

String Ping

Approach: One to one

Level: Year 4 and year 8

Focus: Predict, demonstrate and report the influence of the length and tension of a vibrating string on the sound produced.

Resources: Spoon with piece of string attached, video showing how to use this apparatus to make sounds.

Questions/instructions:

Put the spoon and string on the table.

In this activity you are going to use a spoon and a piece of string to make different sounds. Let's watch the video to see what to do.

Play video.

Before you try the activity I will ask you some questions.

- | | | |
|--|-------------|----|
| 1. What might happen to the sound when the length of the string is changed? | % responses | |
| | y4 | y8 |
| <i>Prompt: How might the length of the string change the sound?</i> | | |
| longer string → lower pitch | 19 | 34 |
| length affects pitch in unspecified way | 30 | 28 |
| 2. What might happen to the sound when the tightness of the string is changed? | | |
| <i>Prompt: In what way might the sound change?</i> | | |
| no sound at all when string is loose | 39 | 40 |
| tighter string → higher pitch | 10 | 20 |
| tightness affects pitch in unspecified way | 11 | 13 |

Let's try these things. Start by holding the spoon to your ear. What happens when you make the string shorter and then longer?

Allow time.



- | | | |
|---|-------------|----|
| 3. What did you notice about the sound as the length of the string was changed? | % responses | |
| | y4 | y8 |
| <i>Prompt: Why do you think the sound was different?</i> | | |
| longer string → lower pitch | 28 | 53 |
| length affects pitch in unspecified way | 28 | 21 |

Prompt: Why do you think the sound was different?

longer string → lower pitch

length affects pitch in unspecified way

Now try making the string looser and the tighter.

Allow time.



- | | | |
|--|-------------|----|
| 4. What did you notice about the sound as the tightness of the string was changed? | % responses | |
| | y4 | y8 |
| <i>Prompt: Why do you think the sound was different?</i> | | |
| no sound at all when string is loose | 68 | 65 |
| tighter string → higher pitch | 11 | 22 |
| tightness affects pitch in unspecified way | 9 | 9 |

Prompt: Why do you think the sound was different?

no sound at all when string is loose

tighter string → higher pitch

tightness affects pitch in unspecified way

Commentary:

There were two difficulties with this task. Holding a spoon alongside an ear was seen as inappropriate by a few Māori children, and the video demonstration showed the string loose for the start of question 4. These limit the usefulness of the results, but year 8 students clearly understood the key relationship somewhat better than year 4 students.