008) ISBN 978-1906005030

Sanger G et al – *The Fat Man on Game Audio: Tasty Morsels of Sonic Goodness* (New Riders, 2003) ISBN 978-1592730094

Websites

www.audiosparx.com – online resource for digital audio

www.filmsound.org/game-audio – game audio articles

www.gamasutra.com – respected website for all things game development

www.gamecareerguide.com/features/696/adaptive_audio_a_beginners_guide_.php?page=1 – game audio article making sounds for video games

www.gamedev.net – a forum, with good articles on all things game development and excellent game developer resources

www.igda.org – non-profit-making industry body, useful for research and learning support

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	<ul style="list-style-type: none"> generating ideas for sound assets to be used in computer game context trying out different ways of creating their sound asset production, following ideas through to produce an asset library for a game adapting their ideas as circumstances change
Reflective learners	<ul style="list-style-type: none"> reviewing and reflecting on their sound assets production and application and acting on the outcomes to modify and improve their work setting goals with success criteria for their 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
Self-managers	<ul style="list-style-type: none"> producing sound assets to be used in a computer game context 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	<ul style="list-style-type: none"> carrying out research into the use of sound and music in computer games carrying out research into the methods and principles of sound design and production carrying out research to develop ideas for their own sound asset production
Team workers	<ul style="list-style-type: none"> if working in a group to produce sound assets, 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 sound recording and editing systems to create their game audio
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	planning for the creation of their game audio
Manage information storage to enable efficient retrieval	managing assets sourced and created for their game audio
Follow and understand the need for safety and security practices	handling sound recording and editing systems to create their game audio
Troubleshoot	handling sound recording and editing systems to create their game audio
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	sourcing sound assets for their game audio production
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	researching asset types and their limitations for use with their game audio production
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 	building and presenting their project portfolio showing their interpretation of their brief and their generation of ideas, documenting the management of their chosen assets, considering legal implications 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 game audio production tools
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	gathering feedback on their game audio work as part of their 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 manufacturers' manuals to research game audio production software
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	creating their project portfolio incorporating ideas, notes, production documentation and reflective comment.