Module 9 **Using Technology in Worship** 6/2014

This module introduces a range of equipment that is commonly used in worship. If you are able to get to a church where there is regular use of these and see them in use, that would be helpful. It would be even better if you could meet up with the technician involved and get them to show you how things work.

- o powerpoint presentations of visual images and texts for singing.

- o projectors and screens.

- o mixing desks to control input from instruments and voices.

- o microphone and speaker systems.

- o MIDI instruments and players.

PowerPoint presentations.

This well-known Microsoft programme is now readily available to PC (Personal Computer) and laptop or notebook users. It enables the user at home to compile a series of screen displays that include graphics and text. Powerful editing facilities give the user the ability to be creative and imaginative. The end result is a series of screen displays that can be presented via the computer to a projector.

Crisp digital images are delivered to large screens and the user is able to flick through screens from the computer or remote control in the building.

The use of PowerPoint enables large groups to see text without the need for printed paper. The user can quickly access a bank of texts from the computer files when needed. These may be cross-referenced to scripture or themes and in worship situations where an appropriate song is needed quickly, this is a useful tool.

The presentation may be left to run itself and the user has control over how long each screen is shown, how each screen changes into the next and what music might accompany each screen image.

If you have not found PowerPoint on your computer yet, click on the start button, then click on 'All Programs' and scroll down to a folder called Microsoft Office, in there should be a red square icon which is Microsoft Office PowerPoint.

You can access a free tutorial by clicking **HERE** at the Baycon Group website. There are also useful tutorials for other Microsoft Office applications.

Projectors and Screens.

Obviously, you will need a very good projector to use with PowerPoint and a carefully placed screen that enables everyone to see what you are projecting. A range of projectors are now available that connect directly into the USB port of your computer. These can be small portable models or more advanced permanent models. Depending on the distance between projector and screen, the model needed will be between £900 (model below) and £1200. Not cheap!

Eiki XB23 Projector

• XGA Resolution
• Weight 2.4kg
• 2000 ANSI Lumens
• 400:1Contrast Ratio
• Manual Zoom and Focus Lens
• Image Size 40" - 300"

Screens come in all shapes and sizes. They can be remotely controlled to fall from the ceiling, they can be wall mounted or can be positioned on a more conventional tripod stand. Size will depend on the building and you may need multiple screens further back into the church.

For information on projectors and screens, try the OVOJO website.

Mixing Desks

These are normally placed at the back of the church or somewhere where the operator can hear the output through the speakers clearly. The output from musicians, either direct or via a microphone is taken into the back of the mixing desk via leads. The operator can then balance the guitars against singers, or lead vocal against keyboard etc. The aim is to produce a clear and balanced sound that is then fed through to the speakers. The musicians may also have a feedback speaker system so that they can hear what is being fed into the church

Digital drumkits can be fed into the desk which means that drummers are not needing to hold back all the time and their output is not going to be too much. Quieter instruments such as acoustic guitars can be amplified and heard clearly. Built-in effects may be added to make the sounds smoother or more defined. Echo effects create a professional sound and the operator is often an experienced musician who can turn a raw mixture of sounds into a well blended and balanced output.

On this mixing desk or amp (the Yamaha MG24/14FX - £789), there are 16 inputs which feature built-in compressors that can help to bring vocals to the front of the mix, give guitars extra smoothness and presence, deliver more authoritative bass sound, and generally refine mixes in a multitude of ways. Seeing and hearing one of these in operation will stop that glazed look that comes over people when they start to read the specifications of these machines!

Without the mixing desk, a group is easily unbalanced and often dominated by one or two instruments. Most churches that use an instrumental group regularly will be using a permanent system that musicians can plug into.

Microphone and speaker systems.

This is equipment that really needs experts to install and we will all have experiences of worship that has been interrupted by crackling, feedback, lost signal or misuse. Radio microphones are now very good and relatively cheap. Static or fixed mics, at the lectern or pulpit can be of a variety of type that pick up the voice from a wide angle.

The types of microphone used depends on their use. There are speech/radio mics, instrument mics, installed mics, vocal/singing mics and recording mics. Here are some explanations of the most common types in use.

Dynamic Microphones

The most common type of mic found in contemporary sound systems. A coil of wire is attached to a diaphragm suspended in a magnetic field. When sound strikes the diaphragm, it vibrates in response generating an electrical signal similar to the incoming wave. Dynamic mics are highly dependable, rugged, reliable and require no power supply. Most Dynamic mics are used for close proximity work such as singing / vocals or near instrument pick up of guitar amps, bass drums and snares.

Condenser Microphones

Condenser mics require a power supply to operate the internal electronics and provide a clear, detailed sound quality with a wider, smoother response than dynamic mics. The internal amplifiers in condensers boost the incoming signal and are therefore used in extended reach requirements such as lecterns, pulpits, interviews, testimonies, drama and children's work. They also benefit from a flat response, which means they have fewer resonant peaks, and are less susceptible to feedback. Condenser mics can be found in a number of forms-stand mics, lapels or goosenecks.

Lectern microphones

It may be a simple wooden readers lectern or an elaborate golden eagle, but either way the microphone at this point needs to be able to compensate for a variety of users; tall/short, confident/ shy and people who do not necessarily have good quality mic technique. Lectern mics can either be stand mounted or fixed.

Pulpit microphones

Some preachers stand still, others are more animated and move around. Either way their efforts should be directed towards delivering an important message and not worrying about whether the mic is picking them up or not. The radio microphone is now a standard piece of equipment which enables free movement for the speaker.

Platform, dais, stage

For interviews, testimonies, children's work etc. Picture this; a new family is being welcomed into the church at the front. A well set-up 'boundary' mic will pickup sound from a wide area.

How to reduce feedback

Feedback is a squealing sound from sound re-inforcement speakers that occurs when the volume is too high.

To reduce feedback:

- turn down the volume on the offending mic.

- use as few mics as poss.

- directional mics pick up less feedback.

- place the mic close to the sound source for higher gain before feedback.

- keep mics as far behind main speakers as possible.

- place monitor speakers directly behind mics.

- use directional mics. Hypercardioids and supercardiods are best at rejecting feedback. Omnidirectionals are best avoided live but are good for recording.

- use same mics where poss. A cardioid mic provides x4.8dB more gain before feedback than an omni at same distance from sound source.

- turn off mics not in use. Use the mixers' channel on/off buttons.

Speaker Systems

Speakers come in two varieties, unpowered and powered. Powered speakers can be used as stand-alone public address (PA) systems and are very versatile and powerful. Unpowered speakers are normally connected to an amplification system, as used on your home hi-fi system. You will also come across Installation Speakers which come in all shapes and sizes and are professionally installed and wired into a building.

MIDI (Musical Instrument Digital Interface)

You may already have come across MIDI instruments such as keyboards which now normally have two MIDI ports on the back, MIDI in and MIDI out. Via these, the instrument can send or receive MIDI signals to or from other MIDI equipment.

The range of sounds available using MIDI equipment is very wide and of very high quality. Any instrumental sound you can think of can be harnessed for use and can be played from keyboards, guitars, drums, strings or even woodwind instruments. The sounds can even be activated by the movement of a dancer or by the smallest movement of a little finger by using a 'sound-beam'.

And Finale

Writing out parts and transposing parts for instruments is now normally done using a notation programme such as Coda Finale or Sibelius. A notation programme can be downloaded from as little as $9.95 – see the Finale Notepad. Try a free trial from Notation Software.

The big professional versions of these products take quite a bit of learning but the introductory, and therefore cheaper, versions can be picked up quickly and probably will enable you to do most things you want to.

Hopefully, after this session, you will know a little about the range of technology now available for use in worship. If you want to explore further, visit the website already mentioned above, DM Music. This firm supply all sorts of equipment to churches and have years of experience. They also put quite a bit of useful information on their website.

Time to reflect

You may be interested in exploring the implications of using technology in worship.

- is this equipment taking away any connection between minister and people?

- by watching a screen or listening to sound from a speaker, are we 'in touch'?

- how does using technology change the style of worship?

- does technology help or hinder our worship.

- what uses can you think of for technology in your own church?

The written work for this module could use these questions as a starting point or you could write about the pros and cons of using technology in your own church services.

I am sure we all have an amusing story to tell about using technology in church, why not share it on the bulletin board?

Further Reading

Liturgy and Technology,
Tim Stratford, Grove Books No.W154, 1999, ISBN 1851744096
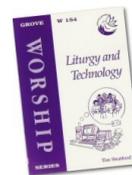
Beyond the OHP: Using Technology in Church, Jackie Sheppard, Authentic Lifestyle, 2002, ISBN-10**:** 185078454X.

High-tech Worship?: Using Presentational Technologies Wisely, Quentin J. Schultze, Baker Books, 2004, ISBN-10: 0801064805

All About Music Technology in Worship: How to Set Up and Plan a Musical Performance, Hal Leonard Reference Books, 2004, ISBN-10: 063405449X

Robert Fielding
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