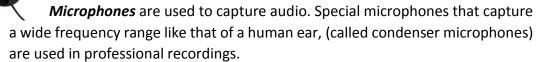# Behind the Boards: Production Tools
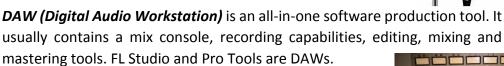
Monitors are essentially human ears in the form of speakers. They are capable of hearing frequencies above and below regular audio speakers (like boombox speakers). They are a necessary part of mixing and mastering audio.

Mix Console is used to route (direct) audio signals, effects, change channel level (audio levels), timbre (tone color), and panning of audio. This can route analog or digital signals, depending on the console type.

Headphones are used by both the engineer and the recording artist or musician. They are especially important when using microphones, so the artist can hear the track they are recording in the booth.

Microphones are used to capture audio. Special microphones that capture a wide frequency range like that of a human ear, (called condenser microphones) are used in professional recordings.

DAW (Digital Audio Workstation) is an all-in-one software production tool. It usually contains a mix console, recording capabilities, editing, mixing and mastering tools. FL Studio and Pro Tools are DAWs.

Reel-to-Reel the analog and once popular tool for recording. Recordings were stored on tape and had to be manually cut to edit recordings.

MIDI Controller transmits data to an external source (either a computer or a sound module) to produce a sound.

Drum Machine is a tool that is used in drum programming and sequencer. Each pad contains a "sample" and when it is struck, plays the sample.

Synthesizer/Sampler is essentially a large library of instruments/effects/sounds built into a keyboard.
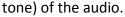
Behind the 'Boards: Mixing

Mixing is the balancing and blending (combining) of audio signals, to create one stereo mix. This process requires one to be creative, but also requires that one has thorough knowledge of audio software and hardware audio shaping tools. For this lesson we will learn 4 basic mixing tools.

1. *EQ* (or Equalizer) is a tool that allows the user to boost (increase) or cut (decrease) frequencies so that the affected audio fits better into the song alongside other elements (or parts). Also, the EQ allows the user to mold the timbre (color tone) of the audio.

2. *Compression* is a gain (level) control tool. If certain areas of a recording are too low or too high, the compressor helps level out the signal, by either squashing the peaks or bringing up the lows to create a uniform signal.

3. *Reverb* is an audio plug-in/hardware that creates acoustic space in a mix. For example the sound bouncing off the walls (reflections) if you stood on stage and clapped your hands in a concert hall, is reverb. Any space or room can be emulated (copied) and used as a model for reverb.

4. *Delay* is a tool that records an audio signal, then replays it back into the recording or will continue to play multiple times, depending on user settings. Example. If you scream into the Grand Canyon "HELLO!" the sound would repeat until it went silent… This is an example of delay.