

The Reef
Theme: Tell it!
October/November 2013
Power Lab

Scripture Deuteronomy 26:1-11

26 You will enter the land the LORD your God is giving you as your own. You will take it over. You will settle down in it. ²When you do, get some of the first share of everything your soil produces. Put it in a basket. It's from the land the LORD your God is giving you. Take your gifts and go to the special place he will choose. He will put his Name there.

³ Speak to the priest who is in office at that time. Tell him, "I announce today to the LORD your God that I have come to this land. It's the land he promised with an oath to our fathers to give us." ⁴The priest will take the basket from you. He'll set it down in front of the altar of the LORD your God.

⁵ Then you will speak while the LORD is listening. You will say, "My father Jacob was a wanderer from the land of Aram. He went down into Egypt with a few people. He lived there and became the father of a great nation. It had huge numbers of people.

⁶ "But the people of Egypt treated us badly. They made us suffer. They made us work very hard. ⁷ Then we cried out to the LORD. He is the God of our people who lived long ago. He heard our voice. He saw how much we were suffering. The Egyptians were crushing us. They were making us work very hard.

⁸ "So the LORD reached out his mighty hand and powerful arm and brought us out of Egypt. He did great and wonderful things. He did miraculous signs and wonders. ⁹ He brought us to this place. He gave us this land. It's a land that has plenty of milk and honey.

¹⁰ "Now, LORD, I'm bringing you the first share of crops from the soil. After all, you have given them to me." Place the basket in front of the LORD your God. Bow down to him.

¹¹ You and the Levites and the outsiders among you will be full of joy. You will enjoy all of the good things the LORD your God has given to you and your family.

Opening:

Ask:

Have you ever thrown a stone into still water? What happens? (ripples)
When we tell stories, the stories spread out like ripples in the water. Sometimes they are changed a little but essentially they are the same story.

Play - Psst – Pass It On...

- ◆ Players sit in a circle.

- ◆ The group leader will begin whispering a short paragraph including names and details into the ear of the player next to him. At the end of the story, the group leader says “Pass It On...”
- ◆ The next players then relays the story to the person next to him and so forth. No one is allowed to repeat what was said.
- ◆ Each player must speak clearly and each player must listen carefully to what was said. Encourage players to repeat what they “heard”.
- ◆ The last player stands up and relates the story, ending with “Pass It On.”
- ◆ The results are often hilarious. Following the activity, tell the original story and discuss what changes occurred. Discuss the evolution of the story and how stories change from teller to teller.

Say:

- ◆ Today we are going to talk about telling the story of who we are and how God has loved us. Where do we find these stories? How did these stories come to be in the bible?
- ◆ Read scripture

Say:

Telling involves listening. Listening involves sound

Sound is a type of energy made by vibrations. When any object vibrates, it causes movement in the air particles. These particles bump into the particles close to them, which makes them vibrate too causing them to bump into more air particles. This movement, called sound waves, keeps going until they run out of energy. If your ear is within range of the vibrations, you hear the sound.

Picture a stone thrown into a still body of water. The rings of waves expand indefinitely. The same is true with sound. Irregular repeating sound waves create noise, while regular repeating waves produce musical notes.

When the vibrations are fast, you hear a high note. When the vibrations are slow, it creates a low note. The sound waves in the diagram show the different frequencies for high and low notes.

Low frequency notes



High frequency notes



Activities:

In all of these, have the students explain how vibrations are involved to make sound.

#1 Screaming Balloons (Note: there are enough balloons and hex nuts for everyone to have a set to take home.)

Warning: If you are a kid, DO NOT let your parents read this! You'll find that your balloon is always popped! Why, you may ask? Keep going... you'll see.

1. Squeeze the hex nut through the mouth of the balloon. Make sure that the hex nut goes all the way into the balloon so that there is no danger of it being sucked out while blowing up the balloon.
2. Blow up the balloon, but be careful not to overinflate the balloon, as it will easily burst. Tie off the balloon and you're ready to go.
3. Grip the balloon at the stem end as you would a bowling ball. The neck of the balloon will be in your palm and your fingers and thumb will extend down the sides of the balloon.
4. While holding the balloon, palm down, swirl it in a circular motion. The hex nut may bounce around at first, but it will soon begin to roll around the inside of the balloon. What is that sound? Could the balloon be screaming? The sound every parent loves...
5. Once the hex nut begins to spin, use your other hand to stabilize the balloon. Your hex nut should continue to spin for 10 seconds or more.

What happens when you change the size of the balloon or the size of the hex nut? Try using a marble instead of a hex nut. Does the marble make the balloon "scream?" Experiment with other objects whose edges may vibrate against the balloon.

How Does It Work?

This is actually a 2 for 1 experiment - you're learning about the science of motion and sound. The hex nut circles inside the balloon due to *centripetal* force. Centripetal force is the inward force on a body that causes it to move in a circular path. It is a "center-seeking" force. A hex nut has 6 sides, and these flat edges cause the hex nut to bounce or vibrate inside the balloon. The screaming sound is made by the sides of the hex nut vibrating against the inside wall of the balloon.

#2 Stringed Instruments

How do String Instruments make sound?

Stringed instruments are played by pressing the fingers down on the strings. This pressure changes the strings' length, causing them to vibrate at different frequencies and making different sounds. Shortening a string

makes it sound higher. Strings produce different sounds depending on their thickness.

- ◆ Demonstrate with autoharp and let kid splay with it.

#3 Sound Tubes

- ◆ Twirl this 30-inch plastic tube over your head at different speeds and make at least five different tones, depending on how fast you can twirl!

How Does It Work?

- ◆ Twirl the tube above your head and the air molecules drifting inside are in for a ride! They begin to bump against each other and vibrate, creating sound waves that you can hear. The faster you move the Sound Hose, the higher the pitch. Experiment with different speeds to pick up the whistle.

#4 Thunder Drums

Grasp the Thunder Tube in the middle with one hand and let the spring hang down. Make the spring dance by shaking your wrist and the air comes to life with sound! The tube works like a drum being played by the spring. Sound waves are created within the tube and the waves resonate back and forth against the sides of the tube, amplifying the sound.

INSTRUCTIONS:

- ◆ Basic Thunder: Hold the drum with the spring hanging toward the floor. Shake your hand, moving only the wrist (as if you were very nervous or shaking a drink). Do not whip the spring around! It will not improve the sound.
- ◆ Modulated Thunder: Cover and uncover the open end of the drum to modulate the thunder sound. This is easier with the basic drum.
- ◆ Creak: Scrape a fingernail along the spring while holding the drum still.
- ◆ Knock: Tap the spring with a pencil.

#5 Thumb Piano, mini music box

When the tines are plucked they vibrate just like a tuning fork. The length of the tine determines the frequency (or pitch) that it produces. Shorter tines create higher pitches.

The resonating chamber (if the thumb piano has one) acts as an amplifier. Air within the chamber vibrates with the tines and escapes through the resonator hole.

#5 Tuning Fork

How Tuning Forks Hum

Every time you strike a tuning fork, you're setting off a tiny, invisible [hurricane](#). Thrashing back and forth at tremendous speeds, the two prongs of the fork, known as "tines," are smashing against nearby air molecules, kicking off a chain of impacts that echo through the air. When these violent, microscopic collisions hit your eardrum, your brain processes them as a gentle hum.

Closing Prayer

Thank you, God, for the amazing gift of sound. Help me to use this gift to tell the stories of the Bible. Amen.

