

How to choose & set up a PA system for your school

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When do we need a PA?

- When something needs to be better heard by an audience
- When the balance of various sounds requires correction
- When electronic enhancement of a sound source is required (*eg. REVERB*)

What makes up a PA?

There are FIVE essential components to any PA system

1. SOUND SOURCE
2. MIXER or volume control
3. AMPLIFIER
4. SPEAKERS
5. Connections/cables

How do I work out how big my PA needs to be?

- Audience size
- Complexity of performances that will require amplification
- Weight!
- Cost

Types of SPEAKERS

- Powered
Powered” indicates that an amplifier is built into the speaker enclosure combines with an unpowered mixing desk
- Unpowered
combines with a powered mixing desk

Types of MIXER (*or mixing desk*)

- Powered mixer
Combines with unpowered speakers (but can be used with powered speakers)
- Unpowered mixer
Needs to be used with powered speakers

Microphones

- What do they do?
- What don't they do?
- Types of microphones

SM58

Condenser microphone

"X/Y pair"

Connections

- 240V Power (mostly "IEC" cables)
- Microphone (XLR or 6.5mm)
- iPod / CD etc (3.5mm, 6.5mm)
- Speaker

Powered speaker (XLR)

Unpowered speaker ('*Speakon*')

Microphone placement

- Vocal technique
- 'Close' micing
- 'Region' micing
- *** Pop or wind filters

Where do I put the speakers?

- Speaker stands
- High frequency sounds need to be projected ABOVE head height
- Position relative to the stage: safety & feedback

Hands on task

Putting it all together #1

Set up a basic PA to amplify an announcer's voice

- SM58 mic
- XLR cable
- Powered desk (IEC lead) Don't turn it on until everything is plugged in!!!
- 2 unpowered speakers on speaker stands
- 2 Speakon cables

The MIXER

What does it all mean???

- The mixer (or mixing desk, or soundboard) is nowhere near as scary as it looks
- As far as controls go, there are TWO main sections
 1. INPUT - Channel strips and that affect each of the individual sound sources
 2. OUTPUT - Master controls that affect ALL of the sound sources simultaneously

MIXER – Input channels

- Gain & fader volume
- EQ (or equaliser)
- Auxilliary section for foldback monitors or for FX
- Pan control
- Routing (on more complex mixers)

MIXER – Output section

- Master Fader(s)
- Graphic Equaliser (GEQ)
- Monitor master send
- FX section (more complex mixers)

Hands on task **Putting it all together #2**

Set up a PA system to amplify:

1. Small choir
 2. Backing track on an iPod
- 2 condensor mics
 - 2 XLR cables
 - 3.5mm to 6.5mm cable
 - Unpowered desk (IEC lead) Don't turn it on until everything is plugged in!!!
 - 2 powered speakers on speaker stands
 - 2 XLR cables

Feedback!!!

- What is it?
- How do we fix it?
 1. Volume
 2. EQ (equalisation)

Foldback

- What is it?

- Why might you need it?
 - What equipment is required?
- Powered speaker and cables
- How do you use it?

FX (effects)

- Types
- Reverb
Delay
- Why & when would you use them?
 - How do you use them?

Hands on task

Putting it all together #3

Set up a PA system to amplify:

1. Solo singer (who requires reverb & foldback)
 2. Small choir
 3. Backing track on an iPod
- 2 condensor mics & 1 SM58
- 3 XLR cables
- iPod & 3.5mm to 6.5mm cable
 - Unpowered desk (IEC lead) Don't turn it on until everything is plugged in!!!
 - 2 powered speakers on speaker stands
- 2 IEC leads & 2 XLR cables
- 1 powered 'monitor' speaker
- IEC lead & XLR cable

Choosing a system

Important questions

- How many inputs will you require? (Mixer)
- What is the largest audience you would expect? (Amplifier & speakers)
- What types of sounds do you want to amplify? (Microphones & leads)
- Will you require foldback?
- What issues are important to you in setting it up and transporting it (eg weight /size)?