Course: Music Technology

A–Z Concept Glossary

Level: Multi-Level

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This advice and guidance has been produced for teachers and other staff who provide learning, teaching and support as learners work towards qualifications. These materials have been designed to assist teachers and others with the delivery of programmes of learning within the new qualifications framework.

These support materials, which are neither prescriptive nor exhaustive, provide suggestions on approaches to teaching and learning which will promote development of the necessary knowledge, understanding and skills. Staff are encouraged to draw on these materials, and existing materials, to develop their own programmes of learning which are appropriate to the needs of learners within their own context.

Staff should also refer to the course and unit specifications and support notes which have been issued by the Scottish Qualifications Authority.
http://www.sqa.org.uk

A–Z concept glossary

2, 3 or 4 beats in the bar (N3)	A bar containing either 2, 3 or 4 beats.
2/4, 3/4, 4/4 (N4)	Time signatures in simple time.
60s pop (N5)	Music popular in the 1960s which paved the way for, and greatly influenced, the development of pop music. Acts such as The Beatles, The Rolling Stones and The Animals are pop acts from the 1960s.
6/8 (N4)	Time signature in compound time.
A tempo (N4)	The music returns to the main tempo (speed) after there has been a change.
Accel(erando) (N4)	The tempo (speed) of the music gradually becomes faster.
Accent/accented (N3)	Accented notes are notes which sound louder than others.
Accents (H)	An accented note is played louder than others. Accents can fall either on or off the beat and can produce very interesting rhythms.
Accompanied/ unaccompanied (N3)	Accompanied: other instrument(s) or voice(s) support(s) the main melody. Unaccompanied: there are no instruments playing in the background.
Acoustic/electronic (N3)	Describes how an instrument produces its sound.
Acoustic guitar (N3)	The acoustic guitar is a stringed instrument that is played by plucking or strumming the strings with fingers, or by using a plectrum.
Acoustic horn/cylinder	Original process for capturing recorded sound until around the mid 1920s. Musicians would perform in front of a

	large flared horn that would funnel the sound waves onto a small thin diaphragm. The diaphragm had a stylus attached which imprinted the sound waves onto a rotating wax cylinder.
ADSR envelope (H)	The 'shape' of a sound in relation to time and volume. As a note is played it has variations in volume and these can be generally summed up as the note's *attack*, *decay*, *sustain* and *release* (or *ADSR*). Different instruments exhibit different general envelopes. Percussive sounds are, by their nature, short and loud, but wind and string instruments take a while getting to their maximum volume and then can stay there for a prolonged period of time due to either blowing or the movement of a bow. *Synthesisers* can emulate these characteristics of acoustic instruments using an envelope generator circuit which controls each of these parameters.
Ambience (H)	Similar to a room's *acoustic* although generally the term only refers to small spaces. Ambience is the acoustic sound generated by a room. With the judicious use of microphone techniques, the ambience of a room in which an instrument is being recorded can be picked up and added to the *direct sound* of the instrument. This gives a greater sense of space within the recorded sound and can lead to a very natural-sounding stereo image.
Anacrusis	The notes which appear before the first strong beat of a musical phrase, particularly at the start of a piece.
Apps (N4)	An app is a software application that runs primarily on mobile devices such as smartphones and tablet computers.
Arco (N5)	Instruction given to string players to use a bow.

Arrange window (N4)

The window in a digital audio workstation where the recorded information is accessed.

Arrangement (N4)

How a song or piece of music is structured.

Ascending (N3)

Ascending notes rise in pitch. Compare descending. Notes can ascend by leap or stepwise.

Atonal (N5)

Atonal music has no feeling of key, major or minor. It is very dissonant and lacks a 'nice' melody and accompaniment.

Audio/MIDI interface

A device that will normally house XLR, jack sockets and a MIDI port, allowing for instruments/microphones and MIDI equipment to be connected to a computer/tablet for the purposes of recording. Typically the interface will connect to a computer via either a USB or Firewire connection.

Auxiliary in(put)/out(put) (N5)

The aux in/out are functions of a mixing desk allowing the signal from a channel to be bussed. In a studio application the signal could be bussed to an effects unit/plugin, or sent to a separate headphone mix for an artist recording. In a live application the aux out can be sent back to the stage for monitoring.

Auxiliary send/return (N5)

A mixing desk function allowing a signal or group of signals to be *sent* to a separate output – an *auxiliary* output – for either monitoring or processing. In the case of monitoring a *pre-fade* send will be used. For effects processing a *post-fade* send will be used and the signal with the process added to it will then be *returned* to the mixing desk.

Backing vocals (N4)

Singers who support the lead singer(s), usually by singing in harmony in the background.

Backup copy (N3)

An additional copy made of data and used in case the original copy becomes corrupted.

Baritone (N5)

A male voice whose range falls in between a tenor and bass.

Bass guitar (N4)

The bass guitar is pitched lower than a guitar. It is an electric string instrument and has four strings – E, A, D and G – which are the same as the first four strings on a guitar. The first mass-produced electric bass guitar was developed by Leo Fender in the early 1950s. It mirrored the strings on a double bass (E, A, D and G). The electric bass works in a similar way to the electric guitar where the pickups (transducer) convert vibrations into electrical energy, which is transferred to an amplifier. The bass guitar largely replaced the double bass in popular music from the 1960s onwards.

Beat (N3)

The pulse of the music.

Beat matching (N5)

This is a technique used by DJs to move seamlessly from one song to the next. As one song is being played, the next song is lined up. By using pitch shift on the turntable to slightly speed up or slow down the tempo of the upcoming song, the tempos are matched. The DJ then crossfades from one song to the next. This process can then be repeated.

Beat/pulse (N3)

The basic beat in music. The pulse may be in groups of two, three or four, with a stress on the first beat in each group.

Binary (AB) (N4)

A form in which the music is made up of two different sections labelled A and B.

Blowing

A technique for playing an instrument,

Blues (N3)	Blues music developed from the field hollers of the African slaves brought to America in the 18th and 19th centuries to work on the plantations in the southern states. During the 20th century blues became popularised and many famous musicians rose to stardom, among them Muddy Waters, BB King, Howlin' Wolf, John Lee Hooker, Stevie Ray Vaughan and Eric Clapton.
Boost EQ/cut EQ (N5)	A frequency can be selected and have gain either added (boost) or removed (cut).
Bowing (N3)	A technique for playing an instrument,
BPM (beats per minute) (N3)	Indicates the metronome mark to be used in the music, which shows the performer the tempo of the piece.
Brass instruments (N4)	The main orchestral instruments in the brass family are trumpet, French horn, trombone and tuba.
Bridge/link passage (N5)	A section which will normally link the verse and chorus, or lead after the chorus into the verse.
Broken chord/arpeggio(N4)	Notes of a chord played one after the other.
Capture (N3)	This refers to the way in which sound is recorded.
Cassette recorder/player/tape	A cassette recorder is a small portable machine for both playing back and recording onto compact cassettes. Similar to the reel–to-reel tape recorder but more compact, it uses magnetically coated plastic tape that passes through either a tape head for playback or a magnetic recording head for recording.

CD players	CDs (compact discs) revolutionised the recorded music industry when it was introduced in the 1980s. For the first time, music was offered on a digital medium as opposed to analogue. The Red Book standard for CD recording is 16bit 44.1Khz.
Change of key (N4)	A move from one key to another.
Channel (N3)	This is the name given to the track that is being recorded.
Chord (N3)	Two or more notes sounded together.
Chord change (N3)	A series of chords played in order.
Chorus effect and depth (N5)	An effect whereby short *delays* and slight modulations are added to a signal to make it sound as if there is more than one player. It therefore applies a detuning effect, which can be detrimental to some instruments (for example the acoustic piano) but can be very effective on others (for example the electric guitar).
Chromatic (N5)	Notes which move by the interval of a semitone.
Click track (N4)	A metronome track recorded onto one track of a multitrack recorder to provide a guide tempo and count-in for the performers. Click tracks are usually generated electronically and so ensure that drummers don't slow down or speed up. Care must be taken not to include the click track in the final mix of the music.
Clipping (H)	This is where a threshold level has been passed. In digital recording, any signal above the 0 db threshold will cause clipping. It can be a severe and potentially damaging form of distortion that happens when a signal is too high for the piece of equipment it is being fed into. This can be particularly damaging to

loudspeakers. Manufacturers include many safeguards to avoid clipping in their equipment. It is very important to monitor meters and input lights. Flashing red is never a good sign.

Close mic'd (N5)

When a microphone is positioned between 2 cm and about 30 cm from an instrument, it is said to be close mic'd. Close mic'ing helps to reduce problems with *leakage* from other instruments nearby, but can lead to other problems related to sound level and the *proximity effect*. It can also mean that performers may hit the microphone or that the microphone will also pick up the sounds of the instrument being played (keys on a flute moving, for example). As with all microphone techniques, the potential problems have to be weighed up against the benefits.

Cluster (N5)

A term used to describe a group of notes that clash when played together.

Coda (N5)

A passage at the end of a piece of music which rounds it off effectively.

Compression

A dynamic process that allows the engineer to reduce the level of loud passages and increase the level of soft passages.

Compressor (N4)

A *dynamic processor* that can automatically control the *gain* of a signal. Once the incoming signal has reached a predetermined *threshold*, the compressor reduces the output of the signal by an amount determined by the *ratio* control. Effectively this is like a fraction, so if a ratio of 2:1 is set the amount of signal above the threshold will be halved, a ratio of 4:1 means it is quartered and so on. Compressors also have an *attack* control, which determines how quickly the compressor reacts, and a *release* control, which determines how quickly the compressor stops compressing

	once the signal has gone below the threshold again.
Copy, cut and paste (N4)	Useful tools when editing both audio and MIDI. These functions enable the movement of data from one part of the recording to another.
Countermelody (N5)	A melody played against the main melody.
Country music (N5)	Country music from the southern states of the USA that developed through the 1920s and encompasses both American folk music and music from the western part of the USA. Early exponents of the style were artists such as Jimmy Rodgers and the Carter Family. Country music has remained popular throughout the decades. Artists who have embraced and developed the style include Johnny Cash, Willie Nelson, Leanne Rimes and Shania Twain.
Crescendo (cres)(N3)	The music gradually becomes louder.
Cross rhythms (N5)	Contrasting rhythms played at the same time or played with unusual emphasis on notes.
Crossfade (H)	This is a technique where as one sound source fades out, another fades in. In audio engineering terms it can form a seamless transition when cutting between different takes of the same track.
Cut-off frequency (H)	The frequency above or below which attenuation begins in any filter.
Cyclical/loop (N5)	A setting which allows a selected length of a recording to be repeated automatically.
dB (decibels) (N5)	The measurement of the amplitude of a sound wave. The greater the amplitude, the louder the volume.
Delay (N3)	The time interval between a direct signal and its first echo and subsequent repeats. In audio the delay time is in 1 ms steps. Modern

digital-delay processors can repeat the original sound forever and with an almost infinite initial delay time.

Descending (N3)

Descending notes fall in pitch.

Digital processor (N5)

A digital signal processor is a microprocessor capable of rapid analysis of a signal, which can allow it to be enhanced or modified.

Diminuendo (dim) (N3)

The music gradually becomes quieter.

Disco (N3)

Disco music grew to its most popular in the 1970s. It usually consisted of a 'four to the floor' beat, and latterly often used a synthesiser to provide bass lines such as in the Donna Summer's track 'I feel love'.

Distortion (N4)

An electronic effect used in rock music to colour the sound of an electric guitar. It gives a 'fuzzy' sound rather than the usual clean sound.

Distortion/overload (N3)

This is the term for having too much audio signal gain on a channel during the recording process. With the audio signal input gain set too high, the signal will overload and distort, which is indicated by a red light on the channel.

DJ decks/mixer

DJ decks are conventionally two, or in some cases more, turntables for playing stereo vinyl. Each turntable is connected to a separate channel on the DJ mixer. This enables the DJ to cue up the next track while the first one is still playing. The DJ will listen in to the next record through headphones and attempt to beat match between songs.

Drop in/out (N5)

This is the same process as punch in and out, although to perform a drop in/out the engineer will select the area to be recorded before the pass.

Drum fill (N3)

A rhythmic decoration played on a drum kit.

Drum kit (N3)	A set of drums and cymbals often used in rock music and pop music.
Dry/wet (N3)	The amount of audio signal to which an effect is mixed. Completely set to 'dry', no effect will be added, completely set to 'wet', only the effected signal will be heard.
Effects (FX) (N4)	Effects recreate an environment and can alter the sound. FX are time based and include reverbs, delays, flange, chorus etc.
Effects pedals (N4)	Often used in live settings, effects pedals cover a range of different effects from reverbs, distortions and delays to vocal processing. These can be switched on and off via a pedal on the floor.
Eight-track recording/multitrack recording (analogue and digital)	Multitrack recording allows multiple tracks to be recorded simultaneously and each track to be manipulated before mixing to a stereo master.
Electric guitar (N3)	A solid body guitar which requires an electric amplifier to produce sound.
Electric guitar (solid body)	Developed through the 1940s and 1950s the solid body electric guitar requires electric pickups which capture the vibrations of a string and converts them to electrical energy, which can be sent to an amplifier.
Electronic drum kit	An electronic drum kit often resembles an acoustic drum kit, but pads mounted on stands replace the standard shell and skin setup from a conventional drum kit. The pads can be made from rubber or, in more expensive drum kits, a mesh system. When they are hit they trigger a corresponding drum sample. It is normal for an electronic drum kit to have its own MIDI sound module, but it can also be used to trigger a sampler or a software instrument on a computer.

Electronic organ	This is an electronic keyboard instrument with a double manual keyboard and pedals. Often different sounds and rhythms can be accessed in the same way as on an electronic keyboard. The instrument has developed in a number of ways and given rise to popular instruments such as the Hammond organ.
Electronica/dance music (N4)	Electronica is a broad term encompassing a range of music styles, including dance music, where the production of the music uses synthesisers, samples and loops.
Equalisation (or EQ) (H)	The process used to alter the frequency of an audio track across the frequency spectrum. Frequencies can be either cut or boosted depending on the requirement of the audio track. There is a range of different EQ options normally within digital audio recording, such as parametric, paragraphic, and graphic. It is important for sound engineers to gain a recognition of the frequency spectrum as this will allow for easier identification of problems within an audio track where instruments share the same space or there are resonant frequencies present. It is worth noting that if a great deal of time is being used to correct a sound source through EQ, it would be worth experimenting with microphone choice and placement to ensure that the sound being recorded is as close to the source sound as possible.
Equaliser (EQ) (N3)	A signal processing device designed to provide engineers with the ability to control and shape the frequency, altering the tonal content of an audio signal passing through it. Equalisation is used for a variety of reasons for correcting, enhancing, contextualising or blending the sound source. The parametric equaliser is the most common type of equaliser used for music production. The

	parametric equalisation section of a mixing console or software application provides two switchable on/off filters: a *high pass filter* and a *low pass filter*. The audio signal is divided into four bands of frequencies, each band corresponds to a region of the audio spectrum: low frequency (LF), low-mid frequency (LMF), hi-mid frequency (HMF) and high frequency (HF). Within each band the parametric equaliser has three adjustable parameters allowing the engineer to select a *frequency*, adjust the *size of the Q* and apply a *cut or boost* to the frequency content within the band/region.
Expander	A dynamic processor that works by turning down the volume when the signal level falls below the threshold, then turning the volume back up when the level goes above the threshold.
Fade in (N5)	When a track or piece of music increases in volume gradually from silence.
Fade out (N5)	The opposite of a *fade in* – when a track or piece of music decreases in volume gradually to silence. This has become a widespread practice in *mixdown* technique as a tidy way of ending a song.
Fader (N4)	The linear sliding control that adjusts a channel's output. A fader is not a volume control, it is a variable *attenuator*. When the fader is fully down, it is at maximum attenuation, and when it is fully up, it is at minimum attenuation. The signal, therefore, is always present, the fader just determines how much of the signal is allowed to pass through. This can be seen as similar to a sluice gate in a lock. While the gate is shut or down, no water is allowed to flow. When the gate is raised, the water may flow. Opening the gate further lets more water flow.

Feedback (N4)	This is a sound loop where the signal into an input device such as a microphone is amplified through loudspeakers. This is again picked up by the microphone and amplified further through the loudspeaker. Feedback is usually characterised by a high-pitched whine, although a number of factors affect the sound, for example type of microphone, acoustic properties of the room, loudspeaker type, microphone placement etc.
File compression (H)	The conversion of a larger file such as a .wav audio file into an mp.3 file, allowing a greater capacity for numbers of files to be stored. Smaller files also allow easier transfer over networks and the internet. Compressing an audio file does, however, cause a loss in audio quality.
File management (N4)	This refers to how all data from a recording project is stored. It is important that folders are labelled and all associated files are sited within that folder enabling easier location of all the tracks within a project.
Filter (H)	An electronic circuit designed to *boost* or *attenuate* a designated range of frequencies. See also *equaliser*.
Final mix (N4)	The version of the mixdown that will actually be submitted as a stereo master. The final mix features a balance of instruments that all involved are happy with, additional effects that enhance the overall production and perhaps the application of some dynamic processors, usually equalisers and compressors, to the overall mix.
Format (N3)	The process of erasing a disc drive either for initial use or for setting up file systems.
Gain (N3)	The gain control on a mixing console or hardware device is a small signal amplifier. To set a proper mix gain structure the overall

	S/N (signal to noise) ratio should be maximised. The signal input is the first stage of the signal path of the recording procedure, and it is important when using the gain control of the recording device to capture the best signals to record. Setting a signal gain too low will mean the engineer has to compensate after the recording (use a compressor) for low-level signals by increasing output volumes; this results in increased noise floor levels. Too much gain on the signal will overload the input circuitry and result in a distorted signal. Every microphone, every instrument and each vocalist produces different quality source levels. The gain control allows the engineer to bring each signal source to an equal level for recording purposes.
Gated reverb(eration) (N5)	An effect whereby a *noise gate* is applied to the output of a *reverb* processor. The natural decay of the reverb is therefore cut off sharply, resulting in a rather startling unfinished sound. The effect is most often used on drums and gives a powerful, if slightly obvious, sound. Nowadays, effects processors tend to have gated reverb settings preset within them with varying reverb characteristics and gate times.
General MIDI (GM) (N4)	Musical instrument digital interface. A *digital* language that enables devices to talk to one another in a standardised format. While MIDI was originally devised for keyboards and musical instruments, more and more effects processors and devices are responding to it and may be programmed using MIDI. General MIDI became an industry standard set of sounds and controllers which promoted a greater degree of compatibility across equipment.
Glissando (N5)	Sliding from one note to another, taking in all the notes in between where possible.

Glitch (N5)

A short and nasty 'click' in *digital* audio. This may be caused by a corruption of the digital information or a poor *edit* of the sound file.

Gramophone records

The earliest form of recording on flat disc was made from Shellac resin from 1898 to the 1950s. Gramophone records evolved to be played at 78 rpm (revolutions per minute). The disc came in two sizes: the 12-inch disc playtime was 4–5 minutes per side and the 10-inch disc playtime was 3 minutes per side. The 10-inch record was most common. The sound quality was characterised by the limited frequency range recorded. Lower frequency instruments were not reproduced very well in gramophone recordings.

Guide vocal (N4)

A vocal track that is recorded in the early stages of the project to give the performers an indication of the progression of the song. This will generally be replaced later in the project by a more carefully performed and recorded *lead vocal* track.

Guitar pick-up

This is a transducer which converts mechanical energy (vibrations from the string) into electrical energy, which can be amplified.

Harmonics (H)

These can be produced on a stringed instrument by lightly touching the string at a certain place along its length. There is a direct relationship between where the string is dissected and the note produced, for example a harmonic produced exactly half way along the string will produce a harmonic at the octave.

Harmony/chord (N3)

The sound of two or more notes made at the same time.

Hip hop (N5)

The roots of hip hop can be traced back to the 1970s. As a style its development

	coincided with the development of the early drum machines such as the TR 808. There was also extensive use made of turntables incorporating beatmatching. Vocals also started to be added to the textures in the form of rapping.
Homophonic (N5)	Texture where melody is heard with accompaniment or where all the parts play a similar rhythm at the same time.
Hum (N5)	A low-frequency noise (60Hz) normally called mains hum. There are several causes of mains hum, such as if the earth reference voltage is different at one end of the signal path to another, or if an audio cable is run through coiled mains cable.
Imitation (N4)	Where the melody is immediately copied in another part.
Impedance (H)	Impedance is the amount of resistance to the current flowing through an electronic device. It is measured in ohms.
Import/export (N5)	A useful function allowing file types not native to the programme to be opened by importing or saved in a non-native format to be opened by another programme. In a digital audio workstation the most common file types to import or export are audio files (.wav/.aiff).
Impressionist (H)	A number of arts movements developed in response to what had come before. Impressionism was no different, being developed as reaction to the chromatic nature of music from the Romantic period. One of the ways in which impressionist composers responded to the chromatic music from the Romantic period was to base melody and harmony on pentatonic and whole-tone scales. There were a number of composers who were writing in the impressionist style, but the main two were

Claude Debussy and Maurice Ravel. Debussy took inspiration from a number of sources, such as hearing the far-eastern percussion orchestra the Gamelan with its gongs and metallophones at the Paris world fair in 1889. The music written in the impressionist style mirrors the style of painting by artists such as Claude Monet, where edges between objects are often blurred. This effect was created in the music through the use of cross rhythms, often tying notes across a barline, and on piano particular use was made of the sustain pedal.

Improvisation (N3)

The performer makes up music during the actual performance. They don't have the melody written down to help, although there may be suggested chords as a guide. Improvisation is an important feature of jazz and popular music.

Indie (H)

Music initially made and released independently from a major record label. The term has gained a much wider use and came to typify Britpop bands in the 1990s such as Oasis, Blur and Pulp.

Input (N4)

The connection in an audio device which receives a signal. Inputs should always be connected to outputs.

Insert point (H)

A mixing desk connection that takes the signal from an input and sends it to an external processor in such a way that the signal flows through the external processor before being returned to the rest of the mixer channel. Insert points are used predominantly for patching in dynamic processors due to the fact that such processors need to change the basic nature of the signal in some way. Insert points tend to be in the form of a single TRS jack socket where the tip of the socket sends the signal out, the ring of the socket returns the signal to the desk and the sleeve is earth. More

	complex mixers may have a separate socket for each function, send and return.
Instrumental break (N5)	A solo instrument section during a song.
Interval (H)	The distance in pitch between two notes, eg C–F is a 4th. The excerpt contains all the intervals starting on C and using all the white notes on a keyboard for one octave.
Intro/outro (N4)	Not all songs and pieces of music have an intro or an outro, but the intro is a section of music at the start and an outro is a section of music found at the end of a song or piece of music.
Inversion (H)	1. When a musical shape is mirrored. 2. An inverted chord is formed when a note other than the root is in the bass.
Inverted pedal (N5)	A note which is held on or repeated continuously at a high pitch.
Irregular time signatures (H)	Irregular time signatures are used primarily in 20th-century music, for example 5/8 or 7/8, which creates rhythmic interest.
Jazz (N3)	A style of music originating in the southern states of America in the early 1900s. It has developed over the past 100 years, giving rise to a number of different styles of jazz, such as ragtime, swing, bebop and trad. There have been many great jazz musicians, such as Louis Armstrong, Duke Ellington, Ella Fitzgerald, Oscar Peterson, Miles Davis, Dizzy Gillespie and Charlie Parker.
Jazz funk (H)	Jazz funk is a sub genre of jazz music. Its main features include a strong rhythmic 'groove' and also a move towards using more amplified instruments and synthesisers.
Juke box	Juke boxes were coin-operated vinyl players where the customer would select the track to be heard. They were most popular between

the 1940s and the 1960s although the peak of their success was in the rock 'n' roll era of the 1950s.

Latency (N5)	The delay between a signal going into a processor and coming back out again. While latency may occur to a small degree in most audio devices where what is being input is being simultaneously monitored, it predominates in *A/D converters* and *D/A converters* in computer-based recording setups. This is due to the time it takes for the computer to digitise and then undigitise the audio information and is directly related to the processing speed of the computer. Faster processors significantly reduce any latency.
Lead vocal (N4)	The main vocal part in a song.
Leap (leaping) (N3)	Jumping between notes which are not next to each other.
LFO (low frequency oscillator) (N5)	An oscillator used as a low-frequency modulation source, for example in the *chorus* effect, whereby the delayed signal is detuned by LFO modulation.
Limiter (H)	A *dynamic processor* that stops a signal from going over a predetermined limit. Essentially a limiter is a *compressor* with fairly extreme settings: a high *ratio* and a very fast *attack* time. Limiters are used in live sound as protection devices. If there is a sudden spike in a signal, the limiter can react quickly and prevent *loudspeakers* getting damaged.
Line level (N4)	The output from a purely electronic source, for example a keyboard or any processing device. The actual output level is set by the manufacturer to industry standards depending on the standing of the equipment as 'semi-professional' (–10 dBV) or 'professional' (+4 dBu).

Locators (N5)

These can perform a range of functions within a digital recording. For example, they can be set to a beginning and end point to allow a section of the track to be played as a loop, or they could be used to select the in and out points for a drop in.

Major/minor (tonality) (N4)

The music sounds in a major key, often described as having a cheery, happy feel, **vs** the music sounds in a minor key, often described as having a sad feel.

Markers (N5)

These can be added to recordings on a digital audio workstation to help identify and easily find key sections of the track, for example verse, chorus, solo instrument.

Mezzo soprano (N5)

A female voice whose range falls in between a soprano and alto.

Microphone level (mic level) (N4)

The level or voltage of a signal produced by a microphone. Typically mic-level signals are considerably lower than *line-level* signals, so a *pre-amplifier* must be used to *boost* their output. In some *condenser* microphones the output of their built-in preamplifier is high enough not to require any more boosting. Will need 48 V(phantom power) to power the microphone pre-amp.

Middle 8 (N4)

In popular music, a section which provides a contrast to the opening section. It is often eight bars long.

MIDI (N3)

Musical instrument digital interface. A digital language that enables devices to talk to one another in a standardised format. While MIDI was originally devised for keyboards and musical instruments, more and more effects processors and devices are responding to it and may be programmed using MIDI.

Minidisc	Developed by Sony in the early 1990s, the minidisc was a small device for storing digital data. Minidiscs could be easily recorded onto and were adopted by many studios as their first choice in mastering. The rise of inexpensive recordable CDs and compact flash memory soon made these formats grow in popularity amongst consumers. This led to a decline in the use of Minidiscs. Commercial albums were initially released on minidisc although by that stage, CDs had a large share of the digital music market.
Mix/mixing/balance, mix (down) (N3)	The act and art of creating a balance of all the recorded tracks, engineering and processing where appropriate and necessary, and creating a two-track stereo-mixed version of the music.
Modulation (N5)	A change of key during a piece.
Modulation controller (H)	At the most basic level, the modulation controller can be used to create vibrato effects using MIDI. The controller is assignable and can be used to create other effects, such as controlling the tremolo on a Hammond organ plug in, or the attack and swell of MIDI string instruments.
Mono(phonic) (N3)	A single channel of *audio*.
MP3 players	These play back mpeg-1 or mpeg-2 audio layer III, usually referred to as mp.3. This file format is a compressed form of encoding for digital audio allowing larger audio files to be compressed into a smaller size. MP3 players have been around since the mid 1990s, although it was the entry of the iPod to the market in the early part of 2000s that led the way for a portable music revolution.
Multieffects processor (N5)	A piece of hardware that offers a number of different effects, for example reverbs, delays and choruses. These are most commonly

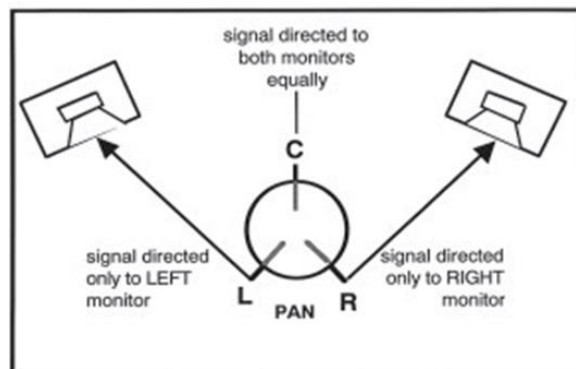|	
	used these days in live settings, but they are still found within a studio environment.
Musical (N5)	A musical play which has speaking, singing and dancing, and is performed on a stage.
Musique concrete (H)	Recorded natural sounds which are transformed using simple editing techniques such as cutting and reassembling, playing backwards, slowing down and speeding up.
Mute (N4)	To turn a *channel* or a *track* off totally. Cutting and muting are mainly used in *mixdown* to either eliminate unwanted parts of a track or reduce the noise from an unused channel or track.
Muted (N4)	An effect created by using a device which reduces the volume or alters the sound of an instrument.
New wave (H)	Bands from the late 1970s and early 1980s who followed on from the punk genre were described as 'new wave'. The style diversified from being driven by heavy guitars to incorporating synths and became an inclusive term for a number of sub-genres. Bands like Blondie and Talking Heads could be described as new wave.
Noise gate (N5)	A signal-activated switch. If a signal reaches a preset *threshold*, the noise gate opens and allows the signal to pass through. If the threshold is not met, the gate stays shut, eliminating any lower level noise or *hiss*. Gates are very effective and useful devices in the studio, operating as automatic *mutes* or *cuts* to reduce low-level background noise while recording using microphones.
Normalising (N3)	The process of affecting the overall gain of an audio file. It can be thought of as having the same effect as turning a volume control up or down. Peak normalisation will scan an audio file, adjusting the entire amplitude of

the wave by the same amount, based on the peak level. For example, if the track 'peaked' at –6 db and the normalisation was set to -3 db, the gain of the entire track would be +3 db.

Octave (N4) — The distance of eight notes, eg from one C to the next C.

On the beat/off the beat (N3) — Notes played on the stronger beats (on) vs notes played on the weaker beats (off).

Organ (N3) — A keyboard instrument usually found in churches. It usually has more than one keyboard, plus pedals that are played with the feet.

Ostinato (N3) — A short musical pattern repeated many times.

Output (N4) — The connection in an audio device from which its signal comes. Outputs should always be connected to inputs.

Overdub (N4) — In *multitrack* recording, the act of playing a new track of material in *synchronisation* with one previously recorded.

Panning (N3) — Critical to the sound design and placing of sounds in the stereo image of your audio mix. The stereo image has two basic perspectives, left to right and front to back. The pan pots control the left-to-right axis. *Volume, reverb, delay*, *filtering* and *ambience* create the front to back.

Parameters (H)	A variable value that affects an aspect of a device's performance or programming.
Patch (H)	The name given to the routing of a signal to an audio recording device. In large setups with many routing options, a patchbay may be used which provides greater flexibility in routing the signal. A patch is also the name given to a preset sound on a synthesizer.
Pause (N3)	A note or rest that is held longer than written. The pause sign (looks like an eye and an eyebrow) is written above the note or rest that is to be held as a pause.
Peak (N4)	The maximum level of any signal.
Pedal (N4)	Short for pedal point. A note which is sustained, or repeated continuously, in the bass beneath changing harmonies.
Percussion instruments (N4)	Percussion instruments can be tuned (xylophone, marimba etc) or non-tuned (bass drum, snare, triangle etc).
Performance software	Recording software for capturing a live musical performance.
Phase/phaser/flanger (H)	An effect whereby the original signal is *delayed* and then played back on top of itself. This gives a swirling filter effect as the frequencies cancel each other out in turn.
Phrase marks (H)	A notated phrase mark is similar to a slur and indicates a length of music that naturally falls. In singing, for example, a phrase will often give an indication of where to breathe.
Piano (N3)	A keyboard instrument which produces sounds by hammers hitting strings.
Pitch bend (N5)	A control message on keyboards designed to change the notes' pitch in relation to a performance wheel or lever. The term may

	also be applied to the guitar technique that bends the strings in order to change the pitch of the note played.
Pitch bend (N5)	Changing the pitch of a note, for example by pushing a guitar string upwards.
Pizzicato (pizz.) (N5)	An instruction given to string players to pluck the strings instead of using the bow.
Playback (N3)	To recall and play pre-recorded music.
Player pianos	These grew in popularity in the late 19th and early 20th centuries until the rise of radio in the 1930s. Player pianos could be played in the same way as a conventional piano, but they also contained a roll inside which could read perforated paper. The information contained on the paper not only mechanically operated the notes of the music but could also contain other information such as dynamics, tone, tempo and expression.
Playlist (N5)	In certain pieces of recording software, a playlist will enable the user to organise what tracks to play and when. This can be beneficial for deciding song arrangement.
Plucking	A technique for playing an instrument.
Plug-ins (H)	A software programme that can apply effects processes to an audio file. Generally speaking, the plug-in software draws on the internal processing power and capabilities of the computer rather than using its own hardware except in some professional situations where, in order to operate fully, the plug-in requires additional hardware that has to be connected to the computer. There are currently two main types of software technology applied to plug-ins: *RTAS* and *VST*. While these are standards for

different manufacturers of software, conversion software is available to enable the use of VST plug-ins on RTAS programmes and vice versa.

Polyphonic (N5)

Texture which consists of two or more melodic lines, possibly of equal importance, which weave independently of each other.

Popping and blasting (N4)

Caused through a blast of air from a plosive sound such as a 'b' or a 'p' type sound. This sudden rush of air close to the diaphragm of a microphone is low-frequency energy, causing the typical low-frequency thumping sound. This can be overcome by either moving a little further from the microphone or using a pop shield.

Portamento (H)

A MIDI control which allows the user to 'slide' between notes. The time the slide takes can be adjusted so that it happens slowly or quickly. This ability adds realism to MIDI instruments such as the saxophone.

Post-fade (H)

Post-fade *auxiliary sends* are used to send signals to effects processors. The fact that the amount of signal going through a post-fade send is determined by the fader position gives the engineer greater control over the positioning of the sound. More fader level and less aux send will make the sound closer, while less fader level and more aux (auxiliary) send makes it sound further away. This gives the mix engineer control over the front-to-back dimension of the music.

Pre-fade (H)

A signal that is monitored or routed before it has passed through the channel fader and is therefore independent of the fader position. Pre-fade *auxiliary sends* are used primarily for *monitoring* or *foldback* mixes, enabling musicians to hear a mix that is separate to that being monitored in the *control room* or heard through the PA system.

Proximity effect (H)

A low-frequency boost that occurs in *cardioid* dynamic microphones when they are placed particularly close to the sound source. This unnaturally colours the sound and can be detrimental to the overall signal, but in some live situations it can help lift a vocal out of the mix slightly. Proximity effect is an inherent characteristic of a dynamic microphone, resulting in a rise of low frequencies when the microphone is used at very close working distances. The SM58 dynamic microphone is the most commonly used live microphone due to the warm sound it creates, its robust handling and its price.

Punch in/out (N5)

A technique in multitrack recording that lets a performer record over mistakes or change parts previously recorded by punching in and out of record mode while the machine is in playback. Punching in can be performed by an engineer pushing the right buttons at the right time or the performer hitting a foot switch at the required point.

Punk (N5)

Punk music developed in the 1970s and was a rebellion against the poor economy and high unemployment rates. The music was loud and energetic, and often carried a political message. Artists include The Clash and the Sex Pistols.

Quantisation (N5)

MIDI notes can be quantised in a number of ways. At the most basic level, notes can be moved either backwards or forwards, making them rhythmically accurate. On a MIDI workstation quantising notes can be 'snapped' to a specific rhythm, for example quavers or triplets.

Radio

The radio was the first device to communicate to mass audiences. In 1922 the BBC was transmitting only to the London area, by 1925 it was broadcasting to the whole of the UK. The BBC received its Royal Charter in 1927. When World War II began,

the BBC stopped TV broadcasting so that transmissions could not be used as a beacon by enemy aircraft; only radio covered the war. By the late 1960s and early 1970s FM commercial, national and regional radio stations started broadcasting, providing more programme choices for the listener. By 2000 radio had expanded into the satellite and internet markets.

Ragtime (N4)	A style of dance music which became popular at the end of the 19th century and which helped to influence jazz. It is recognisable by on-the-beat bass and chords and syncopated melody. A key composer in this style was Scott Joplin.
Rall(entando) (N4)	The tempo (speed) of the music gradually slows down.
Rap (N4)	Rhyming lyrics that are spoken and performed in time to a beat. Rapping is popular in hip-hop music.
Record (N3)	To store a performance onto a medium so it can be played back or edited.
Reel-to-reel magnetic tape	Until the advent of digital recording, reel-to-reel tape was the standard recording medium in studios. The tape was held on a reel which passed through the recording head and wound onto a second reel. It was not contained within a cassette but was open, which allowed producers to undertake some editing.
Relative major/minor (H)	A change from minor to major key using the same key signature but found three semitones higher, eg D minor to F major/ A change from major to minor key using the same key signature but found three semitones lower, eg C major to A minor.
Repetition (N3)	An exact repeat of a musical idea.

Reverb(eration) (N3)   The natural series of very short and dense reflections of a sound that occur in a confined space such as a room or a hall. While echoes with a longer delay would be discernible, in reverb the echoes happen so fast and are so dense it is impossible for the listener to hear individual repeats. Reverb is the essence of natural sound. Listening to a *close mic'd* instrument is like having the instrument play in your ear in a very small room. The addition of reverb to a sound makes it appear as if the instrument is being played in a real acoustic environment, for example a church or concert hall. Nowadays reverb can be emulated digitally very easily and nearly all effects processors have a wide range of reverb types for different applications. See also *gated reverb*.

Riff (N3)   A repeated phrase usually found in jazz and popular music.

Ritardando (rit) (N5)   The music gradually slows down.

Rock (N3)   A genre of music developed through the late 1960s and 1970s that gave rise to many sub-genres. It developed from the American blues and was typified stylistically with heavy sounding distorted guitars. Popular rock acts include Black Sabbath, Led Zepplin, AC/DC, the Rolling Stones, Deep Purple and Iron Maiden.

Rock 'n' roll (N5)   1950s American music which grew from the combined styles of jazz, blues, gospel and country. The main exponents of rock 'n' roll were Elvis Presley, Jerry Lee Lewis and Chuck Berry.

Rolls (N5)   A very fast repetition of a note on a percussion instrument, eg on a snare drum or timpani.

Sample (N3)   A digital snapshot of an acoustic sound. An *A/D converter* takes a constant stream of

	samples in order to convert acoustic sounds into *digital* information. A sampler can take a short series of these snapshots, alter their pitch and duration, and play them back as tuned notes.
Sample editor (H)	Also known as a wave editor, this allows the user to undertake detailed editing on a waveform. Examples include Audacity, Sound Forge, Cool Edit and Renoise.
Sample frequency (H)	The speed at which an *A/D converter* takes snapshots of the incoming signal in a second. The more samples it can take in a second the greater the increase in the frequency response and therefore the better the quality of the A/D converter. CDs typically feature a sample rate of 44,100 Hz, or 44,100 individual snapshots in any 1 second, but it is not unusual to find digital recording systems and hardware with sample rates up to 192,000 Hz.
Sampler (N5)	A sampler records short extracts of audio material that can be looped or triggered from another device.
Save (N3)	The process of storing a file digitally.
Scale (N4)	A sequence of notes moving by step in an ascending or descending order.
Scat singing (N4)	Nonsense words, syllables and sounds are improvised (made up) by the singer. Sometimes the singer is imitating the sounds of instruments. The jazz singer Ella Fitzgerald is well known for her scat singing style.
Scottish/Celtic rock (N5)	A style of music that mixes Celtic folk music and rock together, such as Big Country, Runrig and Wolfstone.
Sequence (N3)	A melodic phrase that is immediately repeated at a higher or lower pitch.

Sequenced data (N3)

Information relating to the input of MIDI data in the form of note information (length, velocity etc) and associated controllers.

Sequencer (N4)

A sequencer can record, edit and play back music. Sequencers have been around for a long time. Early examples includes the player piano which would have a sequence of notes punched onto a roll of paper, which would be 'read' by the piano. Nowadays sequencer generally refers to software used to record music, but it can also refer to the step sequencer where the user inputs data over a series of 'steps', normally subdivided into semi-quavers.

Session log (N3)

Used to capture information about a recording session such as track information on signal gain, type of microphone/DI, how many takes to achieve recording, EQ, compressors, gates, panning and effects.

Shelving (H)

An *equaliser* filter that either boosts or attenuates constantly below or above a set frequency. On a graph, therefore, the equalisation curve resembles a shelf rather than a bell-shaped curve.

Sibilance (N4)

A sound with exaggerated 's' and 'sh' sounds caused by a rise in the frequency response around 4 kHz to 7 kHz. Noticeable on vocal sounds and cymbals. It can cause problems and often depends on a number of factors, such as microphone choice and the proximity of the microphone to the singer. There are several ways of correcting sibilance involving microphone choice and placement, or post-recording using a de-esser, which is a compressor-type processor designed to react to frequencies rather than sound level.

Signal path (N4)

The journey a signal will take from capture through to monitoring via speakers or headphones. To ensure good-quality

	recording and quick troubleshooting, it is important to understand the signal path.
Signal-to-noise ratio (H)	The measurement of the intrinsic noise in the output of a device in relation to the signal. It is important to ensure the gain structure of a recording is well set up to maximise the level of the sound source during the recording. An audio track recorded at a low level is likely to be affected more by the relative noise level on the output of the track.
Simulator (H)	Simulators change the characteristics of an audio track. There are a range of different simulators, such as vinyl simulators where the recorded audio is made to sound like it is playing from an LP. There are simulators in which the recorded material can be made to sound as if it has been recorded with different microphones.
Skiffle (N4)	A style of music popular in Britain throughout the 1950s combining folk, blues and country music.
Slower/faster (N3)	The tempo (speed) decreases (slower) vs the tempo (speed) increases (faster).
Solo (N3)	One instrument or voice. A prominent instrument or voice can be solo even when part of a larger ensemble.
Soul music (H)	Soul music developed in the southern states of America and grew in popularity throughout the 1960s. It was a combination of gospel, blues and country music, and its gritty sound reflected what was happening socially in America at that time. One of the main centres for soul music was in Memphis, Tennessee, home of Stax records, where musicians from different ethnic backgrounds joined together to write and record music. At this time, segregation was still a big problem in the southern states. Artists recording with Stax included Aretha Franklin, Otis Redding, Sam

& Dave, Isaac Hayes, Booker T & the MGs and the Staple Singers. In Detroit, Michigan, a style of soul music was also developing. Although it had the same heartfelt emotion and passion in the music, the sound was smoother than that of Stax records. Detroit was the home of Motown records. Artists who recorded with Motown included the Jackson 5, Diana Ross, Martha Reeves, Marvin Gaye and Smokey Robinson.

Sound card (N5)

A sound card is the interface between inputting and outputting sound in a computer. Sound cards are internal and slot into the motherboard of a computer.

Spillage/leakage (N5)

This occurs when unwanted external sounds are picked up by a microphone. Generally used to describe the unwanted sound of one musical instrument as heard by a microphone in front of another instrument.

Staccato marks (H)

Markings above a note which indicate the performer should play them short and detached.

Step (stepwise) (N3)

Moving up or down between notes that are next to each other

Stereo LPs

Stereo LPs developed in the late 1940s, replacing the 78 rpm style phonograph. They were made from vinyl and had smaller grooves than the 78, which required a much finer needle(stylus), and spun at 33⅓ rpm. Stereo LPs continued to develop through the 1950s and became the standard, allowing artists such as Jimi Hendrix and Pink Floyd to experiment with the stereo image.

Stereo master (N3)

The final *mixed* recording of any project. As most replay systems are *stereo*, the *multitrack* recording has to be mixed down to a *two-track* master in order for it to be replayed.

Stereo(phonic) (N3)	A two-channel audio system with the channels designated as left and right. Devised primarily because we have two ears, stereo reproduction of recorded sound has been the norm for many decades as it offers an excellent representation of what we hear acoustically. Any *multitrack* recording has to be *mixed* to stereo in order for it to be played on a standard domestic hi-fi system. When played back simultaneously the audio system will create a 'phantom' imaginary centre image.
Streaming audio	The process by which an audio file is delivered over a network or the internet and not stored locally. There are many services which offer streaming facilities for music eg Spotify and We7.
Striking (hitting)	A technique for playing an instrument,
String instruments (N4)	The main instruments in the orchestral string family are violin, viola, cello and double bass.
Strophic (N5)	A song that has music repeated for verses/choruses, therefore the same music will be heard repeating throughout the song.
Strumming	A technique for playing an instrument,
Swing (N4)	A jazz style which started in the 1930s and was performed by a big band. The numbers and types of instruments in big bands increased during this period through the influence of swing.
Synchronisation (sync) (N4)	When two or more tracks or devices play at the same time, in time.
Syncopation (N4)	Strongly accented notes playing off or against the beat. Syncopation occurs in all kinds of music.
Synth pop (N4)	The style of music in which the synthesiser was central to the sound of the production.

	The style was popularised in the 1980s with bands such as Duran Duran, Ultravox, Erasure etc.
Synthesiser (N3)	An electronic instrument, usually keyboard-based, that uses electronically generated waveforms through filters and processors to emulate (or synthesise) acoustic sounds.
Take (N4)	A performance recorded on a single pass.
Tempo (N4)	The speed of a piece of music.
Ternary (ABA – three-part form) (N4)	A three-part form of music in which section A is followed by section B, which is a different melody, and then section A returns.
Threshold (H)	Control on various *dynamic processors* that determines the point at which the process is applied to the signal. For example, on a *noise gate*, the threshold is the point at which the gate opens and lets the signal pass. Signals that do not reach the threshold remain unaffected.
Through-composed (H)	A vocal/choral composition where the music for each stanza (verse) changes to reflect the narrative of the text.
Time changes (H)	The variation between different time signatures within a piece of music.
Time compression/expansion(H)	Digital audio workstations and audio editing software often provide a function to correct the length of audio material either in a track or part of a track through shortening or lengthening the audio recording. This can be used to correct timing problems within a track or to create very interesting effects and textures.
Time domain effects (N3)	Effects such as phasing, flanging, chorus, automatic double tracking (ADT), slapback, echo and delay are created by a small amount of echo (1–10 s). Time domain

effects are created by taking a sound source, copying it and delaying the copy in relative time to the original sound, then adding them together to adjust the feedback control to create more than one repeat of the copy, the modulation width can be adjusted to vary the pitch of the copy and lastly the speed can be adjusted to control the frequency rate of the copy. The copy is then mixed with the original sound.

Tone control (N4)

A basic form of *equalisation* on basic devices. The tone control will not have the sophistication of studio equalisers and will in general have only three controls – bass, mid and treble – to *boost* or *attenuate* a range of pre-assigned frequencies (car hi-fi systems).

Tone/semitone (N5)

The distance between two notes, equivalent to two semitones, for example two frets on a guitar.

Toolbox (N5)

In a digital audio workstation the toolbox contains the main user functions such as the split tool, glue tool, pointer, select etc.

Track (names/list) (N3)

Each track is named within the computer session or on the mixing console, for example in a music session each instrument is represented by a named track, eg kick, snare, hi-hat etc. Ensuring this is up to date will enable smooth workflow.

Track object (H)

Data that is recorded in the edit window of a digital audio workstation.

Transport bar/controls (N4)

Common in digital audio workstations (DAWs). The transport bar is a floating tool which contains the main functions required for recording onto a DAW, such as record, play, rewind, zero stop, etc.

Transpose (N5)

Transpose is the function which allows audio and MIDI data to be pitch shifted or modulated to a different key.

Triggering (H)

A form of sample replacement whereby one sound source can be used to activate another. This has practical applications in the studio, for example when recording a drum kit that may have bled between the microphones. The individual hits could be used to activate other sampled or MIDI drum sounds.

Trim (N3)

Also known as the *gain* control, the trim control adjusts the level of a signal coming in to the *pre-amplifier* of a *mixing desk*.

Unison/octave (N3)

Singing or playing the same notes at the same time. The notes do not necessarily have to be in the same register.

USB (port) (N3)

A universal serial bus (USB) port is a communication protocol between electronic devices. It was developed in the mid 1990s and allows much faster transfer of data between a range of devices. USB ports are standard on most computers and allow a range of MIDI, audio, storage and other devices to be connected and recognised.

Vamp (N4)

A rhythmic accompaniment with a bass note played on the beat and a chord off the beat. Usually played on piano or guitar.

Velocity (H)

A MIDI parameter which registers the force in which a MIDI input device such as a keyboard plays a note. This information is registered and can be edited and adjusted. The velocity of notes can be used to deliver a more expressive performance.

Verse and chorus (N4)

A structure/form popular in many songs. The music of the verse will repeat, often with different words, and between verses the chorus will normally repeat and feature different music to the verse.

Vinyl LPs/45 rpm records	These were made from polyvinyl chloride plastic. Vinyl LPs played at 33⅓ rpm and single and EPs at 45 rpm. These analogue mediums of reproducing recorded music are referred to as 'records'. Vinyl was the dominant source of recorded music throughout the 1960s and 1970s. In the late 1980s digital recordings in the shape of CDs overtook vinyl sales.
Virtual instrument tracks (N3)	Virtual instruments are generally controlled via a MIDI input. They emulate the sound of a wide range of instruments and are commonly used in recording studios. It is normal on a digital audio workstation for a special track to be created for a virtual instrument, which can be assigned a MIDI channel in order to control it.
Virtual instruments	Plug-in-based software that is hosted within a digital audio workstation. Virtual instruments are usually played via a MIDI keyboard and emulate the sounds of real instruments, such as strings, grand piano, Hammond organ etc. Developments in computing processor power have seen further developments in the capabilities of virtual instruments.
Vocal enhancer (N5)	This is can be a hardware or software multi-effects unit combining a range of functions, eg compression, de-essing, harmoniser, pitch correct, which can be used by a singer in a live or studio environment.
Voice/vocals (N3)	The human instrument used to speak or sing.
Voices – SATB (N4)	A group consisting of the four main types of voices used in choral music. Soprano and alto are female voices, tenor and bass are male voices.
Volume (N3)	Used to describe how loud or quiet a source of sound is.

Walking bass (N5)	A bass line (low notes) often featured in a variety of jazz styles. The bass line constantly moves up and down a pattern of notes, and is often played on a double bass.
.wav/.aiff files (N4)	.wav and .aiff file formats are both ways of capturing uncompressed audio data. Both are compatible with Windows and Mac-based systems.
Wax cylinders	Early medium for storing recorded information.
Whole-tone scale (N5)	A scale containing no semitones but built entirely on whole tones.
Woodwind instruments (N4)	The main orchestral instruments in the woodwind family are flute, oboe, clarinet and bassoon.