

Technology Resources

WEBINARS



Housekeeping

- The session is being recorded and will be available to all participants within a few days.
- You will be asked to answer a short survey at the end of the session to receive a Certificate of Participation.
- The content being presented in the webinars are to be used as guidance and as a resource. NCMEA does not endorse specific products.
- Additional teaching resources can be found on the NCMEA website:
<https://www.ncmea.net/member-resources/teacher-resources/>

Student Online Safety: During this time of unprecedented need for virtual/online instructional materials, the first consideration for use must be student safety. To that end, NAFME and NCMEA recommends:

- Children under the age to 13, have adult permission before accessing any online resources
- Students and/or families do not provide any identifying information to gain access to the resources – free or paid

How to Make Your Conferences Sound Better

- In this session, you will be shown tools to make your video conferencing sound better.
- Presenter: Howell “Howie” Ledford is in his sixth year of teaching Music Production at Weaver Academy in Greensboro, NC. Previous to this Mr. Ledford taught Electronic Music at Career Center High School in Winston-Salem, NC. Mr. Ledford has taught band and orchestra for fifteen years. He continues to serve as the Sound Designer, Assistant Band Director, and Staff Arranger for the East Forsyth High School Blue Regiment.



How to Make Your Conferences Sound Better

Thanks for Being Here

- This is your summer. You could have been anywhere else but here.
- We hope you enjoy the webinar series that is happening.
- There are some great clinics being given over the next few days. We hope you take away something useful.
- Again, Thanks for being here.



Thoughts Before We Begin





Setup of Presentation

Questions in Chat - Moderator: Amber Tindall

- Please ask your questions in the chat. Every one will be muted for the presentation. We will have “Office Hours” at the end of the presentation. This time is optional. Office hours will be a time for me to answer more questions. We have allocated an hour after the presentation for office hours. Amber may or may not answer questions in the chat. If she does, I would consider what she says as gospel.



These are Recommendations

- What is going to be said in the webinar is a recommendation. This is in no way the way you have to do something. If there is a plan that works for you, use it.

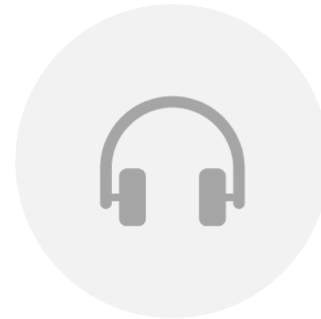
Where to Buy

- There will be some items one might want purchase in this presentation.
- I recommend two major places and people to buy products. Both men are gentlemen and scholars. However, please see the disclaimer at the beginning of this presentation. This is where I shop and who I shop with.
 - Guitar Center Pro – Austin Waynick - awaynick@gcpro.com
 - Sweetwater – Jim Swain – jim_swain@sweetwater.com
- You can shop at Amazon. These guys are more knowledgeable and can get you exactly what you need. They *may* be able to give you educators discounts. This depends on the product and what they can do.

Zoom Specific and Audio Science



These comments will be general, but there will be some Zoom specific topics that will be covered.



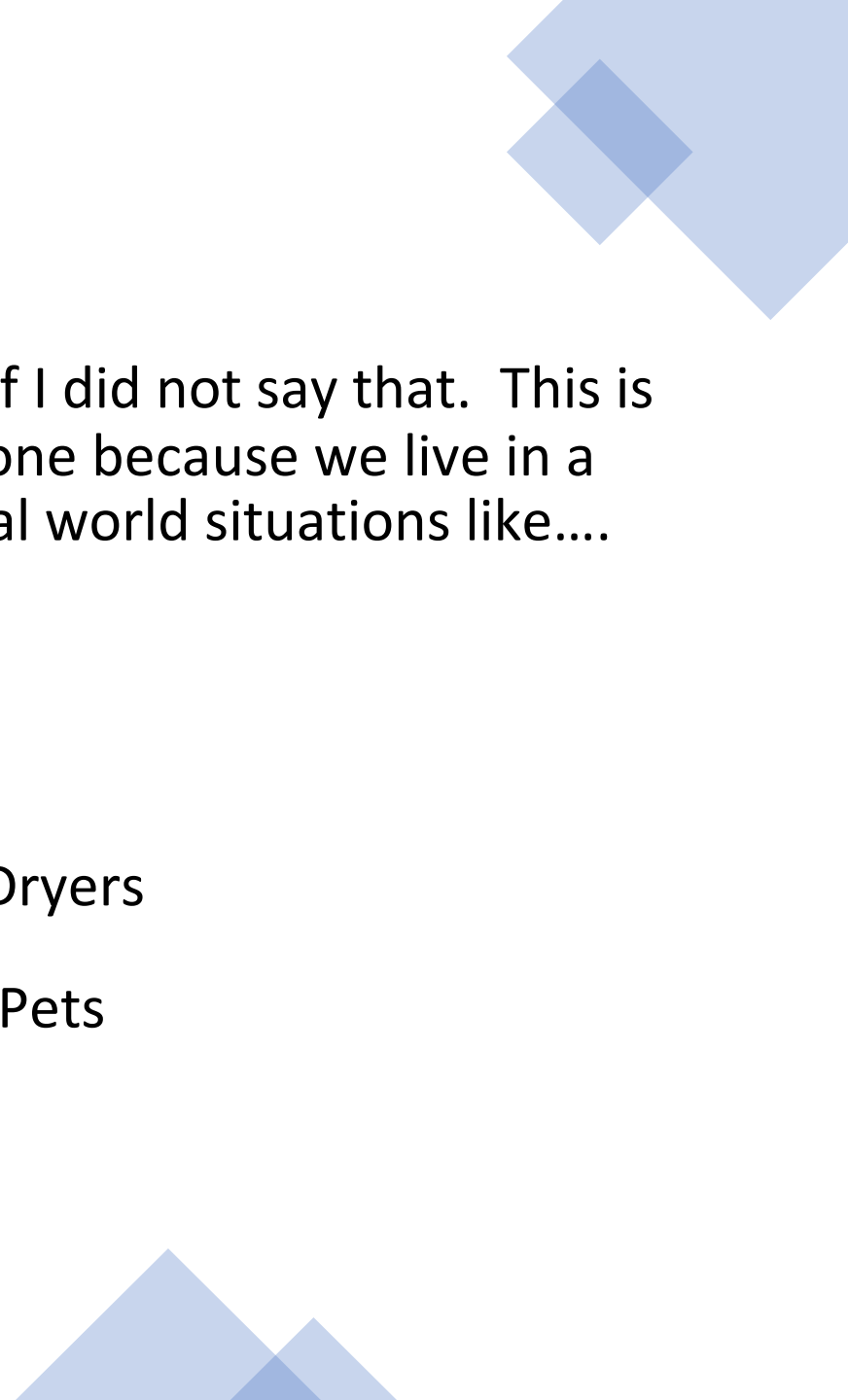
There will also be some audio science in this presentation.

Microphones Work Like Ears

- The way a microphone works is like our ears, only our ears are way better.
 - Sound hits the diaphragm of the microphone inside the capsule and creates electric current. This is like the sound hitting the eardrum.
 - Cables transport the electric current to the next station. Sound travels to our brain via a lot of nerves and bones.



Try to Find a “Quieter” Place

- I would be a miss if I did not say that. This is easier said than done because we live in a real world with real world situations like....
 - HVAC
 - Dishwasher
 - Washer and Dryers
 - Children and Pets
- 

RECOMMENDATIONS



Recommendation One - Have Good Bandwidth and Data Transfer



If the audio/video is going in and out of existence, then the viewer is not going to be able to focus on what is said and done.



I recommend, if possible, to hardwire the connection between computer and internet source. I have a cable for just this occasion. The higher the CAT number the better the connection. CAT6 should do just fine. The more data transfer the better the sound.



Test the Upload and Download speeds in the place where the broadcast will be happening. Google “Cable Speed Test” and the first result should be the Google test. Google will do it for you.

Recommendation Two - Move Closer and Speak Up



This one is simple. The microphone is in your computer/laptop somewhere. This will depend on your computer/laptop. One should move closer to the source and talk to the center of the laptop. This is where the microphone is designed to work from.

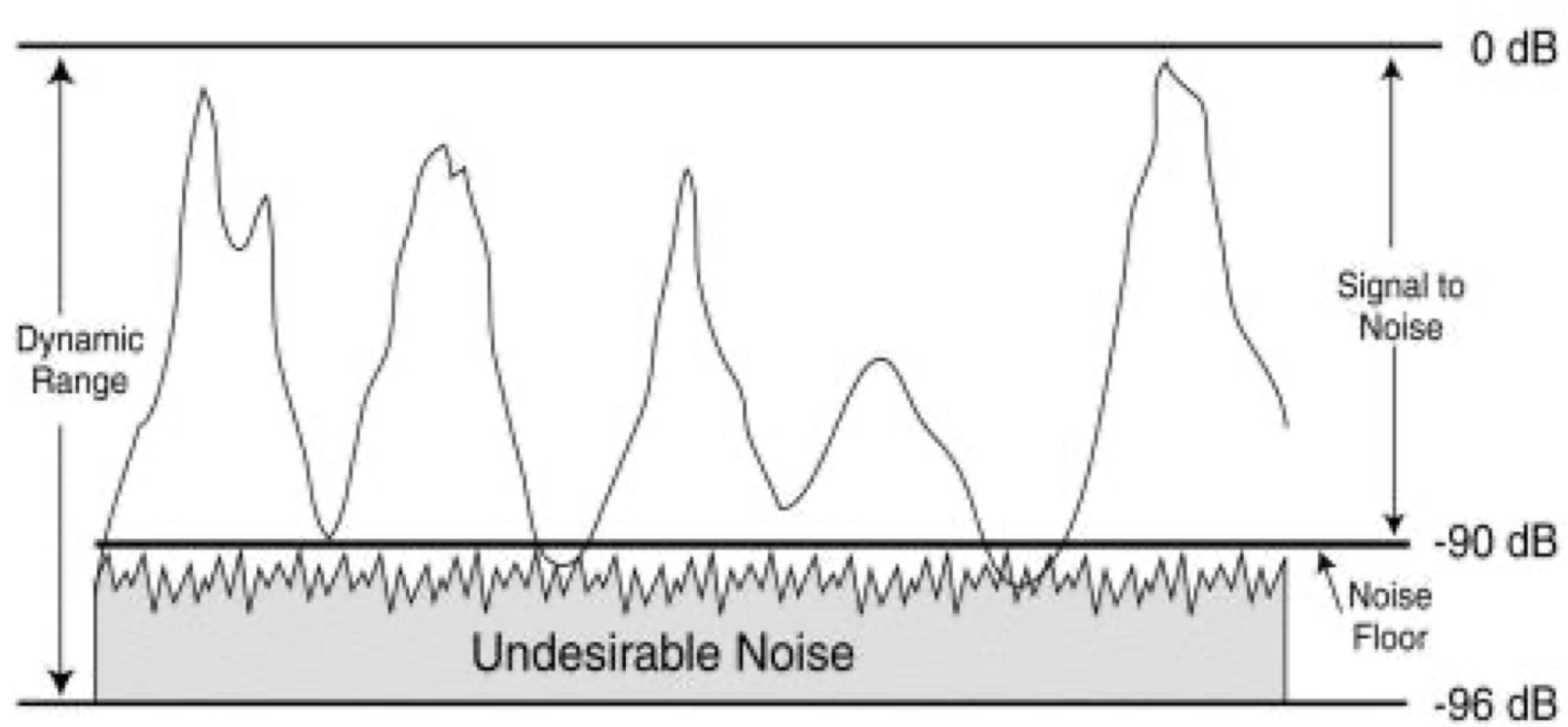


Speaking louder will give the microphone more signal and will give the microphone a better chance to do the job.

Signal to Noise

- The microphone needs sound to work. The more sound, the better the microphone works until the microphone cannot handle the amount of sound being produced. This gives us three scenarios.
 - Broadcasting/recording in the Noise Floor – You broadcast/record the room and the inherent noise in the system.
 - Good Signal – This is where good audio happens
 - Distortion or Peaking – Where the audio source is too loud. The sound is grainy and unpleasant.

Signal to Noise Ratio



Most Likely Scenario - Noise Floor

By sitting farther back the microphone will pick up more of the room than the voice. Moving closer will give more signal to the microphone.

The better signal will cover the noise in the room.

Other Scenario - Distortion

- Distortion is easy to fix.
 - Turn down you input.
Leave some headroom
 - Move away from the
microphone.



Demo Near/Far

Suggestion Two – Get Headphones

- They really are a must have.
 - Headphones help one hear the broadcast better.
 - They cut or eliminates feedback.
 - They reduce or eliminate background noise.
- Better headphones = better listening experience.
 - This is because Frequency Response – More on this later.



Recommendation Two and a Half: Headphones With Microphones

- Some headphones have built in microphones. Typically one will know this when they buy the pair of headphones.
- These are better for broadcasting because the microphone is closer to the face of the person using them.
- They are also designed to broadcast out to someone else.
- These are good for conference audio, but not the best. They are designed for telephones.



Phone Sound

- Why does a person sound different when they are on the phone?
- Thank Harvey Fletcher, Wilden Munson, and Western Electric (AT&T).

Telephone Transmission

- Fletcher and Munson found we hear the best from 1khz-3khz.
- Telephone companies cut all the energy transmissions from outside of those areas.





Telephone Demonstration – Ableton Live

Why is that Important?

- In the digital age, data is sent over a vocoder. Yes, the same idea of the singing synthesizer that gives us Daft Punk gives us modern telephone signal.
- Voice comes into a computer and is processed into data. The data is vocoded, and then that data is broadcast to our ears.
- The higher and lower frequencies are harder to transport, because the size of the data packets, so they may not get transferred. Also, they may get transferred but the receiver may not be able to broadcast the signal.



Bluetooth Headsets

- These are like the headsets with wires just without them. The data is transferred using radio waves. Typically Bluetooth headphones come with some type of microphone for voice commands for phones. I will be demonstrating on Areopex Aftershokz. One may have another brand such as AirPods the difference will be similar.

The background features decorative wavy lines in shades of blue and green, curving from the top left and bottom right towards the center.

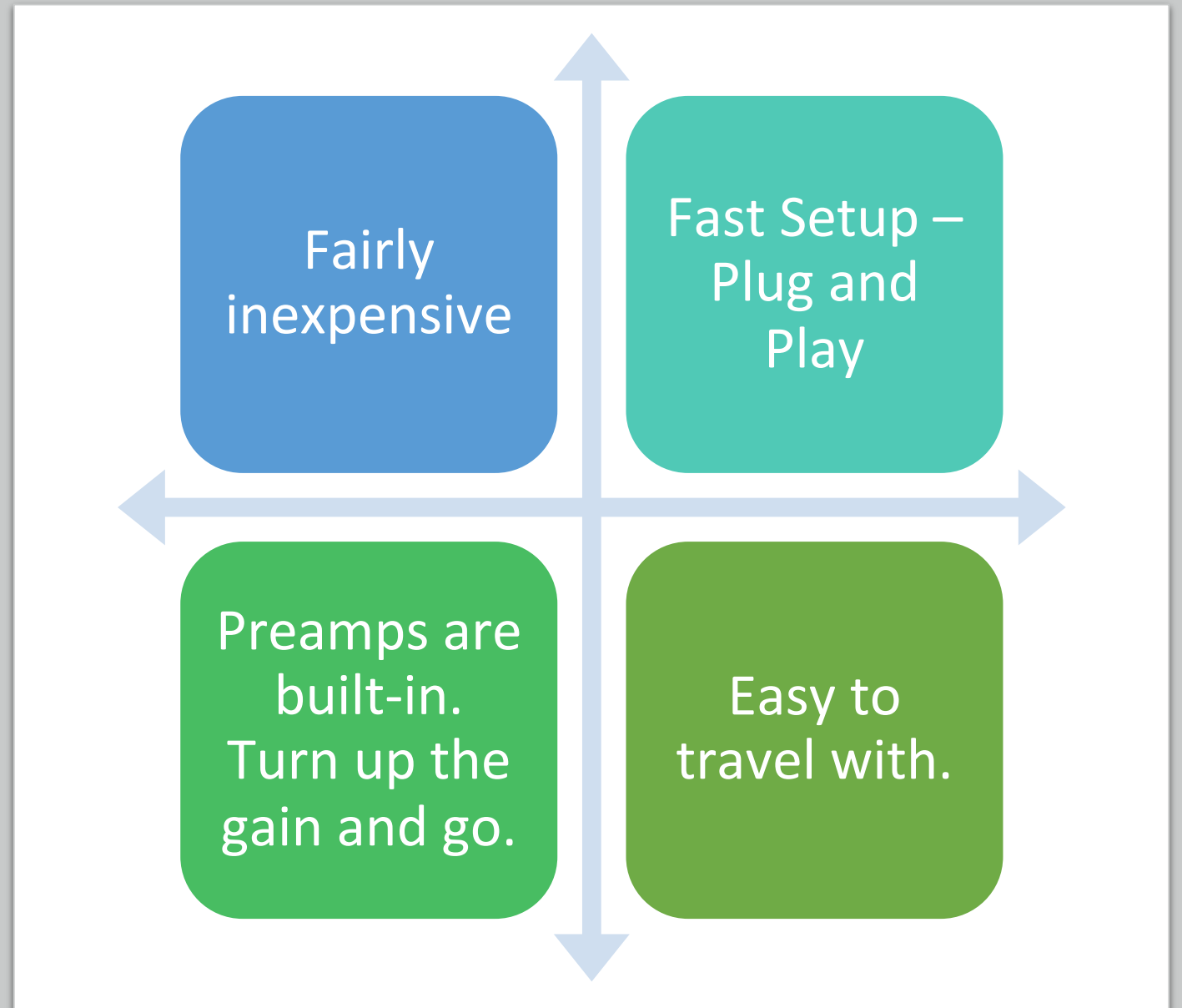
Bluetooth Headphone Demo



Recommendation Three - Get a USB Microphone

- These are relatively inexpensive and work well. They will boost the quality of audio that you will transmit or record because they typically have a good frequency response.

Pros – USB Microphones



Cons



The sound cannot be enhanced by an external preamp. The microphone is limited in what it can do.



Depending on the microphone, Analog to digital conversion is not as superior as an interface. (Next Recommendation)



Not future proof – Ports Change



Reliability – When it breaks, it breaks.

Brands


AT-2500 - \$119

AT-2020i - \$149

Blue Yeti - \$150

Rode NT-USB \$169

Samson Meteor - \$70



COVID-19 and Supply Chains

•Due to COVID-19, The two major music industry retailers are out of good baseline models of USB Microphones. During the pandemic, many people have taken to making music at home or podcasting. There are also quarantine requirements because of overseas shipping. This is why getting a decent USB microphone maybe a problem.

The background features decorative curved lines in shades of blue and green, sweeping across the top and bottom of the frame.

Demo – Blue Yeti – Thank You Jessi AsKew

This microphone sounds really good.



Recommendation Four - USB/Thunderbolt Digital Audio Interface

This is truly the best bang for the buck. This recommendation is also the most complicated. However, this could be a better and cheaper option than the USB Microphone. This is the setup I am presently using.

Setup \$99-\$260

- Setup will look like this
 - Interface – \$99 for a Scarlett Focusrite Solo – Email Austin or Jim.
 - Microphone – Every school has got microphone somewhere. Get it from school.
 - If not – AT-2020 condenser microphone or Sennheiser e835 dynamic microphone \$100. Great entry level microphones.
 - Microphone Cable - \$20.00
 - Microphone Stand - \$20.00
 - Pop Filter - \$20.00
- If you have any item at school or home, you can take it off the list.





Pros

- Studio Grade Broadcasting/Recording
- Relatively Inexpensive and cheaper than some USB microphones depending on the equipment you already have.
- Can be used with equipment already owned.
 - Mic Cables
 - Microphones
 - Computers
- You will get software that will turn your computer into a recording studio.

Cons

- Setup for PC's – Install the drivers.
 - Macs typically do not have this problem.
- Setting up your space for the equipment. I am in a very small office.
- Learning the device.

The background features decorative curved lines in shades of green and blue, sweeping across the top and bottom of the slide.

Demo USB/Thunderbolt Interface

Zoom Specific Items

- Turn off automatic volume setting. Set the microphone volume to around 80%.
 - This will help get signal into the microphone.
- Turn off noise cancelling and intermittent background noise in the Advanced tab.
 - Compression will turn noise up.
 - Work in a quiet space close to the microphone.





Video Recap





Questions



Technology Resources Post Webinar Survey

Please use this link for the Google Form Survey.
The link will also be added to Chat or Q&A.

<https://forms.gle/c5eGHoH8atQmAXbS7>

Thank you for joining us today!