

MAKING SENSE OF MUSIC

Music is a vibration

A toolkit to help you to explore sensory and inclusive music making with children and young people with sensory impairments and complex disabilities.



sense

connecting sight, sound and life

A partnership in sound

Music is a Vibration (MIAV) was a collaboration between Sense, artists Justin Wiggan and Tom Peel and a group of young people with complex disabilities and their support staff. The project ran from October 2017 to October 2018 at the TouchBase Pears centre in Birmingham.

MIAV is an innovative sensory music programme aimed at creating new opportunities for young people to create their own musical compositions and explore the world of sound. Together they developed this unique programme of vibrant sounds and sensory play.

The young people

The MIAV project brought together young people aged 10 – 15 from across the West Midlands to engage in new and fun approaches to music that stretched their imagination and experience. The group had a diverse range of disabilities including dual-sensory impairment, Down's syndrome and epidermis bilosa – with each bringing their own skills, interests and things they find challenging. Everyone who signed up already had an interest in music but the MIAV project enabled the group to push this experience further, in new and imaginative ways and through using incredible technology!

Impact

The variety of activities on offer, and the flexibility of the artists, meant that everyone in the group was able to explore their own interests; enabling them to flourish, not only musically, but socially and emotionally growing in confidence and independence each week!

Sense

Sense pioneers the development and delivery of arts activities, workshops and events specially tailored towards individuals with complex disabilities. Our vision for Touchbase Pears is to develop the UK's leading centre for inclusive arts practice.

Tom Peel

Tom Peel is an artist from Birmingham who designs sensory sound equipment and creates immersive sensory workshops for people of all ages and levels of ability.

Justin Wiggan

Artist Justin Wiggan works with emerging technology, as well as traditional sources, to create innovative and pioneering work that transcends the boundaries of art and social norms to enhance emotional wellbeing and resilience.

In collaboration with artists Tom Peel and Justin Wiggan.

Funded by the National Foundation for Youth Music.

Supported by SUBPAC.

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Music is a powerful medium for children and young people with complex disabilities

Anyone can experience the joys of music. We believe no one should be left out because of their disability.



Our aim is to share new ideas and ways to engage with music in an inclusive way. We want to help young people with complex disabilities express their feelings and find their voice through music-making. Music can help young people to build trust and confidence with each other and provides a positive space to collaborate with others. We focus on what people CAN do, not what they can't.

This toolkit offers a range of unique activities to help you discover more about sound and the senses. It is aimed at anyone who wants to make their music activities more inclusive, especially for people with complex disabilities. We hope that care staff, teachers, youth leaders, families, friends and young people will find this resource useful and inspiring.

It offers a range of games, exercises and technology and is a result of the experiments we tried during the MIAV project. During the making of this resource we learnt a huge amount about the importance of play and collaborating with everyone in the workshops. We learnt to expect the unexpected, be fully guided by the responses of the young people and be open to new ideas and experiences. Whilst some of the activities might not seem like music-making in the traditional sense, they all create different sounds and vibrations – and that is what music is! Each and every contribution is welcome – there is no right or wrong way to make music – so go ahead and enjoy making some noise!

“ There is no right or wrong way to make music ”

Video



Where you see this symbol you can look at video footage of the exercises in this booklet at www.sense.org.uk/music

How to use this toolkit

This resource describes activities that you can try, with step-by-step suggestions. Often these activities can be a jumping-off point to enable you to explore the potential of inclusive music-making in your own way, inspired by those in your session.

All these activities were underpinned by a series of key values. We wanted the young people to:

- Feel safe, independent and engaged.
- Experience emotional and physical wellbeing.
- Have a sense of self and create relationships and friendships.
- Have as much choice and control as possible over their life and support.
- Be included and make a contribution in the community.
- Be creative, and experience a sense of fulfilment and achievement.

Useful tips for delivering a session

To create a safe creative space where the young people will feel comfortable, it is important to have a clear session structure. Young people with complex disabilities will also benefit from having time and space to explore at their own pace. Sometimes repeating an activity will help; at other times it may be helpful to move on and try another idea.

Fundamental to this idea is the practice of 'attunement'. It is important to find out where someone is 'at' on that particular day, 'meeting them there', and exploring where to go from that point, together – all the time looking for cues for new things to try and playing around with different possibilities and combinations.

If you can, practice with new technology before a session. It's easy to lose focus when you are trying to make the technology work.

Where to hold the session

In our experience, the location of these sessions and the feel of a space, is also important. It is best to hold sessions in a neutral space that is clear of obstacles if possible. However, sessions will often take place in a classroom, school hall or general room. Here are some ideas to help you make any space a delight for the senses:

- **Think about lighting** and the atmosphere of a room. Try to avoid using strip lighting and bring in external lighting (lamps, fairy lights, LEDs) to create a more inviting, colourful and calmer atmosphere.
- **Using smells** (for example, by using an air diffuser or oil burner) can help to create a sense of time and place for the participants at the sessions.
- **Use tactile materials** to bring the activity 'alive'. How could an emotion or narrative be connected to different surfaces? How can you use stories as starting points, themes or 'arcs'? For example, how does the smoothness of a metallic surface translate into a sound played on the cymbal? How could you play a sound that feels like cotton wool? This surface feels cold, how does that sound?
- **Use objects within the sessions.** Using the same object or activity at the beginning or end of the group can help give a feeling of structure to the workshops.

Equipment and technology

We used a variety of equipment and technology throughout the project. We were lucky enough to have funding to use a range of equipment and technology but we have also listed activities which don't rely on specialist equipment in order to keep costs down. You will find a list of retailers below.



Some suggestions and websites

- SUBPAC vests, which enable you to feel sound: www.subpack.com
- MINIRIGs small speakers - minirigs.co.uk
- iPad with Phonopaper app installed - <http://www.warmplace.ru/soft/phonopaper/>
- Microphones - shure.co.uk/products/microphones/sm58
- Audio Interface - store.focusrite.com/en-gb/product/scarlett-solo-2nd-gen/MOSC0019DM~MOSC0019DM
- Air Cannons (Airzookas) - amazon.co.uk/Air-Zooka-Colours-May-Vary/dp/B00009B1SF
- Bat Detector, which can detect small sounds - magenta2000.co.uk/acatalog/Bat_Detector_Bat4.html
- Light toys - glow.co.uk/super-led-flashing-ring.html
- Helium gas balloons - cardfactory.co.uk/gifts/helium-balloon-cylinder.htm
- Bongos and floor tom drums - thomann.de/gb/millennium_16x16_mx200_serie_stand_tom.htm
- Foil blanket - amazon.co.uk/Survival-Blanket-reflective-thermal-first/dp/B0040793JY

- Tent - Blacks camping
- Fingerprint kit - ebay.co.uk
- Wacom Tablet - wacom.com/en-us

Other versatile materials

- Umbrellas
- Rice
- Bubble wrap
- Pens, paper
- String, spoons, balloons, feathers
- Water bottles
- Popping candy
- Glow sticks
- Balloons
- Police helmets! eurocostumes.com/mens-police-helmet-with-flashing-siren-light.html
- Handcuffs
- Bottle speakers (see appendix)

Technology


- Apple: itunes.apple.com/us/app/phonopaper/id865947553
- Android: play.google.com/store/apps/details?id=nightradio.phonopaper
This app “reads” changes in light level and outputs noise.
- Computer with a Digital Audio Workstation installed (DAW i.e. GarageBand or Cakewalk) - with pitch shift. (See Appendix for more detail).

Part one

Sound and vibration

Young people who are deaf or have limited hearing may well be able to feel and sense vibrations.

From vibration to drawing – Sonic tags 1

 In this activity one person holds a microphone and makes a sound (it could be saying their name or singing a song) and the other person experiences the vibrations this makes – perhaps through a SUBPAC (a vest that turns sound into vibration) or an uncased speaker. The second person then expresses this feeling of vibration as a drawing. It's a good way for people to work in pairs. >




A SUBPAC

Instruction

1. Set up a microphone and boost the signal through an amplifier/mixer.
2. Connect the amplifier/mixer output to a SUBPAC or an uncased speaker.
3. One person holds the microphone and makes a sound; the other is ready with pen and paper.

Equipment needed: a microphone, amplifier/mixer, a SUBPAC or uncased speaker, pens and paper.

From drawing to vibration – Sonic tags 2

 You can also turn drawings into sounds and vibrations by using a sonic tag.


The drawing the young person has made is laid over a Wacom tablet (see equipment list) and the image is played back as sound/vibration.

Instructions:

1. Set up a Wacom tablet with a laptop connected running musiclab.chromeexperiments.com/Kandinsky/ in the browser.
2. Lay the drawing over the Wacom tablet and trace it using the Wacom Stylus onto the Kandinsky chrome experiment (use the Wacom settings to limit the area of the screen being drawn over - see appendix).
3. Play back the sounds you have drawn!

Equipment needed: Wacom tablet and pen, computer with internet connection.

Fingerprints

 In this activity the young people played out an imaginary scene in a police station with some sound effects. The course leaders dressed up as policemen and women and ‘arrested’ the young people, put them in handcuffs and took their fingerprints. Lots of fun for the young people!

Instructions:

1. Create a police station scene. For example, a low light prison cell, interview room and a walk-through scanner.
2. Dress up as police officers and arrest the participants using toy handcuffs. Make noises with the rattling handcuffs and by using the cell bars as a xylophone.
3. Lead the participants through the ‘scanner’ using a bat detector to pick up the handcuffs rattling.
4. A fingerprint is taken from each young person – which can be used as their identity tag for all their work in the project.



Fingerprints

Sonic tag



You can turn drawings into sounds and vibrations by using a sonic tag.


“ It’s a good way for people to work in pairs ”

Part two

Sounds and movement

Sounds become louder if they are trapped – and if they bounce from each other it makes an echo.

Sonic tennis

 This activity enabled the young people to work in pairs and as a group to explore the sound and texture of foil blankets when moved by the air.




Instructions:

1. Suspend a foil blanket across the middle of the room like a tennis 'net'.
2. Give the participants Airzookas that fire out columns of air, with bat detectors strapped to the top of them. Some participants point their bat detectors at the foil blanket. >

3. Take turns to fire air at the foil and listen to the frequencies being picked up by the bat detectors.
4. Think of other creative ways to rustle the foil – for example, with fans, firing elastic bands etc.

Equipment: foil blanket, air cannons (Airzookas), bat detector.

Sonic snow walk

 In this activity, the young people walked along a polystyrene walkway which created all sorts of interesting squeaks and scrapes. This enabled the young people to make connections between movement and sound; to create and assess these sounds and to develop confidence in unfamiliar surroundings.


Instructions:

1. Set up a walkway of polystyrene blocks. These can be obtained from packing stores or white goods stores for free.
2. Make sure the walkway is not too high (a few inches is ok) and wide enough for a wheelchair to move along.
3. Tape each block together to stop them moving.
4. Place glow sticks along the edge of the walkway, like on an aircraft runway. This acts as a visual indicator for the walkway when lights are off.
5. Turn off the room lights.
6. Line the group up to take the walk in turns.
7. Before the young person starts to walk over the polystyrene give them a bat detector. This should be turned up to full volume with the torch option on.
8. Point the bat detector in front of the participant's feet and move slowly along the walkway.

9. Encourage the young person to choose a point on the walkway where they can stop and twist their feet against the material to produce different sounds. The bat detector will pick up the movement and amplify the footsteps.
10. Support each person to move along the walkway to make the connection between movement made and sound produced.
11. Ask the young person how they are finding the experience.
12. To deepen the experience the young person can wear a SUBPAC vest connected to the bat detector so they will feel the sound vibrations in their backs as they move.

Equipment: polystyrene blocks, tape, bat detector, SUBPAC.

Dancing on rice

 The young people stand as a group under umbrellas while rice – at growing intensities – cascades down above them. This is a nice way to share the same activities as others and feel safe.

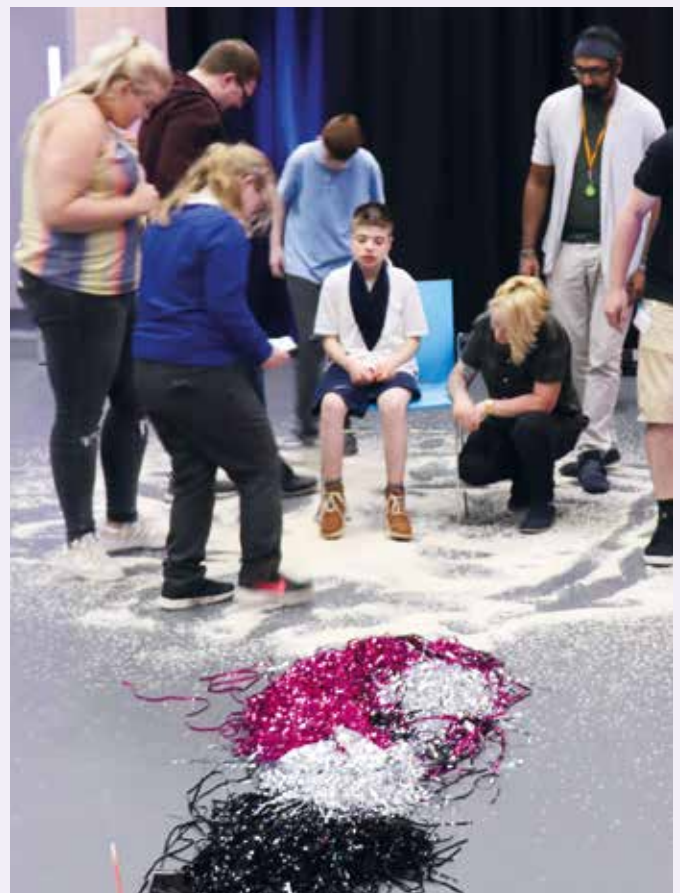
Instructions:

1. Gather the group under a collection of umbrellas; some people can hold bat detectors.
2. Slowly drop grains of rice onto the umbrellas and increase the volume of rice to create a downpour.
3. Experiment with other granular materials or use Airzookas and fans. Try dragging your feet through the rice to make patterns.

Equipment: rice, umbrellas, bat detector, Airzookas.



Sonic snow walk



Dancing on rice

Part three

Everyday objects make diverse sounds

Different materials make all sorts of different sounds – and these sounds can travel through objects.

Vibrating balloon tower

This activity helped the young people to understand that sound travels as a vibration through different materials. >




Balloon tower

Instructions:

1. Blow up a selection of balloons.
2. Set up a speaker on a table, with the speaker facing upwards, and play some bass heavy music.
3. Using tape, harness the balloons over the speaker; start to build a tower.
4. Feel the music vibrate through each balloon as you add them to the tower.

Equipment: balloons, tape, speaker.

Sonic spoons

 The young person senses the vibrations moving up a string from a spoon around their neck. This helps them to understand that sound travels as a vibration through different materials and supports them to learn independently.

Instructions:

1. Tie a length of string around the handle of a spoon so the spoon hangs in the middle when held up by the string.
2. The young person holds the end of the string next to their ears.
3. They can then bounce the spoon off of the table, or another participant can tap the spoon with another metal object.
4. The vibrations travel up the string and can be felt and heard.

Equipment: piece of string and spoon

“ The children hear sounds as they are transferred along a string ”



Sonic spoons

The cup phone (and chicken in a cup!)

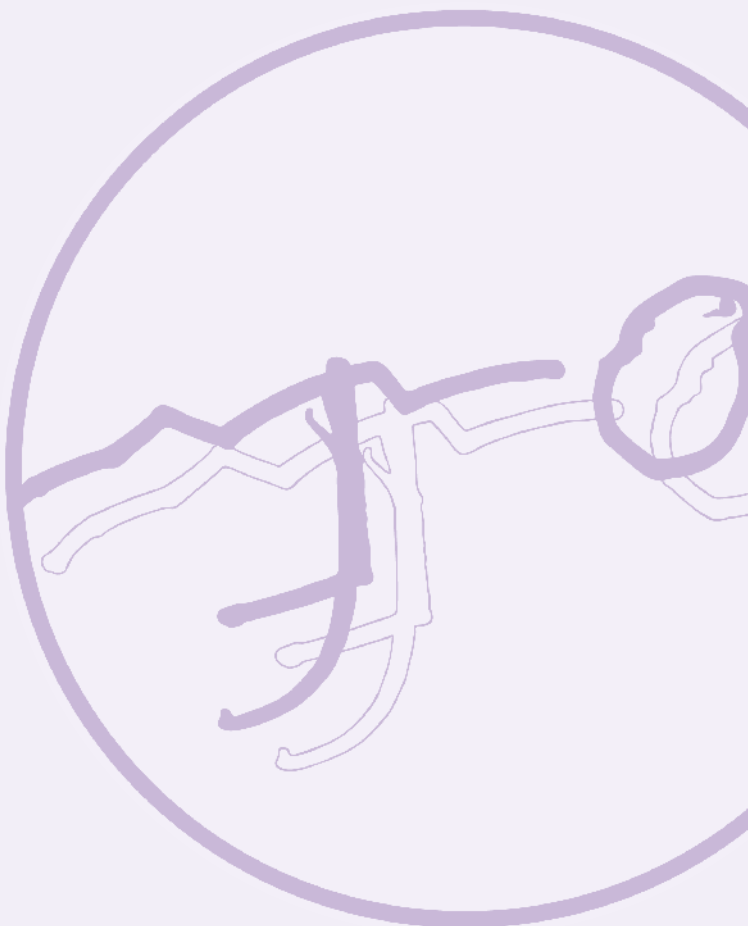
The aim of this activity is for the children to hear sounds as they are transferred along a string.

Instructions:

1. Take a paper cup and pop a hole in the centre of the base with a cocktail stick.
2. Holding the cup upside down, thread some string through the hole and have the long end of the string hanging through the cup.
3. Tie the end of the string coming out of the base of the cup round the cocktail stick to hold it in place.
4. Holding the cup upside down use a damp piece of kitchen towel or hand towel and run it down the string, pinching quite tightly - the cup squawks like a chicken!

Part 2

1. Remove the string and cut a longer piece to create a classic cup telephone.
2. Tie one paperclip to one end of the string.
3. Pull the other end of the string through the hole in one of the paper cups. The paperclip should be inside the paper cup.
4. Insert the free end of the string into the hole in the bottom of the second paper cup. Insert it from the outside of the cup.
5. Pull enough string through the hole to enable you to tie the second paperclip to the end of the string.
6. Pull the cups apart so that in each cup the paperclip rests flat on the floor of the cup and the string is taut.
7. Try a phone triangle by adding another cup with two pieces of string attached to the first two.



Part four

Low sounds as vibration

Some sounds are low. Some sounds are high. This chapter explores low sounds as vibration

Bottle speakers

The aim of this is to enable young people to experience and experiment with the sounds and vibrations from a bass guitar.

Instructions:

1. Set up a bass guitar, and a computer running www.szynalski.com/tone-generator through an amplifier/mixer.
2. Plug in a bottle speaker. (See appendix)
3. Play the bass or low tones from the tone generator and feel the bottle vibrate.
4. Experiment with feathers and a bubble dipstick by holding them over the bottle opening or putting feathers inside the bottle and seeing the bass resonances effects – can you get it to blow a bubble? Perhaps use a microphone input or other instruments.

Equipment: bass guitar, amplifier, bottle speaker, feathers, bubbles.

Popping candy

The young people feel the vibrations of popping candy through the SUBPAC – and experiment with manipulating these sounds musically.

Instructions:

1. Set up a microphone through an USB/Thunderbolt audio interface and send the output to the Subpac/amplifier/mixer.
2. Open your DAW (digital audio workshop) and add a pitch shift plugin (see appendix) to the channel and shift the signal down an octave.
3. Put popping candy in some water (or the young person can hold it in their mouth) and bring the microphone close to pick up the pops and crackles.
4. Feel the noises as low frequencies through the SUBPAC.
5. Experiment with other pitches or plugin effects and sound sources.

Equipment: popping candy, SUBPAC, microphone, amplifier/mixer, computer running a DAW.



Bottle speaker

Part five

Sounds on the move

Sounds and vibrations can be made anywhere with anything. Explore this chapter to make music from your everyday environment.

Light, sound and vibration – session 1

In this activity, the young people explored how sound can be manipulated by light and movement, by feeling the vibrations from the light through a SUBPAC.

Instructions:

1. In a large room set up a range of toys that use light. These can be rings, lightsabres, light rings, fairy lights etc. Make sure that these light points are distant from each other and spread around the room, so that individuals can move around safely.
2. Turn off the main light so only the illuminated toys are on.
3. In a separate room, one of the participants puts on a SUBPAC which is connected to a smartphone. Make sure the phone has the phonopaper app downloaded on it. Attach the phone to a selfie stick.
4. Activate the app and make sure that the SUBPAC vibrates when the phone is being pointed around the space. Once it is working take the user into the dark space.

5. The young person experiences the change in vibration between light and dark spaces. They are now ready to explore the space just using vibration and light to navigate.

Equipment: Light toys, SUBPAC, phone, selfie stick, phonopaper app.

Navigation as sound and vibration – session 2

The participants were supported to explore unfamiliar situations, textures and activities – for example, keys moving, water running, fingers dragged across windows, and even eating an apple!

Instructions:

1. Connect the bat detector to the SUBPAC.
2. Allow the user to understand the connection between movement, space, sound and vibration as the bat detector picks up hidden sounds and sends the vibrations into the body via the SUBPAC.
3. The young person is supported to explore the vibrations of all sorts of activities.

Equipment: Bat detector, SUBPAC.



Bat detector

Part six

Light as vibration

When something moves back and forth it makes a sound. This movement is called vibration. If we add lights to these vibrations we can see the sounds.

Glow stick orchestra

In this session sound was created from the light given off by glow sticks sitting in bottles of water. The amount of water in the bottle alters the sound created.

Instructions:

1. Take 5 - 8 empty glass bottles with no top and fill them with different amounts of water – ranging from very little to nearly full.
2. Place different coloured glow sticks in each bottle.
3. Experiment with the phonopaper app by scanning each bottle, to see how each bottle produces a different sound. Different colours will make different sounds
4. Now take a pencil and gently tap each bottle. Each bottle will make a different note due to the water content. If possible use a microphone to amplify the sounds.
5. Explore putting the bottles in pairs combining tapping whilst using the phonopaper app.

Equipment: glow sticks, glass bottles, phonopaper app, water.

Light drums and glow rhythms

An interaction between percussive instruments, light and bounce!

Instructions:

1. Take a range of percussion instruments, such as tom tom, snare drums and cymbals.
2. In a darkened room, use the glow sticks as drum sticks and explore hitting the surface of the drums and cymbals with them. As you drum the glowsticks break and begin to glow.
3. Cut off the ends of the glowsticks.
4. Note the traces the glow sticks make as the drums are hit, experiment with fast and slow rhythms, take photos and film in slow motion to watch and review later.
5. To make it more sensory, leave rubber glow balls or rings on the surface and watch them bounce around as the rhythms are created.
6. Try phonetically spelling out the names in the group to a rhythm.

Equipment: bongos and other drums, light up rubber rings, glow sticks.



Light toy

Sonic star field

A line of young people wearing SUBPACs experience vibrations together, move as a team, build upon what they have learned previously and celebrate their achievements!

Instructions:

1. In a large room set up a range of light toys. These can be rings, lightsabres, light rings, fairy lights etc. Amongst these place 10 - 20 balloons filled with helium. If possible use balloons with small lights inserted and weigh them down so they hover around three feet above head level. Make sure that these light points are distant from each other and spread around the room, so that people can move safely around the room.
2. Prepare a projector and screen, turn off the main room light so that only the light toys and projector are on, and play some atmospheric music from another sound source – something like ‘Space Oddity’ by David Bowie for example.
3. The participants should line up, each wearing a SUBPAC, with extra audio leads connecting each user in a chain, using the headphone socket on each SUBPAC. This way everyone will experience the same vibrations.
4. Then connect a smartphone to the person in the lead position in the group to the SUBPAC. Make sure the phone has the phonopaper app downloaded on it. Attach the phone to a selfie stick.
5. Activate the app and make sure that the SUBPAC vibrates when the phone is being pointed around the space. Once it is working take the user group into the space and move in very slow motion.
6. Allow the user to understand the change in vibration between light and dark spaces. They are now ready to explore the space just using vibration and light to navigate.

“ The young people move as a team and celebrate their achievements ”



Part seven

Appendix

DAW with pitch shift

- To manipulate sounds and change their pitch (make voices deeper or higher pitched) you need to connect your computer to an Audio Interface (see equipment list) usually with USB/Thunderbolt.
- You can connect a microphone with an XLR cable to the Audio Interface so it sends signal to your computer to be recorded or manipulated through a DAW.
- GarageBand is free and preinstalled for apple. Cakewalk or Audacity are free for Windows.

GarageBand

- Start a new Empty Project.
- Click the Blue Microphone Icon and Create.
- In the left hand menu select Voice/ Experimental/Deeper Vocal.
- In the blue Controls interface dial the pitch all the way anti-clockwise.


Cakewalk

www.bandlab.com/products/cakewalk:

- Start a new Basic Project
- Select the Audio Track
- Click the + next to FX
- Go through Insert Audio FX/Pitch Shifter
- Slide the top control all the way to the left.

Technology and apps


You can purchase most of the software we used via the app store on itunes.

-  **Sound navigation walk**
Equipment: Phonopaper app on smart phone, subpac, mini rig speaker, selfie stick


Kandinsky Music

-  **Equipment:** laptop, wacom tablet and pen

Chrome Lab voice spinner

-  www.musiclab.com
Equipment: Laptop and speaker

Patatap

-  www.patatap.com
Equipment: Laptop and speaker

Other useful sites

www.whalesynth.com
www.femurdesign.com/theremin

Bottle Speakers

How to make:

- A “6.5” QTX Driver Speaker 902” is glued into a 18cm “Hydral Elements Cedar Pot.” (Solder the female instrument jack to the connectors with wire first).
- A “Tesco Ashbeck Still Water 5Ltr” bottle with the base cut off is sealed into place on top of the speaker. Cut the bottom off the plant pot so it doesn’t overheat.
- Melt a hole in the plastic with the soldering iron to fit the female jack through and screw in place.

Notes

A series of horizontal purple lines for writing notes. A large, faint purple graphic of a musical waveform is overlaid on the lower half of the page, spanning across the lines.



sense

connecting sight, sound and life

About Sense:

Sense is a national disability charity that supports people with complex disabilities – including deafblindness – to be understood, connected and valued.

Sense supports children, young people and adults in their home and in the community, in their education and transition to adulthood and through its holidays, arts, sports and wellbeing programmes.

Sense campaigns passionately for the rights of the people it serves, and offers practical help and support to families and carers, including information, advice, short breaks and family events. For more information please visit www.sense.org.uk

If you, or someone you know, require this information in a different format, please contact Sense Information and Advice - contact details below.

Sense

101 Pentonville Road
London
N1 9LG

Tel: 0300 330 9256 (voice)

Text: 0300 330 9256

Fax: 0300 330 9251

Email: info@sense.org.uk

Website: www.sense.org.uk

Patron: HRH The Princess Royal

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National Foundation for
Youth Music