

# Trend Task: Banjo Boxes

Approach: One to one

Focus: Sound generation and transmission

Resources: "Banjo box", coloured and brown rubber bands, 2 pieces of dowel, picture

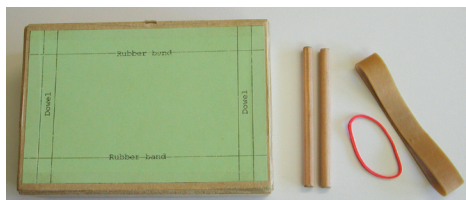
Year: 4 & 8

## Questions / instructions:

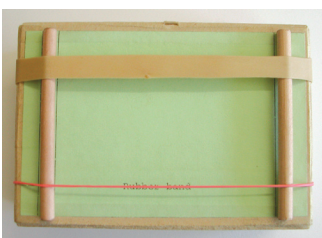
In this activity we'll be thinking about sounds and how they're made. First I'm going to make a simple banjo.

**Place the box, two rubber bands and two pieces of dowling on the table. Teacher makes banjo box, telling the student.....**

These are the materials I'll use to make a simple banjo. I put the rubber bands around the box lengthwise.



I make sure the two rubber bands are not touching each other. Then I put the pieces of wood under the rubber bands near the ends of the box.



**Once the banjo has been made give it to the student.**

Now I would like you to pluck each of the rubber bands and listen carefully to the sounds the two rubber bands make.

**Allow time for student to experiment.**

1. What can you tell me about the sounds?

PROMPT: *What is different about them?*

coloured band makes higher sound/pitch

**If the student didn't notice that the coloured rubber band made a higher sound than the brown rubber band, demonstrate and say, "The coloured rubber band makes a higher sound than the brown one".**

2. Try to explain why the coloured rubber band made a higher sound.

**Explanation:**

*[coloured band thinner/lighter; coloured band stretched more tightly]*

included both ideas

included thickness/mass

included tension/tightness

3. Try to explain how the sound gets from the rubber band to our ears.

band makes vibrations in air which travel to ears and are heard

vaguely mentioned air vibrations

4. What do you think would happen to the rubber band sounds if we took the pieces of wood out?

PROMPT: *In what way might it sound different?*

sound will not ring out properly, or will stop quickly

Let's take out the pieces of wood and see what happens.

**Remove pieces of wood.**

5. What do you notice about the sounds the rubber bands make now?

sound does not ring out properly or stops quickly

difference in pitch (lower)

6. Try to explain why the sounds are different when the pieces of wood are taken out.

stops bands from vibrating properly

**Show picture of stringed instruments.**

This picture shows some stringed instruments.

Notice that they all have a hole.

7. Why do you think these instruments have holes in them?

open cavity allows sound to resonate and amplifies sound

lets sound in/make sound louder

**Total score:** 11-13

8-10

5-7

2-4

0-1

% responses 2003 ('99)

year 4 year 8

41 (37) 68 (57)

18 (10) 38 (45)

22 (20) 20 (17)

34 (29) 53 (68)

% responses 2003 ('99)

year 4 year 8

54 (50) 72 (78)

9 (9) 14 (9)

75 (73) 76 (77)

4 (4) 4 (6)

14 (17) 24 (22)

25 (32) 38 (50)



15 (19) 35 (37)

31 (34) 39 (40)

4 (5) 16 (20)

19 (18) 37 (40)

37 (39) 34 (29)

36 (33) 13 (9)

4 (5) 0 (2)

## Commentary:

Year 8 students, on average, performed substantially better on all task components. There was very little change in performance between 1999 and 2003.