

# AUDIO ENGINEERING CRANNY

## INTRO to MUSIC PRODUCTION A Guide to Studio Gear Setup

### Summary

1. We'll walk you through considerations for the basic music studio setup and what you will need to engage in the creative recording process for most types of music.
2. We'll suggest some budget-conscious gear options as well scaled-back alternatives to meet the needs of the mobile music therapist/producer.
3. We'll outline future content for further learning on audio engineering and its implications for the clinical setting.

### What is Gear and What Does it Have to Do With Music Production?

Gear is the term used to affectionately refer to any and all music-making equipment. From MIDI controllers to microphones to amplifiers in every price-range imaginable, the world of gear can be seemingly overwhelming and confusing at times. Through this document and accompanying video, we have paired down what is the basic gear necessary for developing a studio-type setup for music production. Take a look at the suggested setup below, with details on the function of each piece of gear. We've compiled links to quality and budget-friendly options currently available. With recognition that technology is continually changing, this will be attached as an open source document regularly updated by TechNook. These recommendations are not meant as an endorsement of any kind, and none of these companies have sponsored TechNook in order to have their products promoted.

## What Do I Need?

The following list has been loosely laid out in order of necessity, should you be acquiring these items over a course of time:

### Computer

At the cornerstone of any audio production set up is your computer. Preferably a laptop serves the perfect functionality between portability and processing power. While the use of an iPad or tablet is not out of the question, it will offer you less options for building out your set up in terms of compatibility of other gear you are hoping to utilize in your setup.

### Digital Audio Workstation (DAW)

On your computer you'll be running your Digital Audio Workstation or DAW. Your DAW will be the software platform to which everything will be recorded, arranged, edited, mixed, etc. There are a number of options out there, with some DAWs better suited to certain styles of music creation than others. For example, Ableton Live or FL Studio were created with electronic music production in mind. While various DAWs each have their own strengths, what is of most importance is finding the layout that is most intuitive to you. This will take time, though most DAWs provide free trial periods for beginning to explore such. While DAWs can get quite pricey there are some very capable options for free DAWs, such as GarageBand (Mac), Cakewalk (PC) or Reaper (Mac/PC).

### Headphones

Truly any headphones will do the trick. Over-ear headphones versus earbuds are recommended as they allow for a fuller audio spectrum, while from a clinical perspective they also allow for more sanitary usage. Using a headphone splitter can serve as an important option for allowing therapist and client to listen simultaneously while tracking or playing back a recording. In this case, two sets of headphones would be needed.

## What Do I Need? (Cont.)

### MIDI Controller Keyboard

A MIDI controller is any hardware or software format that transmits Musical Instrument Digital Interface (MIDI) data into controlled sounds and parameters of that instrument. However, in this case we are suggesting hardware as an integral piece of gear for streamlining your music production process. These typically take the form of a piano-style keyboard in varying sizes and can include additional features such as drum trigger pads, pitch and modulation wheels, and sliders, giving you increased expressive control over the MIDI instrument you are using. Depending on your setting, choosing a mini-type MIDI controller can be key to having a portable and flexible setup. As a reminder, *a MIDI controller does not produce any sounds on its own* but connects to your computer, typically via USB, and acts as a controller for audio plug-ins run through your DAW or third-party software.

### Microphone

Your microphone converts sound from your environment into electrical signal, in this case recording it through your audio interface and into your DAW. There are two main types of microphones: dynamic mics which excel in capturing loud, strong sounds and condenser mics which excel in capturing more intimate sounds, as they have greater sensitivity and range of frequency. Condenser mics require external power, often called P48 phantom power, which is included on most modern day microphone inputs. While advertised microphones might boast various tonal characteristics, we will suggest a few standard microphones that allow for a range of applications from recording voice, to amplifiers to acoustic instruments. There are USB microphones that plug directly into your computer, however most microphones use XLR inputs that require the use of an audio interface.

## What Do I Need? (Cont.)

### Audio Interface

We can think of an audio interface as the main hub (port and control center) of our studio setup, serving the function of passing audio from the external sources into our computer and back out again for live monitoring and playback. Audio interfaces most often include direct instrument inputs (1/4") and microphone inputs (XLR), preamps, digital converters, metering, headphone and monitor distribution, and may even include digital signal processing (DSP), all in one unit. While again coming in a range of shapes, sizes and prices, it is most important to consider the amount and type of inputs you will likely need for simultaneous recording. For example, having two inputs would allow me to record an instrument while singing through a microphone simultaneously, while having only one input would not. Bus powered interfaces are ideal for a mobile setup, as they are powered through the computer rather than needing to be powered separately.

### Cables and Connectors

Bringing all of this gear together will require a variety of cables. Most electric instruments require a 1/4" to 1/4" cable and most microphones require an XLR cable, standardized with what is called a male and female connector, connecting these sources to your interface's inputs. These are typically not included with your various audio sources and need to be purchased separately. Your interface and midi controller will typically connect to your computer through cabling such as USB or Thunderbolt connectors. While these cables are often included with your product, it is always best to check ports on your computer to ensure compatibility. Additional cables may be necessary. Cable length is also an important consideration, ensuring enough length to reach desired distance while being short enough to avoid unnecessary clutter.

## What Do I Need? (Cont.)

### Microphone Accessories

Microphone Stands - From boom stands to desktop stands, there are microphone stands to suit a variety of needs. Clinical context may be important to consider when choosing a microphone stand, as various types may provide greater client accessibility in certain contexts.

Pop Filters - These come in various forms and are intended to prevent plosives, such as “b” and “p” sounds, that push air into the mic at a volume audibly louder than whatever sounds you are meaning to capture.

### Monitors

Monitors are a set of speakers that are meant to provide flat responsiveness and honest playback of your music, ideal for mixing. These can serve as a nice alternative to headphones for shared listening with the client. While monitors provide an authentic studio feel, they can hinder mobility of a mobile music therapy studio, as most require external power.

### Room Treatment

For the music therapist creating a more permanent studio space, a final consideration might be acoustic room treatment; a means of controlling sound reflections that can cause unwanted echo or brightness in a space. Additionally, acoustic treatment would provide greater insulation of sound for a more private clinical space.

## What Do I Need? (Cont.)

### All Other Instruments

While this is certainly not last on the list, it is being included as a reminder that all of your instruments, traditional and non-traditional, have a place in the music production process. Recording opens up an exciting world of possibilities in which sounds can be captured, colored, effected, chopped, looped and arranged to your imagination's content. Even the quality of a recording or placement of a microphone can inspire your music-making process. Yes, there are "right" ways to do these things, but much can be discovered through creative experimentation. And speaking of getting creative...

## What if I Don't Have What I Need?

Now that we have shared a list of recommended gear for a basic studio setup, we can consider how we might function with minimal gear in music production. Truly, what is most necessary is capacity for recording and playback, or in other words a computer with a microphone and a speaker. With use of an iPad we can record through the built-in microphone and play back through either the built-in speaker, or plug into any external speaker that might offer improved sound quality in playback. These recordings can range from voice memo style to GarageBand, a DAW included on all iPads. Using GarageBand, we can additionally trigger MIDI instruments through the touch-sensitive screen of the iPad surface. It is important to remember that we have the capacity to save this audio and return to it another time, even integrating iPad recordings later on into a full studio production. A number of mobile applications can also serve as instruments for music-making and be recorded or imported into DAWs in a variety of ways. These techniques will be further explored in the Mobile Applications Cranny on the TECHNook.

# Budget-Conscious Recommendations

## DAWs (free or functional without payment)

GarageBand (Mac) <https://www.apple.com/mac/garageband/>

Reaper (Mac/PC) <https://www.reaper.fm/download.php>

Cakewalk (PC) <https://www.bandlab.com/products/cakewalk>

LMMS (Mac/PC/Linux) <https://lmms.io/>

ProTools First (Mac/PC) <https://my.avid.com/get/pro-tools-first>

Soundtrap (Online) <https://www.soundtrap.com/>

## Headphones (under \$50)

Sennheiser HD 206

Audio-Technica ATH-M20x

Sony MDR7502

## MIDI Controller (under \$100)

Akai MPK Mini Mk2

Arturia MiniLab Mk2

Novation Launchkey Mini Mk2

## Audio Interfaces (under \$200)

Focusrite Scarlett 2i2

MOTU M2

PreSonus AudioBox

Mackie Onyx Producer 2-2

## Microphones (under \$150)

*Dynamic:*

Shure SM57

Shure SM58

*Condenser:*

AKG P120

IK Multimedia iRig (USB)

## Monitors (under \$300)

IK Multimedia iLoud Micro

M-Audio BX5-D3

KRK Rokit 5

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Need more help? You can always consult the authors directly for 1:1 tutorials, lessons, etc.