Explanation of basic terms

Filter A high-pass filter only lets through sounds above the cut-off pitch (high sounds). A low-pass filter only lets through lower frequency sounds (deep sounds)

Reverb makes the music sound like it was recorded in an echoic cathedral, or perhaps your bathroom!

Delay adding repeats of the sound as if it were played in a cave

Degrader This effect is often used to add a 'retro' quality to sounds, like those very popular gaming machines that had 8 bit sound.

Phaser giving a "whoosh" synthetic sound making it sound sci-fi! Indeed, the voice of C-3PO from Star Wars was created by taking the actor's voice and treating it with a phaser.

Distortion is the horrible sound made when you record something too loud! Lead guitarists in rock bands, however, like the sound it makes!

Compressor This is an effect that reduces (compresses) the dynamic range of the signal input, so that it isn't so varied.

EQ stands for "Equaliser" and is several tone controls to remove or add more of frequencies like 'high', 'mid' and 'low'.

Limiter This stops sounds being any louder than at the point it is set. Imagine having a teacher who suddenly shouts when you are not expecting it, this device stops it being so loud that it makes you jump!

Fakie This is a weird sounding device, making the music sound digital.

Tremolo This adds a trembling (vibrato) effect to the sound

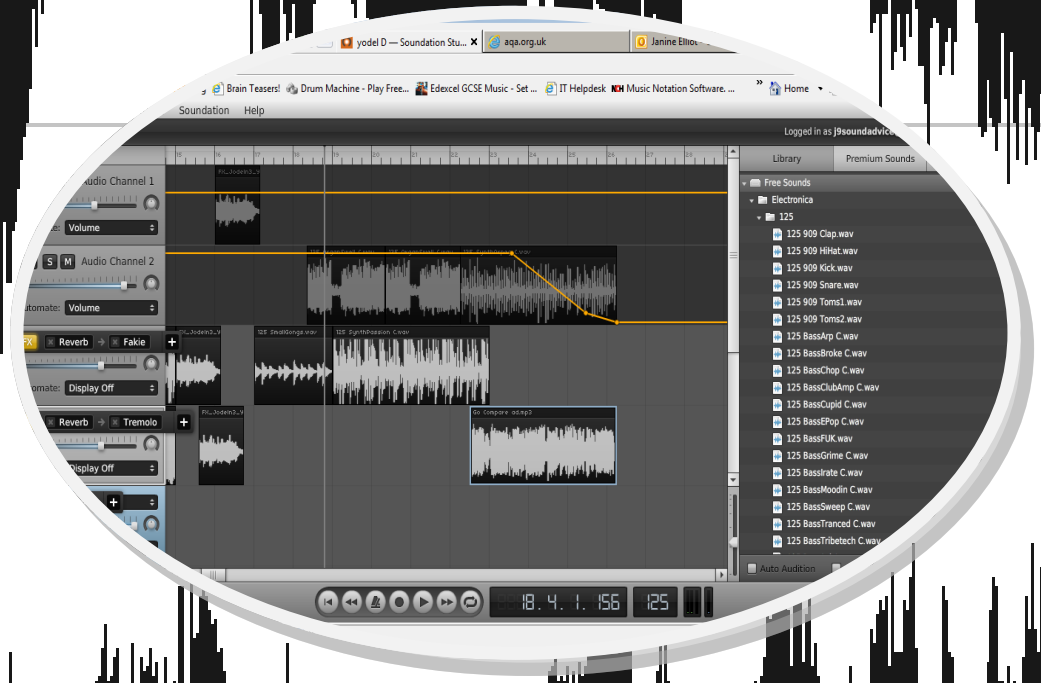
Normalise If a sound was recorded at very low level (very quiet), 'normalising' it brings it to the loudest it can be before it distorts.

Quantising is the process of ensuring notes are set exactly on beats or fractions of beats to fit in exactly with other tracks in the **Arrange Area.**

Name_____ Class_____Teacher_____

The Marlborough Science Academy
'shaping futures'

Introduction to Music Technology



Some History.....

Using computers to make music is nothing new. A scratchy recording of "Baa Baa Black Sheep" and a shortened version of 'In the Mood' are thought to be the oldest known recordings of computer generated music! We perhaps know computer music as Kraftwork or the BBC sound effects for Dr Who. Computer music has it's origins in ***Musique concrète*** from the 1950's . They used reel-to-reel tape recorders and microphones, and 'constructed' their musical theatre. In the 1960's composers used electronics to create synthetic sounds (synthesisers).

Since those days computer music has become used more and more, so that nearly all POP and CLASSICAL music and even modern film tracks which sound like full orchestras, are put together synthetically on a computer!

Your Project...

⇒ You are going to learn how to make music loops and add your own audio!

⇒ You are going to learn to learn about MIDI and design your own music!

⇒ You are going to learn the basics of Digital Signal Processing (DSP) to lead you into being able to use the industry-standard systems, such as LOGIC, Protools and Cubase.

⇒ You will make your own sound track for an imaginary computer game you have designed!

How do you feel you have done in this topic?

I can assemble all the sound loops I need to make my project!

I can add my own melodies using MIDI.

I can change the dynamics of different sounds.

I can pan sounds within a stereo sound-space.

I can add special effects to tracks, such as reverb and EQ.

I really enjoyed doing this project.

Title of your Computer Game

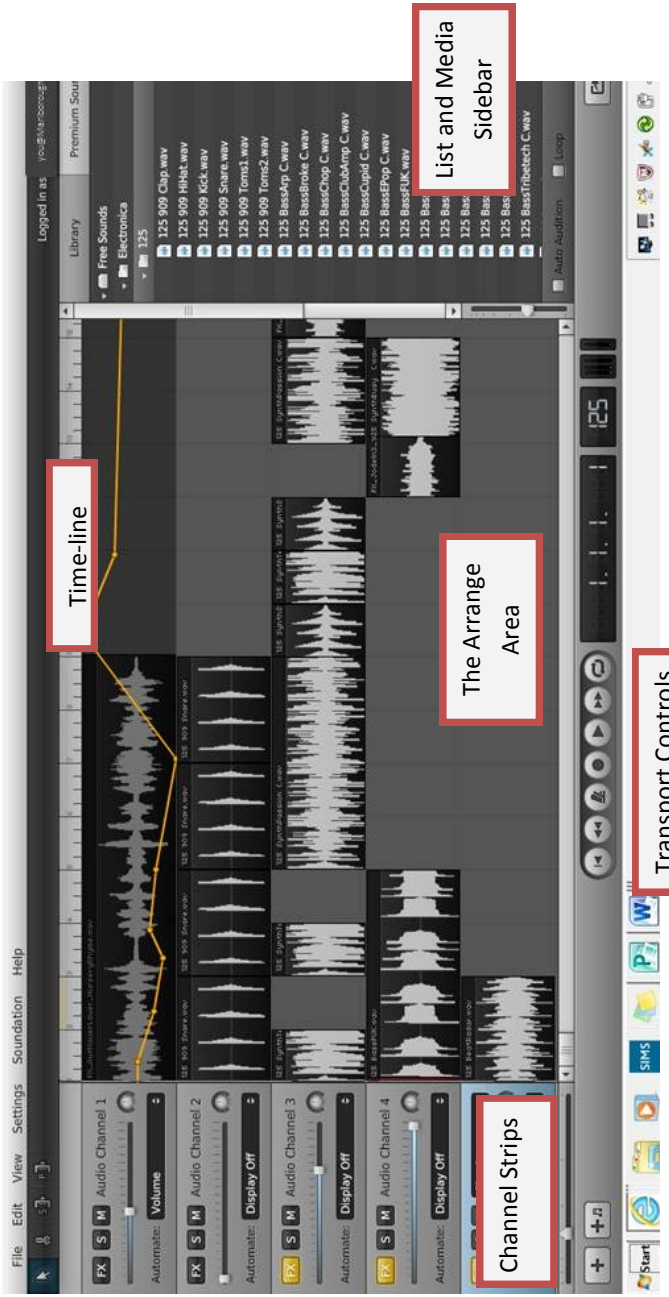
Who is working with you in your project?

What is the game about?

What sort of sounds did you need to use to make the music fit in with the type of game?

The Screen Overview

Lesson 1 To understand the basics of DSP



Task 1

You are to create a short piece of music using the "loops" that are available in the **List and Media** sidebar.. Each loop will be 1, 2, or 4, 'bars' long, so choose different ones that go well together, and also which give contrasting sounds!

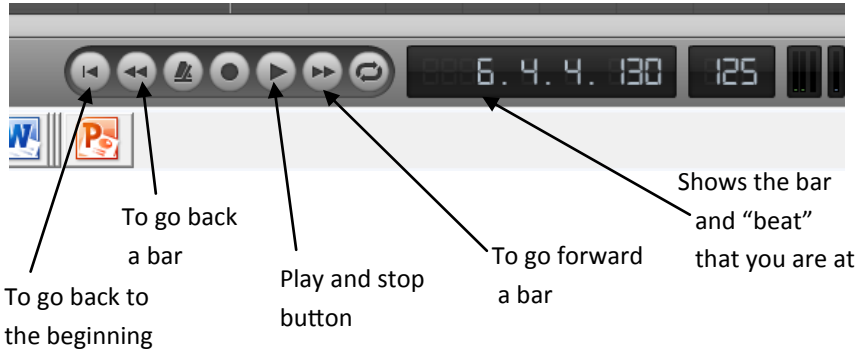
1. Select the sound you want by clicking;

Library → Free sounds → Electronica → 125

2. Then grab the sound you want and move it over into the **Arrange Area**..

3. You will see that you can move it about, and even copy and paste more on the same **track** or other **tracks**!

4. To play your tracks to hear how they are developing press these buttons;



5. **Remember to save your work when you have finished!**

Press File on the top left, then Save As and give it a name!

Task 5

To create a 30" piece of music to accompany a computer game that your company has created. It should fit in with the type of game you are producing.

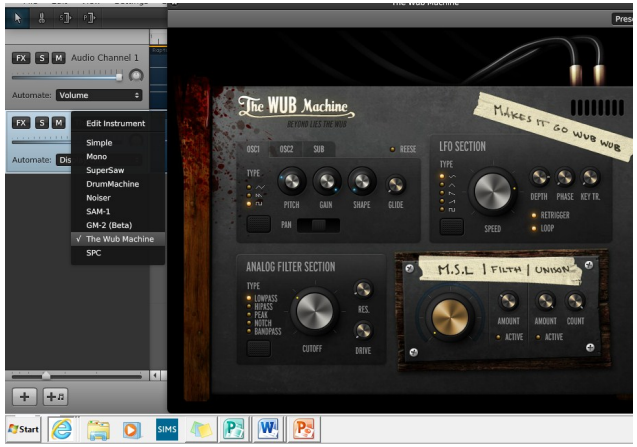
You should use loops of sounds plus make your own MIDI notes. Think about the type of game;

⇒ Is it fast moving?

⇒ Is it fun or serious?

⇒ What age-group is it for?

To experiment, why not select different instruments from the drop down menu! (Don't use **Drum Machine SAM-1** or **SPC**.)

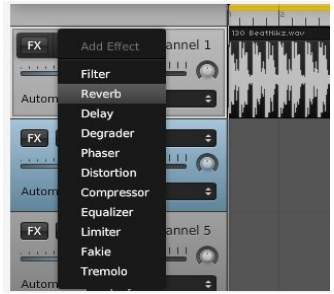


To add more tracks, just follow the instructions 1-4 again!

Don't forget to create some good **rhythms**, and a tune with a variety of **pitch** and **dynamics**. Try to make it 'catchy' and give it a name!

For those wanting to play musical notes in 'real time' press view, show virtual keyboard. Press the round record button (transport window) and use the keys on your computer keyboard. To stop, press the triangular play button.

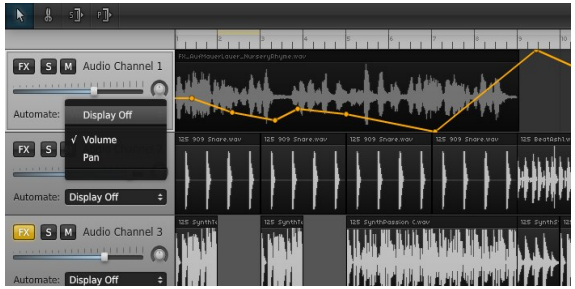
To use '**Effects**' (explanations on page 12) press "**FX**" on the channel strip and then the "**+**" sign next to it to choose the **effect(s)** you want. Yes, you can have more than one!



Task 2

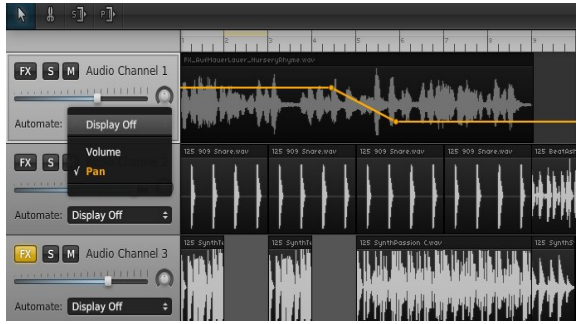
Now that you have created your first music 'loops' you now need to make the music sound professional by mixing the sounds in **post production**. This includes;

levels: Alter sound levels of each 'track'. Create crescendos (getting louder) and diminuendos (getting quieter). 1. Click to the right of the 'automate' button and select **volume**. 2. Click on the horizontal line to make it go yellow. Pull it up or down to go louder or softer.



Use sound levels (volume, dynamics, crescendo, diminuendo) for effect; have lots of varieties and make sound levels appropriate for what you are trying to achieve!

Panning: Separate the tracks by placing them in the stereo field, by 'panning' them left or right, or get them moving about!
1. Click to the right of the 'automate' button and select **pan**. 2. click on the yellow line and pull it up to go **Right** or down to go **Left**.



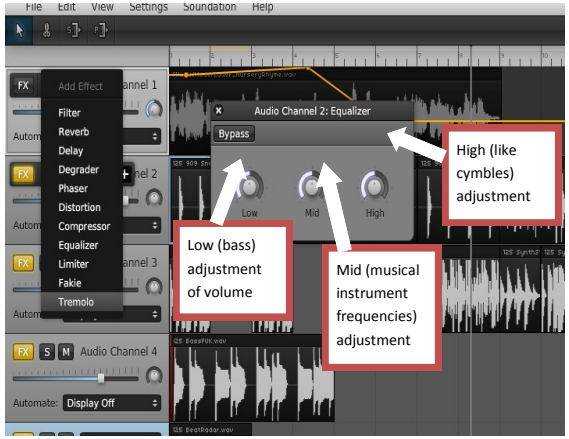
Use pan (panorama, left, right, centre) appropriate for what you are trying to achieve! Too much "central" sound is confusing and boring, but similarly don't just put things hard left or right. How about having them moving across the 'sound-stage'

To hear a track on it's own press the "**S**" button on the left of the track. To mute (silence) a track, press the "**M**" button.

Task 3

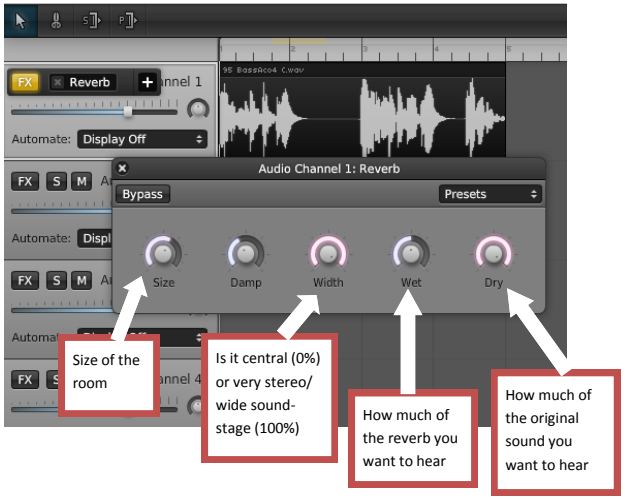
Experimenting with FX

Experiment with **EQ, reverb**, and other effects! Press the **'FX'** icon, press the **'+'** button, select an effect (eg 'EQ') and alter sounds on that track! Press PLAY on the transport window to hear them!



Try to open "Reverb" for one of the tracks and see how you can make the sound 'dry' (like in a small room) or 'wet' (like in a cathedral or school hall! Try settings like;

50% size
100% width
100% wet
40% dry

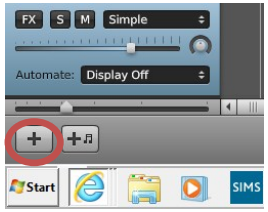


Explanation of all effects is on page 12!

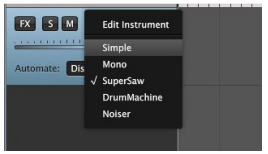
Task 4

You can now create your **own** musical notes by adding a MIDI track!

1. Click on the bottom left "+" icon with the musical notes next to it. It will then create a blue track.



2. Now select an instrument from the drop down list.



3. Now click to the right of the blue instrument channel to open up a dark blue note clip box.

4. Double click on the note clip box to create a virtual keyboard so that you can write Notes and make your own music! Stretch the note boxes to make the notes last longer. The high **pitch** notes are at the top.

The **Pointer tool** adjusts the **duration** and position of the notes.
Pen tool - creates the notes
Velocity tool - adjust the **dynamics** (volume) of the notes.

5. Now have a go at making your own music! **Remember to save your composition and give it a name!**

To hear your work use the **transport controls.**