

Music and Sound – Science Time

The video for this transcript can be found on the Questacon Science Squad website at:

<http://sciencesquad.questacon.edu.au/activities>

Transcript of Video

DION Hi, welcome to Questacon Science Time. My name's Dion.

BJ And my name's BJ.

DION And today we're talking about music

BJ And sound. Come on.

DION Let's go.

[Science Time logo]

[Music playing]

[Singing]

Wake up sun and moon, it's Science Time, it's Science Time.

Wake up skeleton, it's Science Time, it's Science Time.

At home in the bathroom, when we're swimming there is science,

Outside at the playground, in the sunshine, there is science.

Wake up.

[Science Time logo – Title, "Music and Sound"]

[BJ, DION and all the children are sitting around the mat.]

- DION What do you think we might be talking about in Science Time today?
Does anyone know.
- CHILD I do.
- DION What do you think it might be?
- CHILD Music.
- DION Music and sound today. No, can anyone tell me what body part do you
use to listen with?
- CHILDREN Ears.
- DION Can everyone show me your ears? Where are your ears? Right there.
Now, I've got quite bit big ears, as you can see. I'm pretty good at
listening. These are our big ears here, and we use those to listen to
sounds and also music. Now, I'm going to start by looking at a very
special instrument. Can anyone tell me what instrument is this?
- [DION holds up a small drum.]
- CHILD Drum.
- DION A drum, exactly, it's a drum. Now how do I play a drum? Do I shake it?
- CHILDREN No!
- DION What do I do?
- [CHILDREN mime hitting a drum with their hands]
- DION You hit it. So what I'm going to do – I've got a special banger here and
I'm going to bang our drum. And you have to listen very, very carefully
using your ears and see if you can hear the drum.
- CHILD Some drums beat very loud.
- DION Some drums are very loud, aren't they? This one might not be loud
though. We'll have a listen. Ready? Listening to the drum.

[DION puts the small drum on the ground and bangs the drum with the drum stick a few times.]

BJ Can you hear it?

DION Can you hear the drum? Is it a very loud drum? Do you think it's a very loud drum?

CHILD Yes

DION You can hear it pretty well. What I'm going to do, I'm going to lift it up now so all of this space here is outside.

[DION lifts the drum off the ground and points to the space on the underside of the drum.]

DION And we're going to have a listen and see if it's louder or quieter. Ready? Listen.

[DION hits the drum again and the sound is louder than before.]

BJ Is that louder?

CHILDREN Louder!

DION It's louder, isn't it? It's a lot louder than that one. Now, what is sound made of? Does anyone know? It's a pretty hard question.

CHILD I know.

DION You know?

CHILD From instruments.

CHILD From noise.

DION From instruments.

BJ Or from noise.

DION From noise. Sound is actually made from air that's shaking. Can everyone shake for me?

[DION, BJ and the CHILDREN all shake their arms and hands.]

DION Can you shake? Shake, shake, shake, shake. This is shaking. And when air shakes really, really fast it's called vibration. Can everyone say vibration for me?

CHILDREN Vibration.

DION Vibration. So, vibration is when the air is shaking really, really fast. Now, when I hit this drum.

[DION picks up the drum and hits it with the drum stick.]

DION This bit here of the drum starts to vibrates really, really quickly. It shakes really, really quickly. And it starts to shake all the air inside the drum. All that air shakes all the way to the inside of my ear. That's why we can hear it.

CHILD If you bang it on the outside, let's see if it makes a loud noise or quiet noise.

DION If I bang it on the outside it's a lot louder, isn't it? And all that air is vibrating all the way into our ear. It's very, very loud.

BJ So that air vibrates, and it makes the other air shake, and the other air shake, and the other air shake, all the way to our ears.

CHILD Let's see how loud it can go.

DION What we're going to do now is we're going to have a look and see. So if everyone looks really, really closely at the air behind the drum. Can anyone see the air shaking?

- CHILD No.
- DION Can you see it shaking?
- BJ No.
- CHILD The drums shaking.
- DION You can see this bit might be shaking, but the air behind it you can't see it shaking.
- CHILD But it's moving when you do it.
- DION It is moving.
- BJ It's moving but we can't see it because air is invisible. We can't really see what it's doing.
- DION To show that it is really shaking I'm going to use some of this rice here.
- [DION gets a large bowl with plastic rap pulled tightly over the top. He puts rice on top of the plastic rap.]
- DION Now what we've done, you can do this at home if you like, we've put some plastic over the top of a bowl and we've put some rice on top. Now, is the rice moving?
- CHILDREN No.
- DION No it's not, is it? It's staying very, very still. But what I'm going to do now, I'm going to play the drum near it and we'll see if the shaking air makes our rice shake. So watching very, very closely see if it shakes at all. Ready?
- [DION bangs the drum next to the rice and the shaking air makes the rice shakes and move around on the plastic.]
- CHILD It's shaking!
- BJ What's happening to the rice?

CHILDREN It's shaking.

DION It's shaking,

BJ Yeah.

DION You can see because our rice is been shaken by all that shaking air you can see it and you can see the rice moving.

CHILD Some has fallen down now.

DION It's fallen down everywhere, hasn't it? So you can see, even though we can't see the air shaking, it is shaking and it can shake our rice and make a really big mess.

BJ And if you go really, really fast watch what happens. I love this. Are you ready?

[DION bangs the drum next to the rice and the shaking air makes the rice shake and move around on the plastic.]

[DION bangs the drum next to the rice really fast and the rice shakes and move around on the plastic quicker.]

BJ Really, really fast. It's dancing. Dancing rice.

DION So that is really, really loud and really, really fast. But watch what I do. If I do a really, really quiet one watch what happens.

[DION bangs the drum next to the rice really softly and the rice shakes and move only a little bit.]

BJ What's happening to the rice now.

CHILD It's moving a tiny bit.

DION It's only moving a tiny bit, isn't it? So what happens is when we make a loud noise the air moves really, really big. It's got big shakes in it. But

when we make a small noise it's only got small shakes. There we are.
Now, I've got another exciting thing to show you.

[DION passes the bowl to BJ and picks up a small wind-up music box.]

DION Thanks very much BJ. We've got another exciting thing to show you. This one right here. Now, this is called a music box.

CHILD I've got that at home.

DION You've got one at home, do you?

CHILD I've got that.

DION Do you? Who's got one of these? Hands up if you've seen one of these before.

BJ You may have seen one of these.

DION Now, what we're going to do – you've got to be really, really quiet. You got to listen really, really carefully to the music. Ready? Listening really, really carefully.

[DION turns the handle of the music box and it plays music very quietly.]

BJ It's very quiet Dion.

DION Hands up who can hear the music.

CHILD Me.

BJ I can a little bit.

DION Is the music quiet or loud?

CHILD Quiet.

DION It's very quiet, isn't it? That's because only little bits are vibrating. On our music box here, only tiny little bits of the metal are shaking and vibrating the air or shaking the air. So it only gets a very small amount of shaking

and a very quiet noise. What I'm going to do though is I'm going to put it onto of this drum now. So now not only is this small metal bit going to be shaking, but the whole of the drum is going to be shaking as well. So do you think it's going to a louder sound or a quieter sound?

CHILD Let's see.

CHILD A louder sound.

DION A louder sound? Let's have a look shall we.

BJ Let's see.

DION We'll have a little experiment. So listening carefully.

[DION puts the small music box on top of the drum and turns the handle to play the music box again. The sound can be heard a lot louder.]

BJ Is it louder or quieter?

CHILDREN Louder.

DION It's louder, isn't it? That's because there are more things vibrating or shaking. So the whole drum is shaking this time which means that more air is shaking and we can hear it a lot better.

CHILD When you do it on bigger drum it goes really loud.

DION The bigger the drum the louder it probably is.

CHILD Try to put it on the ground.

DION We'll put it on the ground and have a listen, ready. Listen carefully when we put it on the ground.

[DION puts the music box on the ground and plays it. It sounds loud again.]

BJ So now the whole ground is shaking and vibrating.

DION So we're making big shakes using bigger things. It's very small by itself so it only makes a little bit of sound. But the drum and the floor are bigger and make a bigger sound. Now, we're going to try to make some big sounds ourselves. We're going to use these special instruments. Does anyone know what these instruments are called?

[DION shows the children a container of bells.]

CHILDREN Bells.

DION Bells, aren't they? They're bells. So I want everyone to come and grab a bells.

[DION tips the container of bells onto the ground and the children all come forward and choose a bell then they go and sit back in their spot on the mat.]

BJ One each.

DION One bell each. Good work. There we are.

BJ Here's some for you.

DION Good work. So has everyone got a bell? There you are.

BJ Now if you've got some bells at home you can do this. Or you might like to do some clapping. So while we're playing our bells you can clap.

DION You can clap or play your bells as well. So I want everyone to hold your bells really, really still. Can everyone hold their bells really still?

BJ What happens if you don't shake the bells.

CHILD They won't move.

DION They won't move and they won't make any sound, will they? So what I want everyone to do first –

BJ Quiet first.

- DION Everyone shake your bells really, really tiny.
- [All the CHILDREN shake their bells a really tiny amount and make a quiet sound.]
- BJ Really little shake.
- DION Really little shakes.
- CHILD Mine's very tiny shake.
- DION Is that making a loud sound or a quiet sound do you think?
- CHILD Quiet. Let's see if we can make a really loud sound.
- DION Let's see if you can make a really loud sound.
- BJ How do you think we can do that?
- CHILD I can make it really loud.
- [The CHILD shakes his bells really hard and makes a loud sound.]
- DION By shaking big.
- BJ A bigger shake.
- DION Can everyone shake really, really big?
- [All the CHILDREN shake their bells really hard and make a loud sound.]
- DION Good work. What we're going to do now is we're going to play a bit of a game. So I want everyone to stand up for me. Can everyone stand up?
- [DION, BJ and all the CHILDREN stand up.]
- DION Now what I want you to do – everyone get as small as you can. Can everyone get really, really small and rap your self in to a ball.

[DION, BJ and all the CHILDREN crouch down into a small shape.]

DION And we're going to make tiny, little shakes.

[DION, BJ and all the CHILDREN make tiny little shakes with their bells.]

BJ Really little. Little shakes.

DION When we are down little we are going to make little shakes or little claps. But when you get higher we are going to make bigger shakes. Everyone standing up and make really, really big shakes. Shake, shake, shake.

[DION, BJ and all the CHILDREN stand up and make big, loud shakes with their bells.]

BJ Big and loud.

DION Loud noises. Right now I want everyone get really small again. Really small and tiny little shakes. Tiny shakes.

[DION, BJ and all the CHILDREN crouch down small and shake their bells a really tiny amount and make a quiet sound.]

BJ Little shakes. And nice and quiet. Down you get, nice and small.

DION And now I want big shakes. Big, big, big shakes. Shake, shake, shake.

[DION, BJ and all the CHILDREN stand up and make big, loud shakes with their bells.]

DION Well done. And sitting on your bottom again.

[DION, BJ and all the CHILDREN all sit down on the mat again.]

BJ Oh, wonderful.

DION Putting our instruments back into the container.

[DION, BJ and all the CHILDREN put their bells back into the container.]

- BJ You were all wonderful musicians.
- DION Well done everyone.
- BJ You played really good music with your instruments.
- DION And that one in there. And shuffling backwards everyone. Back to where you were sitting on your favorite colours. Thank you very much, there you are. Shuffling back for me. Thank you very much.
- [All the CHILDREN move back and sit on the mat.]
- DION When we do our big shake we made a big noise with all the air shaking. And when we did a little shake only a little bit of air was shaking and that's why they were a little quieter those sounds there.
- BJ Do you know that there is a musical instrument that everybody has? And that is our voice. Our voices can also be quiet and loud
- CHILD You know, I can do supper quiet.
- BJ Can you? Can we all say I love Science Time?
- DION How about we try to say I love Science Time really, really quietly. So can everyone whisper ready? When I say ready, set, go whisper I love Science Time. Ready, set, go.
- CHILDREN I love Science Time [very quietly]
- BJ That was very quiet.
- DION So what do you think we should try to do next?
- CHILD I LOVE SCIENCE TIME [very loudly.]
- DION I think we should try to say it as loud as we can. Try it at home as well. So when I say ready, set, go we are going to shout I love Science Time as loud as we can. Ready, set, go.
- CHILDREN I LOVE SCIENCE TIME [very loudly.]

[BJ giggles.]

DION We must all like Science Time a lot.

BJ That was really loud.

DION So we've got lots of things to look at in Science Time today. So ready, set, go. Explore the room and have fun. Go and have fun.

[CHILDREN leave the mat and go and start playing]

[Music playing]

[Singing]

We are going to learn about the world we live in, it's Science Time, it's Science Time.

We are going to play, its fun experimenting, it's Science Time, it's Science Time.

At home in the kitchen, when we're cooking, there is science.

Outside in the garden, in the night sky, there is science.

Wake up sun and moon, it's Science Time, it's Science Time

Wake up skeleton, it's Science Time, it's Science Time.

[CHILDREN (with their caregivers) are exploring, observing and playing with all the toys and experiments focused on "Music and Sound" in the Science Time room.]

[A close up of BJ talking directly to the boys and girls at home.]

BJ Wow. So no while everyone's playing I want to show you a really special instrument that we have here at Questacon. Come with me.

[Science Time logo is on screen. BJ is now standing out the front of Questacon next to the stone lithopone.]

Making science fun and relevant for everyone

Hi boys and girls. Now we're at one of my favorite things here at Questacon; our big, giant lithopone. Which is basically a stone xylophone. You might have played a xylophone before. Now a xylophone has different sized bars and each different bar makes a different sound, or what we call pitch. Listen to thing, I'm going to play the small bar and the big bar.

[When BJ hits the small bar is makes a high sound and when she hits the bigger bar is makes a lower sound.]

BJ Did you see that? When I hit the bar it vibrates and it's those vibrations that cause the sound. And the small bar has a high sound.

[BJ hits the small bar again.]

BJ High sound. [in a high voice.] And the big bar has a low sound [in a low voice.]

[BJ hits the big bar again.]

BJ I'll play from the little one to the big one and you can hear how the sound changes.

[BJ hits the bars from the small bar to the big bar. The pitch of the sound goes from high to low.]

BJ I can even play a song on my lithopone. I've been practicing. Ok, listen carefully; see if you can guess what this song it. Ready?

[BJ plays the song "Twinkly, twinkle little star" on the lithopone. There is a close up camera shot of her hitting the bars.]

BJ Did you guess what song it was? "Twinkly, twinkle little star" I'm going to play it one more time and you can sing with me. Are you ready? We'll sing together then.

[BJ sings and plays the lithopone at the same time]

BJ Twinkly, twinkle little star.

How I wonder what you are.

Up above the world so high,

Like a diamond in the sky.

Twinkly, twinkle little star.

How I wonder what you are.

BJ I love playing music. Next time you come to Questacon make sure you come and play the lithopone. Let's go back and see what's happening at Science Time.

[Science Time logo is on screen. We are now back in the Science Time room with DION, BJ and all the CHILDREN.]

DION So we had a lot of different things to look at and talk about at Science Time today. But before we finish up, we're going to have a chat about sounds. Now sounds, we can have really, really loud sounds [loud voice] or we can have really, really quiet sounds as well [quiet voice]. What we're going to talk about now are some different sounds. So, first of all, does anyone know what instrument this is?

CHILD Whistle.

BJ Yes.

DION What do you think?

CHILD Whistle.

DION A whistle. It's a whistle. So I'm going to play the whistle first of all. Listen carefully to this noise.

[DION plays the whistle. It has a very high sound.]

CHILD It's loud.

BJ It was loud.

DION It was loud but do you think it was a high sound or a low sound?

CHILDREN High sound.

DION High sound. It was a high sound. So what I'm going to do now, listen to it and you'll see how it changes.

[DION plays the whistle. It is a slide whistle and as he pulls out the slide handle on the bottom of the whistle the high note changes to a low note.]

BJ Did you notice that change?

DION Did it change? What was I doing?

BJ What did Dion do to make it change?

CHILD Pulled it down.

DION I pulled it down. What happened was that the instrument got a little bit bigger. So that second sound, was the second sound higher or lower do you think?

CHILD Lower.

DION It was lower, well done. So what happened is if you've a really, really small instrument then the air can only vibrate in a small space and you get a really high sound like this one.

[DION pushes up the handle on the slide whistle so that the whistle is small. He blows into it and plays a high note on the whistle.]

DION But if you've got a bigger instrument. So I'm making more space now for the air to shake inside you have a low sound.

[DION pulls out the handle on the slide whistle so that the whistle is bigger. He blows into it and plays a low note on the whistle.]

DION There we are. So generally big things make low sounds and small things make high sounds. You can see this on this instrument here. What is this instrument called?

[DION holds up a small xylophone.]

CHILD A xylophone.

DION A xylophone. You might have one of these at home maybe that you can have a look at. Now a xylophone - this is the small bit of the xylophone, listen carefully.

[DION hits the small bar on the xylophone with a wooden drum stick.]

DION Now, was that a high or low note do you think?

CHILDREN High.

DION It was pretty high. What about this one? Is this high or low?

[DION hits the big bar on the xylophone with a wooden drum stick.]

CHILDREN Low.

DION Quite low that one.

[DION hits the biggest bar and then the smallest bar on the xylophone with a wooden drum stick.]

DION So there is high [talks in high voice and makes high sound] and low [talks in low voice and makes low sound]. There we are. Sitting on your bottom. Now, another instrument we're going to have a look at - these ones here.

[DION holds up two triangles, one larger than the other.]

DION What type of instrument is this?

CHILDREN Triangle.

DION Triangle. So, if BJ wants to hold onto that one there. There we are. We've got our small triangle. Do you think our small triangle will make a high or a low sound? Have a guess at home. High or low sound? Let's have a look.

[DION hits the small triangle with the stick.]

CHILD High.

DION And look at the big one [lower ding, ding]

[DION hits the big triangle with the stick.]

DION Which one is the high sound? Come and sit down. There you are. So which one is the high sound?

[DION hits the small triangle with the stick again.]

CHILD That one.

[The CHILD points to the small triangle.]

DION That one, isn't it? The small one is the high sound and the big one is the low sound.

BJ And one more thing to show you with a high and low sounds. We've got our music bangers.

[BJ hits the plastic tubes "music bangers" on the ground. The different size tubes make different pitches.]

BJ Which do you think will be the low sound? The big one or the little one?

CHILD Little one.

CHILD Big one.

DION Big one. Exactly. Well done.

[BJ hits the plastic tubes "music bangers" on the ground. The different size tubes make different pitches.]

BJ Let's have a listen. They sound different, don't they?

[BJ hits the plastic tubes “music bangers” on the ground. The different size tube make different pitches.]

BJ I like those [giggle].

DION There we are. So we've had a look at low and high sounds. We've also looked at loud and quiet sounds as well. So, we've learnt a lot of things in Science Time today. Now, before we go we've got some things for you guys to take home and you at home you can also get these on the website. The first thing here is our parent information sheet. They will give you an idea of some activities you can do at home, some websites to visit, some activities to do. They are lots of fun. They are for the parents. But for the kids we've got some colouring in. Can anyone tell me what the boy is playing? What instrument is he playing?

CHILDREN A guitar.

DION A guitar. And what other instruments are beside him? What are those two?

CHILDREN Drums.

DION Drums as well. Now, you can get this off the website or you can take it from here. It will give you something to colour in lots of different colours. So before we go I want everyone to look at the boys and girls at home. Can everyone look at the boys and girls and we're going to give them a big wave. Can everyone wave? And say see you next Science Time.

EVERYONE See you next Science Time. Bye

[Theme Music Playing]