Unit 4.3: We are musicians
Creating a piece of music in GarageBand

Software: GarageBand
Hardware: iPads, headphones, musical instruments such as MIDI keyboards (optional)

Overview

In this unit, pupils explore GarageBand and create their own composition and performance. In:

- **Session 1** they recall earlier work building a percussion sequence
- **Session 2** they explore the **touch instruments**
- **Session 3** they create music using the **piano roll** view
- **Session 4** they experiment with **live loops**
- **Session 5** they create their own multi-track composition
- **Session 6** they refine their composition and get feedback from their classmates.

Alternatives

GarageBand also works on Macs, although it is a different version. LMMS (Linux multimedia studio) is a good, free alternative for Windows. The subscription service SoundTrap provides a good online tool for creating music.

Knowledge, skills and concepts

In this unit, pupils will learn to:

- create a repeating percussion rhythm
- play music using virtual instruments
- compose or edit tunes using the **piano roll** (pitch and duration) tool
- perform electronic music using pre-recorded loops, and create their own loops
- create a multi-track composition or performance using multiple instruments
- give feedback to others on their compositions and performances.

Progression
In Key Stage 1:
- Pupils first used GarageBand in **Unit 1.5: We are rhythmic**.

In Key Stage 2:
- Pupils will continue to develop their media production skills in **Unit 5.3: We are architects**, **Unit 5.6: We are VR designers** and **Unit 6.5: We are advertisers**.
- There is the opportunity for them to apply their GarageBand skills in **Unit 6.5: We are advertisers** to create a jingle for their advert.

Assessment – by the end of the unit:

All pupils can:
- create a repeating percussion pattern
- play at least one **touch instrument**
- create a piece of music using the **piano roll**
- play a piece of music using **live loops**
- combine two or more **tracks**.

Most pupils can:
- edit a repeating percussion pattern
- use Smart mode with touch instruments
- edit a piece of music using the piano roll
- add extra loops to a grid
- combine tracks using recordings, percussion and touch instruments.

Some pupils can:
- combine two or more percussion patterns
- play a familiar tune using a touch instrument
- use piano roll to create or edit a piece of music using chords
- create or edit loops
- use automatic or semi-automatic accompaniment.

Cross-curricular opportunities

Music: Link to knowledge and skills acquired in music lessons, drawing on the expertise of the music teacher. Recorded instruments and singing can also be imported into GarageBand.

Background information

- Digital music has two principle pathways:
  - First, singing and analogue instruments can be recorded on a computer. The sound pressure received at the microphone converts to a stream of numbers. These values can then be manipulated in much the same way as the colour values for each pixel in a digital image.
  - Second, **MIDI** format records the pitch, duration and **velocity** (volume) of notes played. How the notes are played back can be subsequently specified (e.g. on what instrument they should be played, at what volume and which audio **samples** might be associated with each note). MIDI format music can be created note by note, either on a **stave** or a **piano roll** representation of the music.
- Applications like GarageBand mean that anyone can compose and record music, regardless of formal music education. The software may seem complex initially, but the technical skills required can be mastered quickly.
- Apple's GarageBand allows both approaches to be combined in a multi-track format. Digitised input from microphones can be recorded and played back alongside MIDI-based audio samples. GarageBand has incorporated automated accompaniment, meaning percussion **tracks** can be created to accompany a tune.
- GarageBand is a computer program which describes the sequence of sounds, functions (filters or effects) to apply, and when sequences should be repeated. The SonicPi programming language would allow pupils to experiment with this directly through code.
- A cross-curricular approach linking technical skills here with pupils developing musical knowledge and understanding is necessary to get the best out of this unit.

Key vocabulary

Beat sequencer: interface for creating a repeating percussion pattern, showing at which beat in a set of bars individual instruments are hit

Live loops: GarageBand tool for creating and performing electronic, typically dance music, in which multiple samples are played with synchronisation managed by the software

MIDI: 'Musical Instrument Digital Interface', originally a standard for connecting electronic instruments, now used for the associated file format in which note pitch, duration and velocity are specified, allowing subsequent playback using different instrument voices or samples

Piano roll: interface for controlling the pitch and duration of individual notes, a digital equivalent of stave notation, derived from the punched-hole piano rolls used for player-pianos in the 19th century. The velocity (volume) of individual notes can also be specified

Sample: a short, recorded piece of digital audio, for example a hand clap or an individual note

Stave: traditional musical notation in which pitch is represented by the height of the line on which the note is drawn, and duration by the shape of that note

Touch instrument: GarageBand interface for keyboards, strings and percussion instruments, which can be played and recorded live on the iPad screen

Tracks: GarageBand tool for combining and modifying music recorded, performed or created using other components of the program

Velocity: here, the volume of individual notes – mirroring the speed and force with which piano keys are pressed determines the volume of the notes played

Voice: in this context, the virtual instrument chosen to replay music, with the associated samples of notes at different pitches

Differentiation

Pupils could compose a rhythm just using high or low tom-toms, or their tune composition could be restricted to a piano or glockenspiel. They might use a template of just four loops for each of the four rows or channels, or arrange familiar songs. Provide pupils with the notes for some songs, both in **stave** notation and as note names and durations (WS4.3a).

Pupils who play an instrument can experiment with creating music for the GarageBand equivalent of that instrument. Pupils more confident with working independently on iPads can explore the effect of changing options and settings at note, **sample**, loop/track or song level.

Further suggestions for support and challenge are provided in the notes on each session (pages 33–38).

Preparation for teaching the unit

⬍ Things to do

- Check you have access to iPads, GarageBand and headphones.
- Prepare some familiar pieces of music for pupils to play. For Session 3 you will need a simple, familiar piece of vocal music written in traditional stave notation for pupils to sing.
- You could arrange access to musical instruments and MIDI keyboards.
- Read pages 30–31 to get an overview of the unit.
- Read the steps in the unit sessions (pages 33–38) and look at the associated online resources, printing out the worksheets as required.
- Watch the CPD videos if you are using LMMS rather than GarageBand (see *Additional resources*).
- Work through the unit yourself, so you know what is expected of pupils.
- If pupils are going to share their work or save their work online, make sure they have accounts set up, that necessary permissions have been obtained and that these are integrated with the iPads they are using.

❓ Resources needed

- **Software:** GarageBand
- **Hardware:** iPads, headphones, musical intruments such as MIDI keyboards (optional)

🖱 Online resources provided

Session resources

- Worksheet 4.3a: End-of-unit quiz
- Worksheet 4.3b: Pupil self-assessment
- Teaching slides 4.3a–4.3f
- Walkthrough videos 4.3a–4.3h
- Interactive end-of-unit quiz 4.3

Additional resources

- CPD video: Digitising audio files
- CPD video: Understanding audio file formats
- Software in 60 seconds: LMMS 1
- Software in 60 seconds: LMMS 2
- Software in 60 seconds: LMMS 3

↖ Online safety

- Pupils should work on their own iPads during the session, without any need for access to the web. Pupils might need to download additional templates, instruments or loops for GarageBand, but this is done from inside GarageBand itself.
- Some pupils may wish to seek inspiration from online music recordings, or explore online help for GarageBand. If so, make sure that the necessary Internet filters and monitors are in place and watch out for explicit or otherwise inappropriate lyrics.
- If pupils upload completed music to the Internet, ensure that any copyright conditions are satisfied and that pupils' identities are protected.

🤝 Collaboration

Pupils can work together with a partner on a single iPad. GarageBand's jam mode allows pupils to connect iPads together to collaborate to perform and record a song (see *Useful links*).

🌐 Useful links

Software and tools

- GarageBand on the App Store
- Denemo: **www.denemo.org**
- LMMS: **lmms.io**

Online tutorials

- GarageBand User Guide: **www.support.apple.com/en-gb/guide/garageband-ipad/welcome/ipados**
- Beginner's Guide to GarageBand: **www.youtube.com/watch?v=pmR15yoeN_o**
- GarageBand for iPad tutorial: **www.youtube.com/watch?v=RRbUaqbbwTk**
- Introducing GarageBand: **www.youtube.com/watch?v=b9h61mrqhfU**
- GarageBand jam mode: **www.support.apple.com/en-gb/guide/garageband-ipad/chsf2f99ff5/ipados**

Information and ideas

- Music technology in the classroom: **www.musiceducation.global/music-technology-getting-started**
- Apple Books: *GarageBand for Schools*
- iPad and technology in music education: **www.ipadmusiced.wordpress.com**
- GarageBand in the elementary classroom: **www.cnx.org/contents/nJgUiTlk@4/GarageBand-in-the-Elementary-Classroom**
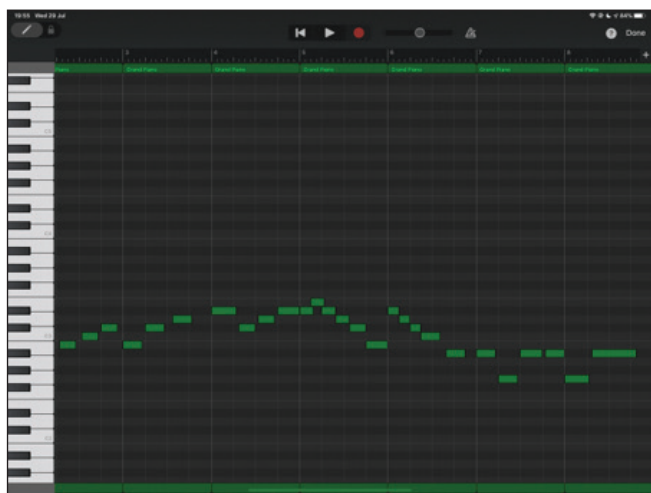- Glittering Ideas: **www.freeplaymusic.com/#/music/192397**

Unit outcomes

Below are some examples of the outcomes you could expect from this unit.
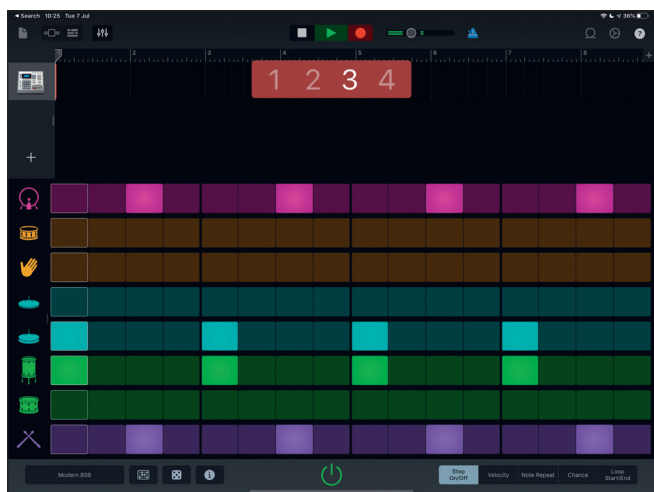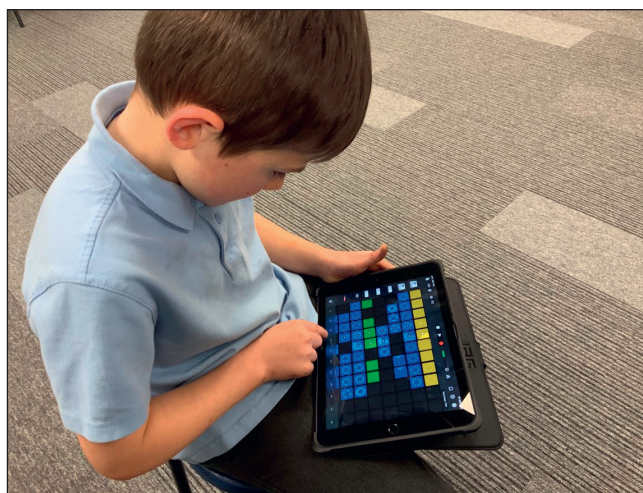

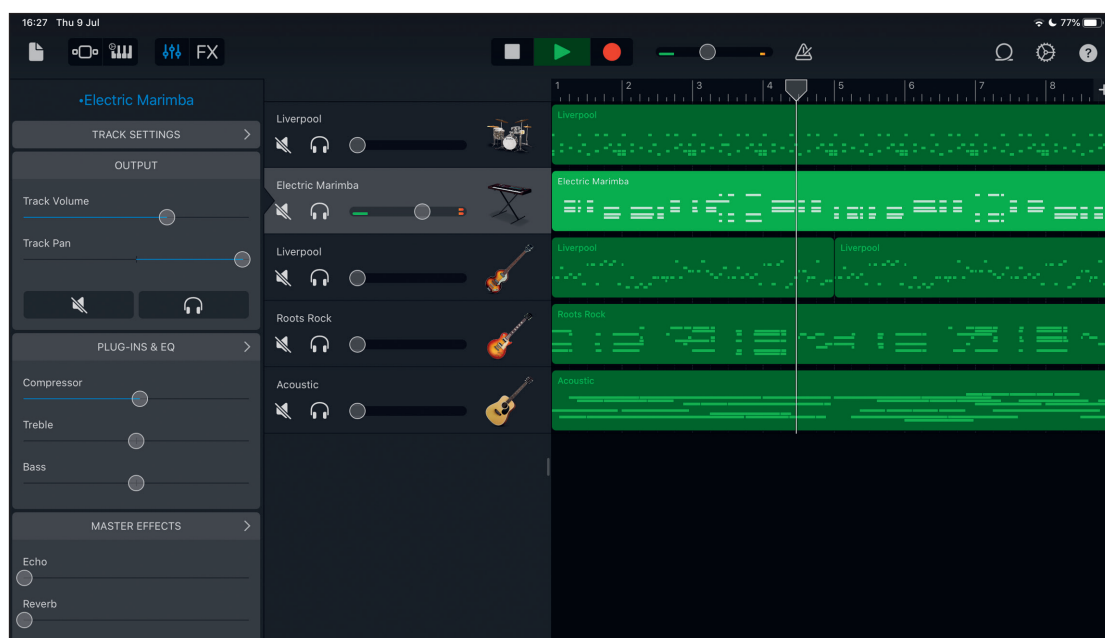**Session 1:** Creating a percussion sequence in GarageBand
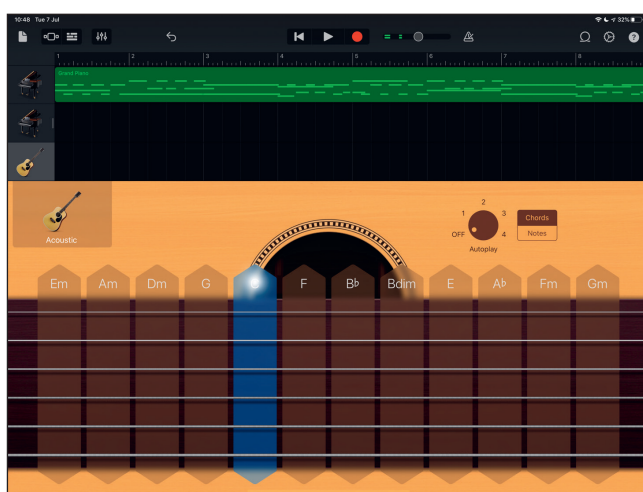
Session 2: Experimenting with instruments in Smart mode

Session 3: A short tune in piano roll mode

Session 4: Experimenting with live loops

Sessions 5 and 6: Creating and refining a multi-track composition