SEEC2017

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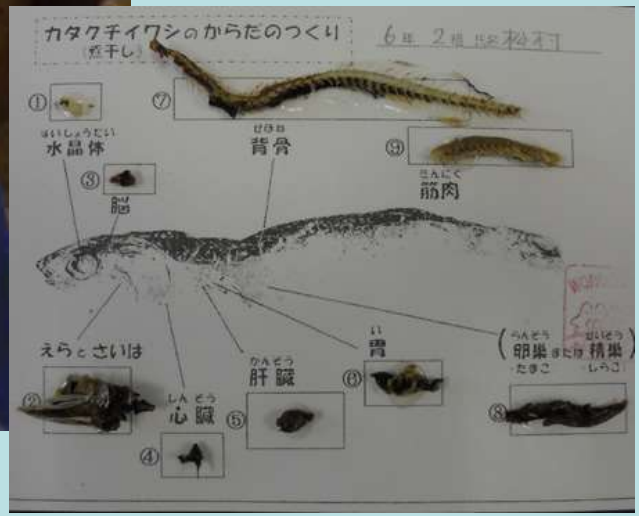
Saitama is known for being a soccer-loving city.

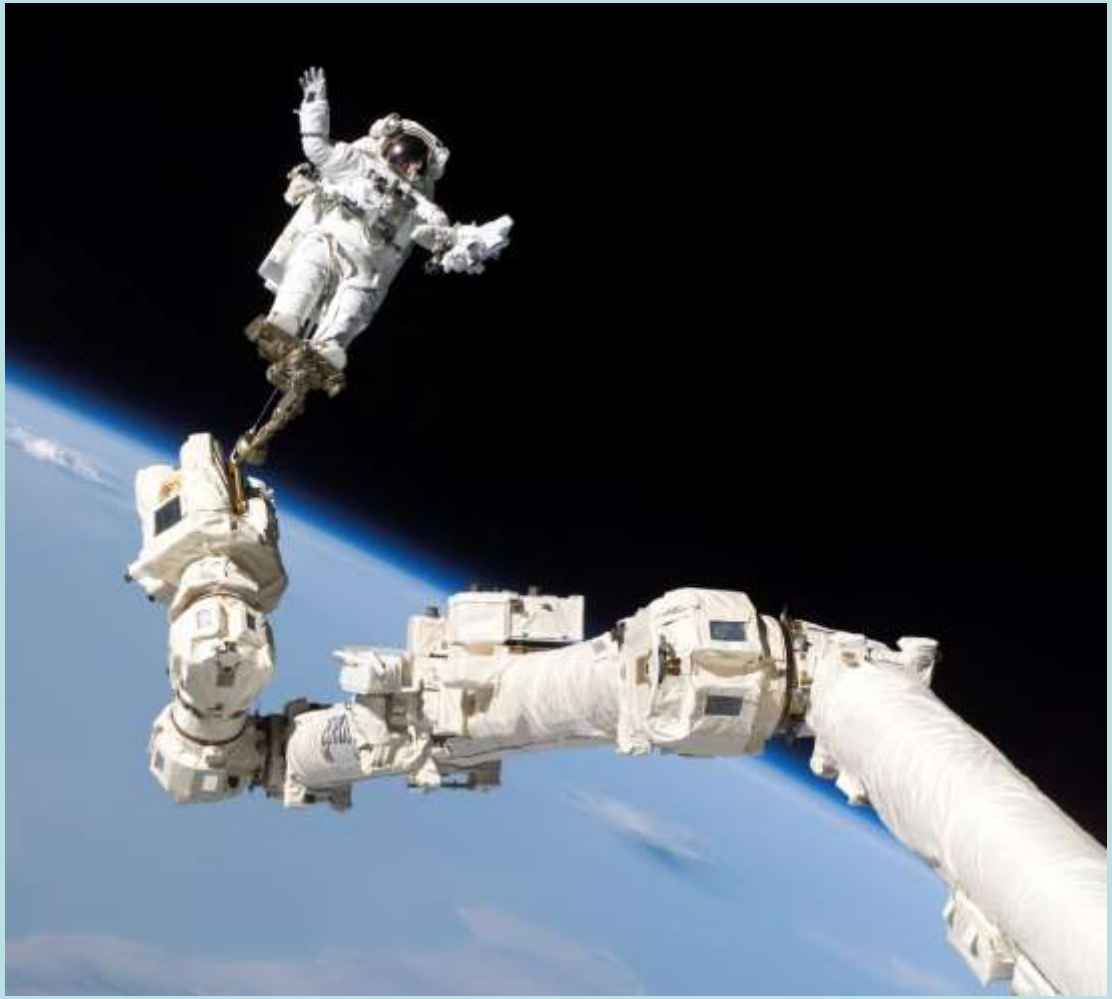
This is a 5th grade (11 years old) science class.
They are boiling sea water to get the salt .



This is a 6th grade (12 years old) science class .
They are studying small dry fish to learn about fish bodies.

I went to South Africa for a month as a volunteer teacher .

Sound & Air



Sound & Air

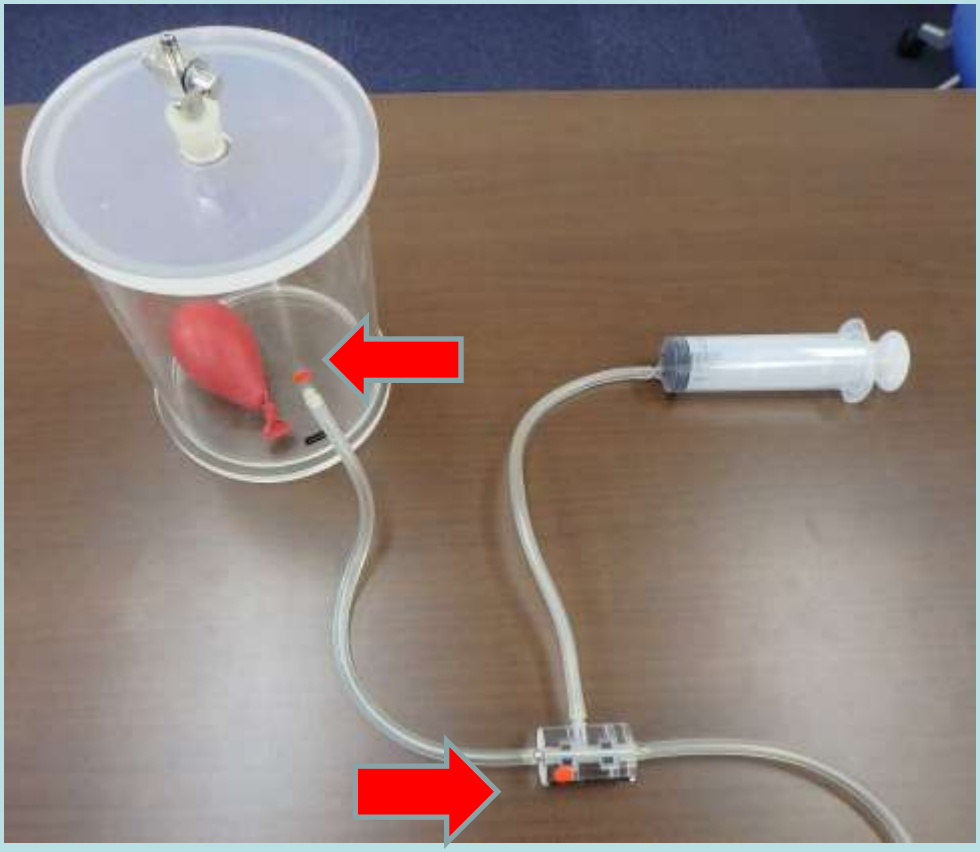
Star Wars

A famous scene from Star Wars.
It's a battle scene in space.
Do you notice anything?

Space has no air

- Would things burn?
- Could space ships do sharp turns?
- And one more thing?

Let's check with a vacuum pump and a buzzer



Just set the device as in this pictures.

Determine the level of the vacuum by how inflated the balloon is.

Lever position
(horizontal)

(1) Put a buzzer after switch ON and a balloon into a container.
(2) You hear the buzzer beep.
(3) Close the container with a lid.
(4) Check the position of the lever. (Make it horizontal)
(5) Pump the plunger about 30 times to remove the air.

Sound gets quieter as the air gets thinner

The balloon expands.

Open the valve to let air in

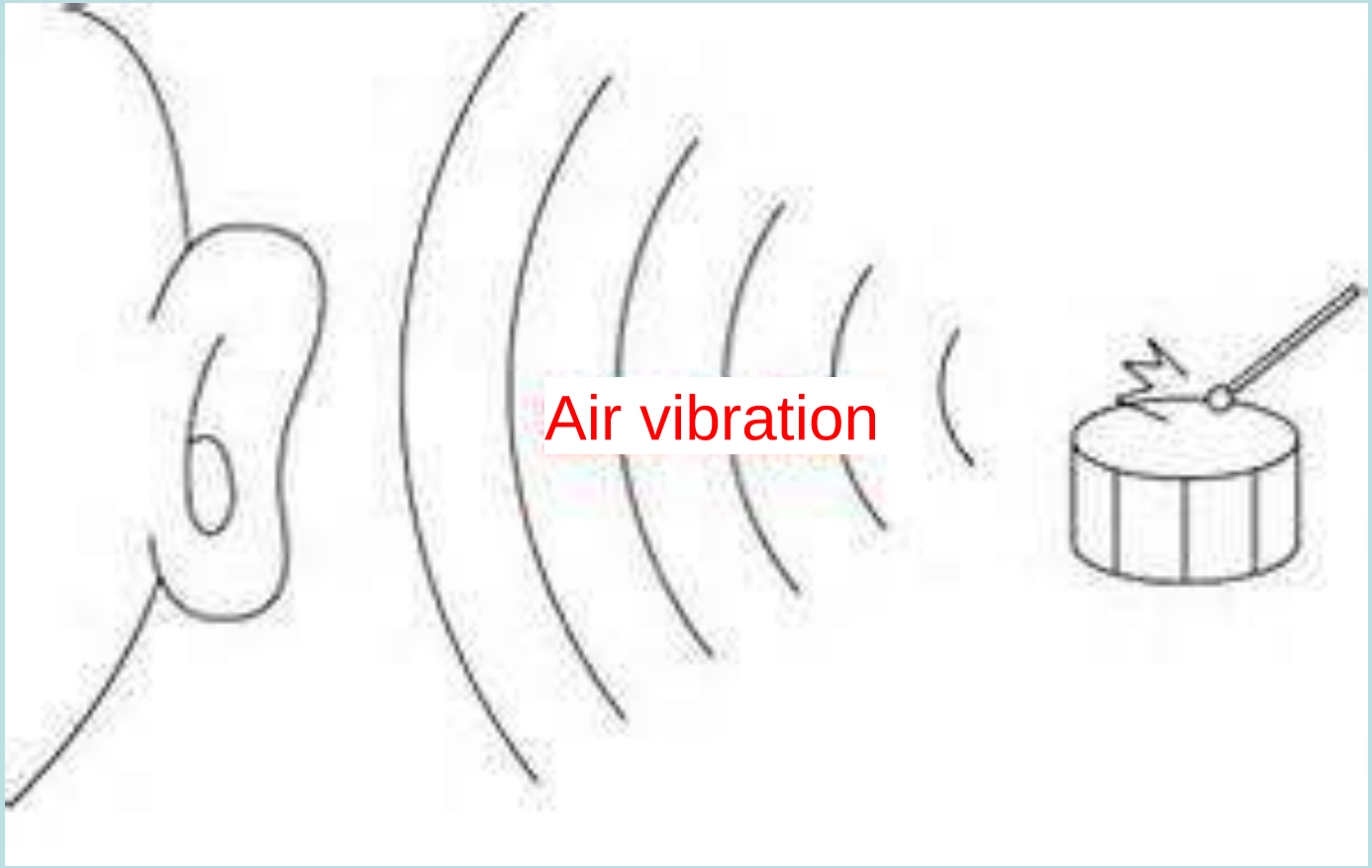
Lever position (vertical)

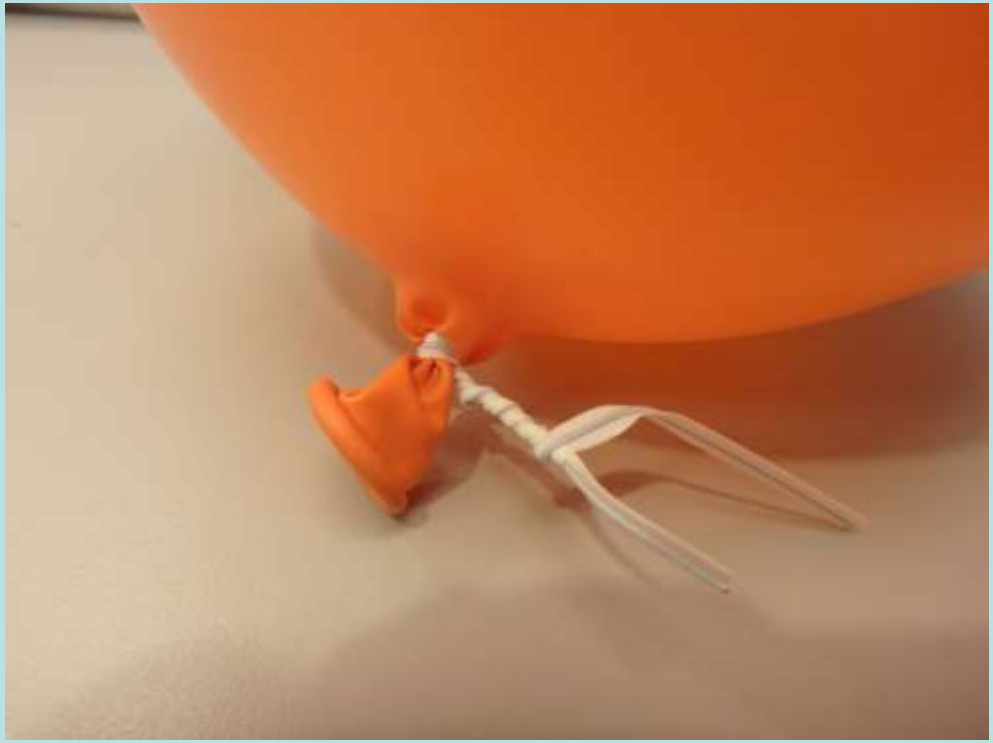
Now let's move the lever to let the air in.

Missiles etc.

don't make sounds!!

The sound is conveyed by the air vibration.





1 Blow up the balloon.

2 Tie the lips of the balloon with wire.

Will a balloon convey sound?

(1)We hold the balloons touching each other.

(3)The other person puts one ear to the other balloon.

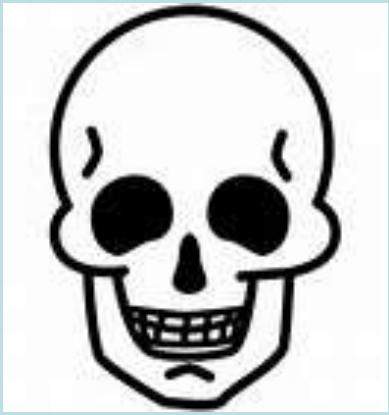
(2)One person talks into a balloon.

Will the balloons convey the sound?
Can you hear the voice through the ballons?

Dense air conveys sound very well

The other way ?

Bone also conveys sound very well



This is called Bone conduction

Tie a knot through the center of a metal piece, like kitchen tools, of string around (as pictured A).

1 Wrap the loose ends of the string around a finger on each hand once or twice.

2 Put those 2 fingers in your ears (as pictured B)

3 Knock the tip of the tool against the corner of a desk (as pictured B)

A

B

1 2 3 4 5

骨伝導実験機　あの鐘を鳴らすのは（(株)ケニス）

1

2

3

4

1　Japanese　Temple　Todaiji
2　France　Paris　　Notorudame　Dome
3　Rossia　Mihairu Church
4　Italia　Mirano　Dome
5　Japan　Egunatio　Church

If you cover your ears and put a music box to the back of your head.

This lever round left

Talking in space?

There's no air in outerspace so your voice doesn't reach the other person.

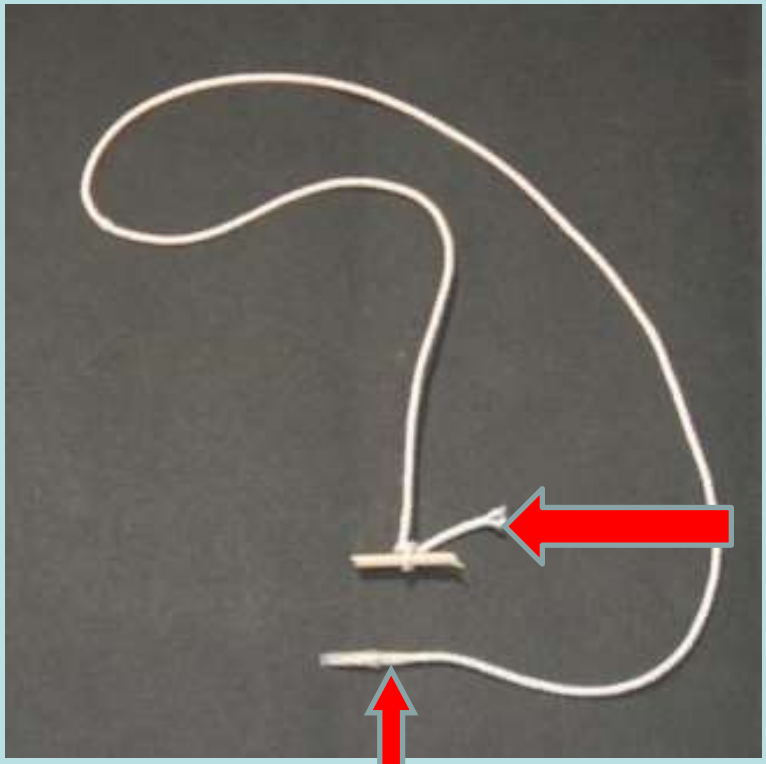
Talking in space?

There is no air around astronauts when they are out in space...

- **So they make it possible to talk using infrared light.**
- **This technology is also used in remote controls.**

A sound-based toy

(1)



(2)Pick

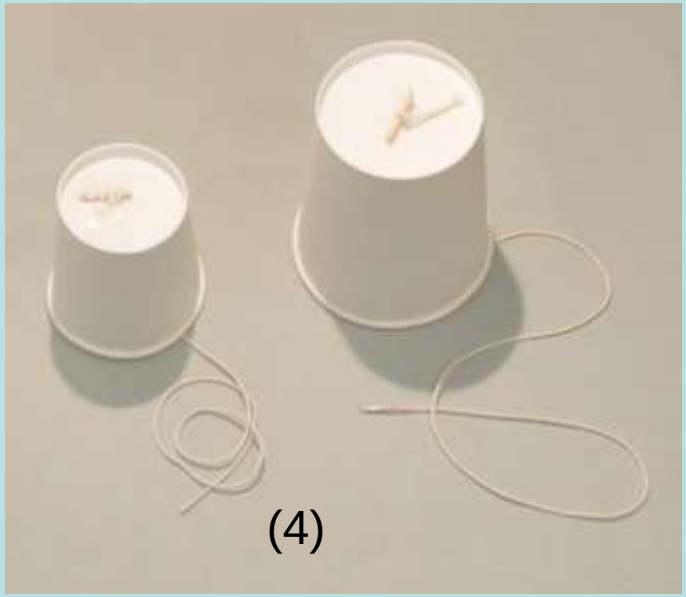
(3)Wrap with tape

This is the last experiment in my part, Making a sound-based toy

(1) Make a hole in the center of the bottom of a paper cup to put a string through.

(2) Tie one end of the string around a pick.

(3) Wrap the end of the string in Scotch tape so it will pass through the hole.


(4)


(5)

(4) Once the string is through the hole, it will be stopped by the pick.
※You may also attach the pick to the cup with Scotch tape.
(5) If you rub the string with a damp wet cloth you hear a sound.
In Japan, this toy is called Making a Crow's Voice.
How do you feel this sound?
(6) The smaller the paper cup, the higher the pitch of the sound.

This is the end of my workshop.
Science is fan.
Enjoy science more.

We have received lots of help from around the world for the Great East Japan Earthquake of 2011.

I would like to take this opportunity to express my thanks to the people among you who supported our reconstruction in both physical and spiritual form.

I will continue to convey the fun of science to children.

Source

Reference: The All-Sound Laboratory, Sumio Yoshizawa, Blue Backs, Kodansha

Images: NASA, free images from the Internet