

# Sound Bite

## Home Connection

Dear Family,

During the last few days, your child worked on a team to design a model of a phone. The children worked just like engineers! They . . .

- learned about a problem;
- planned ways to solve the problem;
- made and tested a prototype phone;
- thought about test results and made a new plan.

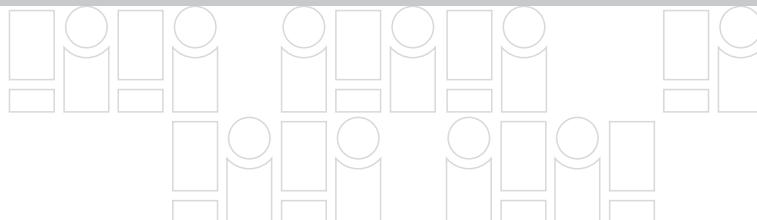
In this exploration, children learned about sound. They learned that sound is caused by a vibration that can move through air, water, and even a solid string. They also practiced skills such as developing and using prototypes, conducting fair tests, making claims based on evidence, and communicating with other children.

**Say:** *Tell me about what you did when your team designed a phone. Ask prompting questions if your child needs help.*

- What was Jazmin and Amit's problem?
- What were the goals for your phone?
- What kind of string/cups did you use to make your phone?
- Why did you choose those materials?
- How did you measure the success of your phone?
- How did you make your phone better?

On the back of this sheet, work with your child to find out more about what the team did in this exploration.

This STEM project has been developed in partnership with Texas A&M University.



# Sound Bite

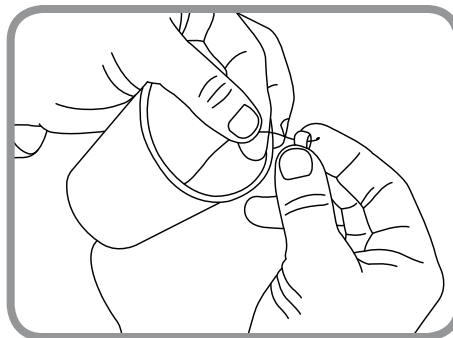
## Home Connection

To test their phone, your child's team used a clicker, such as used in dog training, and a digital sound level meter to measure the loudness of sounds. Have your child explain how the team measured the sound that was carried through their string phones. Then have your child compare the loudness of the clicker to the other sounds below. Ask questions such as, *Was the clicker louder than a normal speaking voice? Was it louder than a lawn mower?*

Sound Loudness	
Silence	0
Whisper	20
Normal voice	60
Clicker	85
Lawn mower	90
Motorcycle	100
Jet engine	140

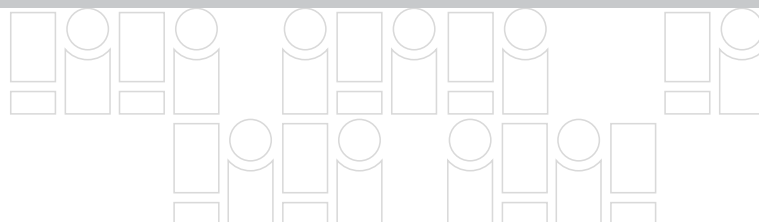
### Try It!

Gather two paper or plastic cups and a long piece of string. Ask your child for advice on which cups and kind of string to use. Poke a hole in the bottom of each cup. Thread the piece of string through the hole. Have your child show you how to attach each end of the string to a bead or paperclip so the string cannot slip out of the cup.



Have your child show you the best way to speak and listen on the string phone, which requires that the string is tight. Take turns sending and receiving messages.

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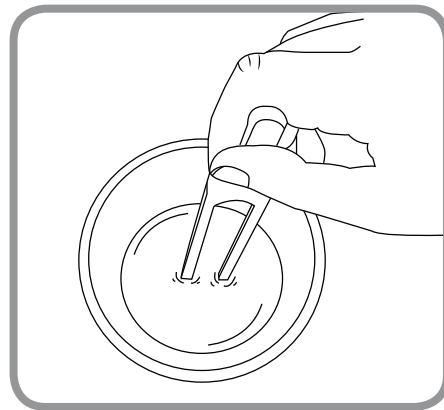
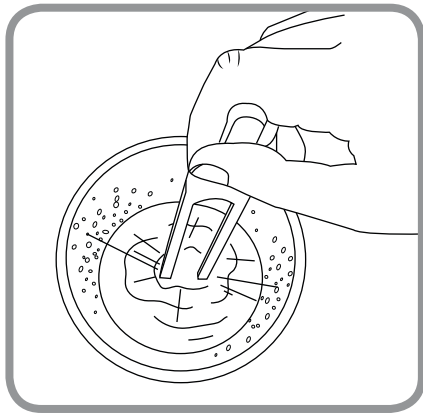


# Tuning Fork Fun

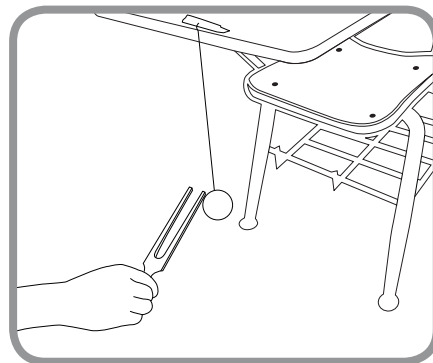
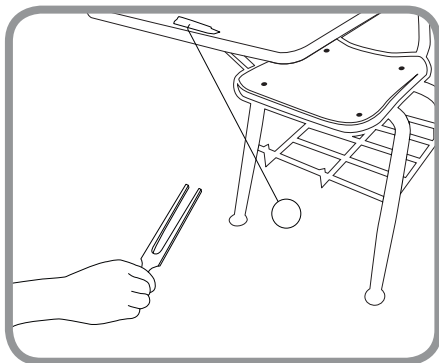
Name \_\_\_\_\_

## Follow these steps.

1. Take turns. Tap the tuning fork. Hold it to your ear.
2. **Observe** What do you hear? Talk about it.
3. Tap the tuning fork. Place the tip in water.
4. **Observe** Circle what you saw. Talk about it.



5. Tape string to a ball. Tape the other end to a desk.
6. Tap the tuning fork. Place the side of it on the ball.
7. **Observe** Circle what you see. Talk about it.



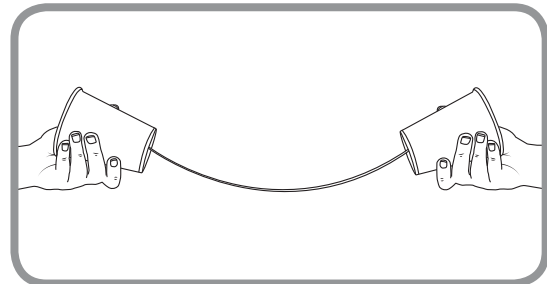
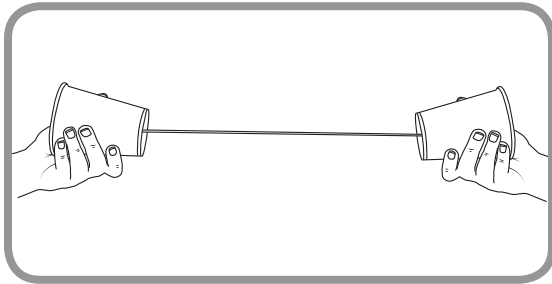
# Explore String Phones

Name \_\_\_\_\_

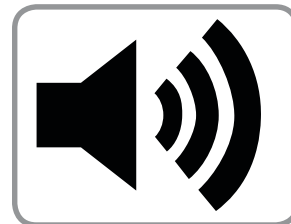
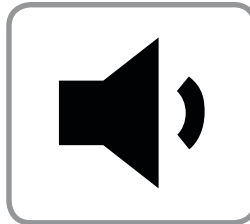
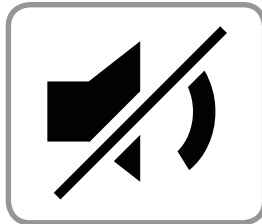
**Write what you found out.**

1. **Observe** Which sounds louder?

Circle one:



2. **Observe** What did you hear when you pinched the middle of the string? Circle one:



3. **Conclude** What is the best way to use a string phone?  
Draw a picture.



# Compare Strings

Name \_\_\_\_\_

Write what you found out.

- 1. Record** Was the voice clear? Circle yes or no.
- 2. Record** Measure the sound. Write the numbers in the chart. Circle the largest number for each string.

Kind of string	Voice clear?		Sound test 1	Sound test 2
	Yes	No		
Kite string	Yes	No		
Yarn	Yes	No		
Plastic string	Yes	No		

- 3. Compare** Write the largest number for each string. Then write  $<$ ,  $>$ , or  $=$ .

\_\_\_\_\_      ○      \_\_\_\_\_  
Kite string                  Yarn

\_\_\_\_\_      ○      \_\_\_\_\_  
Kite string                  Plastic string

\_\_\_\_\_      ○      \_\_\_\_\_  
Yarn                          Plastic string

4. Which string will you use? Why? \_\_\_\_\_

\_\_\_\_\_

# Compare Cups

Name \_\_\_\_\_

**Write what you found out.**

- 1. Record** Was the voice clear? Circle yes or no.
- 2. Record** Measure the sound. Write the numbers in the chart. Circle the largest number for each cup.

Kind of Cup	Voice clear?		Sound test 1	Sound test 2
Paper	Yes	No		
Foam	Yes	No		
Plastic	Yes	No		

- 3. Compare** Write the largest number for each cup. Then write  $<$ ,  $>$ , or  $=$ .

\_\_\_\_\_      ○      \_\_\_\_\_  
Paper cups                      Foam cups

\_\_\_\_\_      ○      \_\_\_\_\_  
Paper cups                      Plastic cups

\_\_\_\_\_      ○      \_\_\_\_\_  
Foam cups                      Plastic cups

- 4. Which cup will you use? Why?** \_\_\_\_\_

\_\_\_\_\_

# Phone Plan

Name \_\_\_\_\_

## Follow these steps.

1. Circle one: My phone plan                  Team phone plan

2. Think about the tests you did.

3. **Plan** Which string(s) carried sound clearly?

Kite string

Yarn

Plastic string

4. **Plan** Which cup(s) had a clear sound?

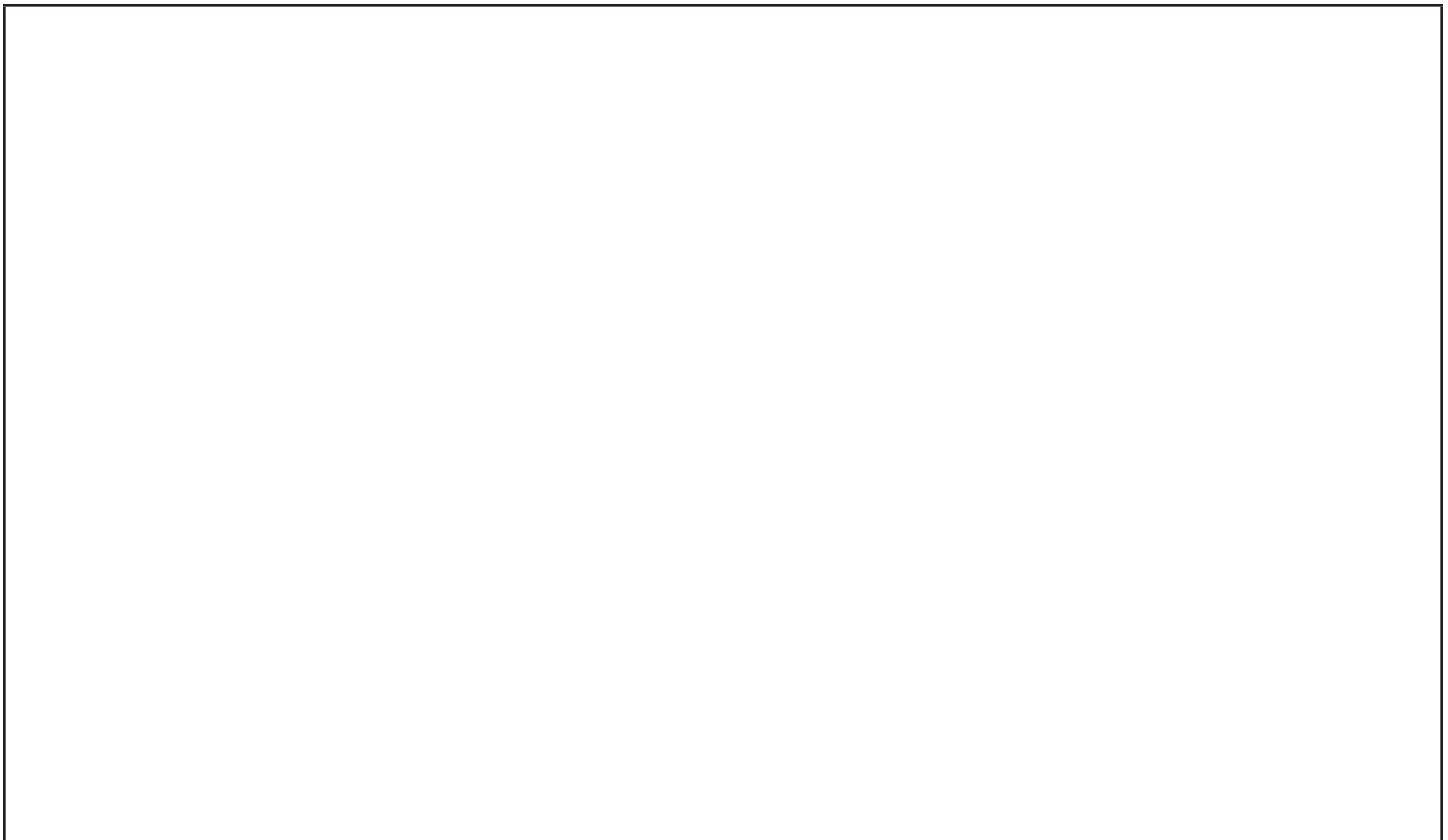
Paper cups

Foam cups

Plastic cups

5. **Plan** How will you connect three people?

Draw a picture. Label the cups Jazmin, Amit, and Omar.



# Test Results

Name \_\_\_\_\_

**Measure the sound two times. Record the numbers.**

<b>Clicker in Jazmin's cup</b>		
	<b>Sound test 1</b>	<b>Sound test 2</b>
Sound in Amit's cup		
Sound in Omar's cup		

<b>Clicker in Amit's cup</b>		
	<b>Sound test 1</b>	<b>Sound test 2</b>
Sound in Jazmin's cup		
Sound in Omar's cup		

<b>Clicker in Omar's cup</b>		
	<b>Sound test 1</b>	<b>Sound test 2</b>
Sound in Jazmin's cup		
Sound in Amit's cup		



# Compare Test Results

Name \_\_\_\_\_

**Follow these steps.**

1. Use **Test Results**. Write the largest number for each cup.
2. **Compare** Write  $<$ ,  $>$ , or  $=$ .

Clicker in Jazmin's cup		
_____	_____	_____
Amit's cup		Omar's cup

Clicker in Amit's cup		
_____	_____	_____
Jazmin's cup		Omar's cup

Clicker in Omar's cup		
_____	_____	_____
Jazmin's cup		Amit's cup

3. **Conclude** Did your phone meet this goal?  
 Carry 80 decibels of sound from a clicker.

Circle one:      Yes              No

# Reflect On It

Name \_\_\_\_\_

**Look at your team's phone plan and your results.**

1. Our phone met these goals.

Allow three people to talk and listen.

Carry sound for 6 feet.

Carry 80 decibels of sound from a clicker.

2. Draw one thing that worked well.



3. Draw one thing that did not work well.



# Reflect On It

Name \_\_\_\_\_

**Fill in the chart.**

Material	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Total teams
Kite string							
Yarn							
Plastic string							
Paper cup							
Foam cup							
Plastic cup							

**Answer the questions.**

1. Circle the kind of string that was used most often.

Kite string

Yarn

Plastic string

2. Circle the kind of cup that was used most often.

Paper

Foam

Plastic

3. How will you make your phone better?

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