

Teacher's Guide for:

Woodwinds

Note: All activities in this document should be performed with adult supervision. Likewise, common sense and care are essential to the conduct of any and all activities, whether described in this document or otherwise. Parents or guardians should supervise children. Rock-it Science assumes no responsibility for any injuries or damages arising from any activities.

NOTE: This is the transcript of a lesson that was videotaped during an actual Rock-it Science class with real students, not actors. The students' brainstorming comments are included on the video but are not transcribed here because they're not part of the lesson presentation.

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Woodwinds A Rock-it Science Lesson Filmed December, 2013

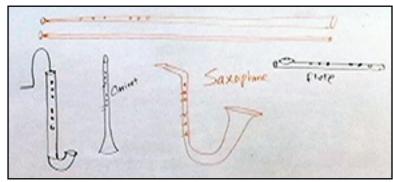
Rock-it Science

2110 Walsh Ave, Unit F Santa Clara, CA 95050 www.rockitscience.org

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Intro Quick Recap:

- Instructor draws a saxophone. Ask students if they know what it is.
- A saxophone has a piece of reed at the mouthpiece. Very thin, like bamboo.
- Instructor makes vibrating sound with his tongue to show what the reed does. Ask students to try it.
- Instructor makes his lips vibrate and asks students to try it.



Top: Two tubes. Bottom: Bassoon, clarinet, saxophone, flute.

- Draw a clarinet and ask students if they know what it is. It has a reed, too.
- Draw a bassoon, and ask students if they know what it is. It has two reeds.
- Draw a flute. A flute doesn't have a reed. It has holes that make a sound like a whistle when you blow across them. Ask students if they can whistle.
- A professor at San Jose State has a long tube that's the same diameter all the way down. He puts a mouthpiece on it and blows. If he blows hard, he gets one note. If he blows softly, he gets a different note. If you blow in between, you can get other notes, but they sound weird.
- This professor has another tube that grows larger from one end to the other. He can make louder notes with this tube than with the straight tube. He also has holes in it, and he can make additional notes by covering and uncovering some of the holes.





Instructor holds one end of the spring and turns it. Student stands on table and holds other end with his hands still.

- To get an idea of what the moving air looks like, we use a spring. Have one student stand on the table, holding one end of a long flexible spring. The Instructor holds the other end and turns the spring to create wave forms.
- A low note creates a long lazy wave form. A burp has different frequencies, so the spring would wiggle erratically.



Student's hands (gloves not required).

- To play a higher note, you'd have more waves on the spring. If it's a soft note, the waves would be small. If it gets louder, the waves get bigger.
- If you clap your hands, it would be a bonk (slap the spring), and it can bounce off the walls, making an echo.
- When you have sounds that sound good together, their waves fit on the same length of spring in even numbers. A note with three waves would sound good with a note that has five waves, or two, or four, or six. But it wouldn't sound good with one and a half.

Experiment Quick Recap: "Woodwinds"

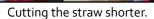
Part One: Straw

 Instructor demonstrates how to bite the end of a plastic straw to flatten it a bit.
 Then Instructor makes two diagonal cuts in the end of the straw to make a reed.





Views of cut straw. Left: front, Right: side



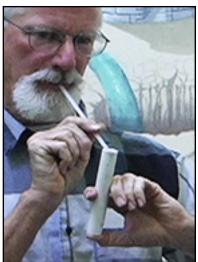
- Instructor demonstrates how to blow hard into the straw to make a sound. It takes trial and error to get the reed squeezed the right amount.
- While blowing through the straw, Instructor cuts off the lower end of the straw, making it shorter and shorter and changing the tone of the sound.
- Students bite their straws to flatten them, and the Instructor cuts the ends for them.
- Students blow into the straws and try to make a sound.
- Once they get the sound, students use scissors to cut the straw and make the sound change.

Part Two: Straw & Tube

- Instructor demonstrates how to hold a straw over the top of a pvc pipe and blow through it to make a sound.
- You can also make a sound by blowing directly over the pipe.
- Putting a cork in the end of the pipe also changes the sound.
- There are three sizes of pipes for students to experiment with.
- Students receive a new straw and select a pipe, then switch to a new pipe so they try them all.

Part Three: Whistling Tube

- Instructor demonstrates how to blow into the end of a large "whistling tube" to make a sound.
- Then he demonstrates how to swing the tube around to make a sound.
- Each student gets a tube, and they spread out so they don't hit one another when they swing it.
- After the students experiment with swinging the tubes, the Instructor brings out a hair dryer, sets it on "cold," and blows air into the students' tubes.
- Then he does the same thing using a shop vacuum cleaner.



Blowing over top of pipe.



Swinging the whistling tube.



Using the hair dryer.

Part Four: Longer Whistling Tubes

- Class moves outdoors, and the Instructor hands out longer whistling tubes, about 6 feet long. Students pair up and share the tubes, taking turns swinging them around.
- After a few minutes, students switch with others so they can experiment with different kinds of tubes.
- Once they get a sound, they can also try running with the tube.



Swinging a longer tube.

Part Five: Cut-off Balloon

- Class moves back indoors. Instructor demonstrates how to make sounds
 with a cut-off balloon top, putting it between his lips and stretching it to
 make a screeching sound.
- Students each get a cut-off balloon to experiment with.

Part Six: Party Whistle

- Instructor demonstrates how to make different sounds using the holes on a plastic party whistle.
- Each student gets a whistle to experiment with. They can also trying blowing through the other end to see if it still works.
- They can also attach their cut-off balloon to the end of the whistle and stretch the balloon while blowing through the whistle.

Part Seven (optional): Auto Horn and Balloon

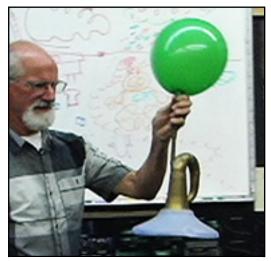
- At Rock-it Science, we happen to have an old auto horn, which we used for this demo.
- The rubber ball was removed from the horn and a blown-up balloon was put in its place, to see whether the air from the balloon would be strong enough to sound the horn. It was.



Stretching the cut-off balloon.



Party whistle.



Balloon attached to old auto horn.

Equipment List: "Woodwinds" Items needed for Instructor:

- Long flexible spring (special Rock-it Science item)
- Scissors
- Hair dryer
- Shop vacuum cleaner
- Antique auto horn (optional)
- Balloon (optional)

Items needed for Students:

Consumables:

- Straws, plastic, smaller-diameter, 2 per student
- Balloon, cut-off neck only, 1 per student
- Party whistles, 1 per student

Other (per 2 students):

- Scissors
- PVC Pipe, 1/2", about 6" long, 1 per 2-3 students
- PVC Pipe, 1/2", about 12" long, 1 per 2-3 students
- PVC Pipe, 1/2", about 24" long, 1 per 2-3 students
- Corks, #7, to fit 1/2" pipe, 1 per student
- Whistling Tubes, 3 ft long, 1 per student
- Whistling Tubes, 6 ft long in different diameters, 1 per 2 students
- Earmuffs, for students who want them



Party whistle.



Long flexible spring.

Prep Work:

 Cut off necks of balloons



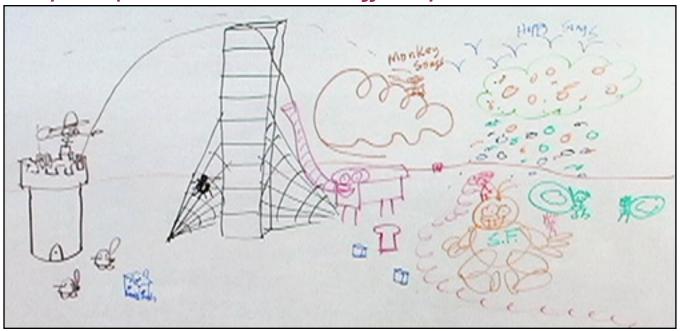


Whistling tube.



Longer whistling tubes.

Story Recap: "Jack & Jill and the Heffalump"



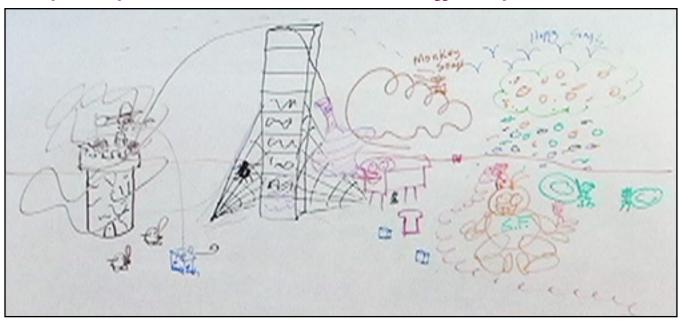
Part 1:

- Jack and Jill were raising baby giants. The babies needed to eat two tons of pizza each month.
- The source of pizzas was a pizza cloud. It rained pizzas -- all flavors of pizza.
- The people in the village nearby ran around with catcher's mitts, catching the pizzas as they fell.
- The babies also like sandwiches.
- The heffalumps look like loaves of bread, and they could divide themselves and shed off slices of bread. They also had trunks like elephants, so they could communicate with other heffalumps far away.
- There were also monkeys on roller skates who played on roller coasters.
- There were also bluebirds that sang in the sky.
- The baby giants lived in a building that was 100 stories tall. It was unstable, so the spiders secured it with their webs to keep it from falling.
- Evil Mister Fred wanted to catch some of the spiders so he could use them to trap people and conquer the world. So he built a castle nearby.
- He sent his minions out to capture some of the animals. One of them grabbed a heffalump, but it flung the minion back onto Evil Mister Fred's castle.
- Another minion grabbed a bluebird, but it flew back to Evil Mister Fred's castle and dumped the minion there.
- Evil Mister Fred called the Acme Store of Everything and ordered a trap to catch baby giants.
- He bought the cheapest one, which looked like a paper grocery sack with handles, and with two buttons drawn on the side with crayons: "Push" and "Don't Push."

Story Recap (cont.): "Jack & Jill and the Heffalump"

- Evil Mister Fred told the minions to take the bags out and set them on the ground and press the "Push" button. So they did.
- Heffalumps love paper bags. When they see one, it makes them want to crawl inside, curl up and take a nap. When the heffalump got close to the bag and stuck his trunk into it, the bag sucked him in. Only his eyes were visible.
- The bag was light enough for the minions to pick it up and bring it back to Evil Mister Fred.
- At first, Evil Mister Fred didn't believe it, so he pushed the "Don't Push" button, and the heffalump reappeared. When he pushed the "Push" button again, the heffalump was sucked back into the bag.
- Then the minions put the bags all over the place. They caught more heffalumps, some baby giants, bluebirds, monkeys, and big spiders.
- Evil Mister Fred decided to use the bags to capture Jack and Jill.

Story Recap (cont.): "Jack & Jill and the Heffalump"

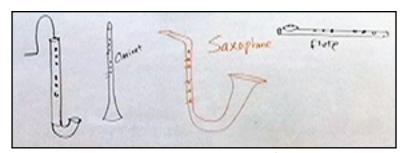


Ending:

- Jack and Jill knew that Evil Mister Fred was trying to capture them.
- Jack was too hot and he couldn't think, so he went and lay down under the heffalump.
- He asked the heffalump if it could make noises with its trunk, and the heffalump told Jack that heffalumps communicate with their trunks, even over hundreds of miles.
- Jack asked the heffalump to make a really loud sound. So the heffalump made a noise that was so loud, it broke the windows in the baby giants' tower and started making cracks in Evil Mister Fred's castle.
- But Jack wanted it even louder. So the heffalump told Jack to climb up and put a twist in the end of his trunk to block the air. Then he took a big breath, pushed the air into the blocked trunk, and the trunk bulged out with the compressed air.
- Then Jack let go, and it made the world's loudest sound.
- The base of the tower cracked, and the baby giants jumped out through the broken windows and slid down the spider webs.
- The sound made Evil Mister Fred's tower start to disintegrate.
- One of the babies slid down a spider web and slid right into the castle, and it collapsed.
- Evil Mister Fred slipped off and landed right in one of his own grocery bags. It sucked him in.
- Jack noticed a little piece of mustache sticking out of the bag.
- One of the baby giants saw it, thought it was a toy, and sat on it.

Transcript: Intro

Have you ever heard a band play? Have you ever seen somebody playing an instrument that looks like this? [Instructor draws a saxaphone and students try to guess what it is.] A saxaphone has a piece of reed up there. It's like a bamboo, a piece really thin. And it works like this [instructor makes a vibrating sound with his tongue]. Can your tongue do that?



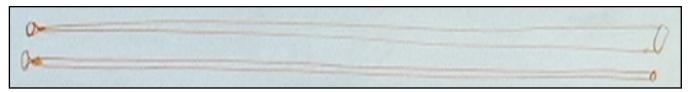
Bassoon, clarinet, saxophone, flute.

[Students try to make the sound.] If your tongue can't do that, can your lips do this [makes his lips vibrate]? Try it and see. [Students try to make the sound.] Vibrations. A saxaphone has a reed up there that makes a vibrating sound.

There's another thing that looks like a big stick of licorice [draws a clarinet]. And it's got keys and things sticking out. It's black, you play it downwards. Yep, clarinet. And it's got a reed, too, at the top. This goes straight down.

There's another thing that's weird. It's got two reeds against each other. I think they go uphill, then downhill, and into a brown tube [draws a bassoon]. And sometimes I think the tube has a horn-looking thing at the bottom. That's a weird thing. It's called a bassoon.

And then there's a thing that looks like [draws a flute]. A flute's different than all those guys. Those guys have reeds that vibrate. A flute, you blow across the hole and it [whistles] makes a sound like that. Can you guys whistle? [Students whistle.] That's good. A lot of kids these days don't whistle very well.



Two tubes, one with a gradually increasing diameter, the other with the same diameter the whole length.

And you can change the notes on these things. There's a professor at San Jose State who has two kinds of tubing. One piece of tubing is the same thickness all the way down, like that. And he puts a mouth-piece on it and blows on it. And if he blows hard, he gets one note, and if he blows soft, he gets another note. And if you can blow in between, you can get different notes. But the notes sound weird. They're not very loud, and you'll find out today kind of what they sound like.

Then he's got another piece of tubing the same length. He takes the mouthpiece off of that one and puts it on this other one. And this other one goes from skinny to fat, like that. And he blows on that, and he can get all kinds of notes out of it. And he can make them a lot louder than he can with the straight tube. Then he has some holes in it. And when he covers or uncovers the holes, he gets different notes as well. So we're going to also try covering and uncovering some holes. It changes the way the air comes out. It also changes the way the air inside vibrates, because air does move. It can vibrate and shake and stuff.

So we could use a spring to kind of get an idea of what the air looks like. We need somebody to stand on the table [chooses a student]. Here, you stand on the table. Hold that [hands student one end of a long flexible spring]. Hold it with both hands, because you don't want it to slip out of your hands. And we're going to pretend this is air. You're going to hold your end still. Don't wiggle your end.

We'll pretend this is air and that the air is vibrating with a very low sound, like "ooooooo" [makes a low sound while ro-



Student standing on table (spring is moving too fast to see in picture).

tating the long spring like a jumprope]. It might be a long lazy wave like that. A burp's a little bit different. A burp has different frequencies added together, so a burp might be kind of like that [wiggles spring around erratically].



Instructor rotates the spring to make different wave lengths.

Then, if you wanted to play a higher note, like "aaaahhhh" [sings a higher note], then you'd have more waves on the spring. If it's a really soft note, the waves would be really small like that. That's a very gentle note. If it's louder, the waves get bigger and bigger and bigger.

Now, if you clap your hands, that's a different kind of wave. It's a sudden wave, and it can also create echoes. If you clap your hands, it would be a bonk [slaps the spring], and it can bounce off the walls

and bounce back and forth and back and forth and back and forth. That would be like an echo.

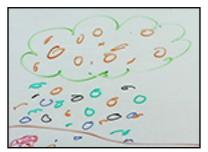
When you have sounds that sound good together, it's waves that fit on the same length of spring in nice even numbers, or nice integral numbers. So like, we did one, and we did four. You could do [turns spring again] -- how many waves is that? [Students: Three.] Three. Okay. If you could play that note, it would sound really nice with another note that has [turns spring again] five. If you could put two on there, it would sound good with three. And two would sound good with four, and two would sound good with five, and two would sound good with six. But if you could put one-and-a-half, that wouldn't work so good. [To student holding spring] Okay, now you can let go of your end.



Student holds spring with both hands (gloves not required).

Story: "Jack & Jill and the Heffalump"

Once upon a time, Jack and Jill were raising giants. But they were baby giants with chubby legs. There, baby giant. And they had to feed the baby giants, of course, because baby giants can't feed themselves very well. And the baby giants like pizzas. They could eat a whole sheep, but they like pizzas better. There's Jill and there's Jack. And they have to find a lot of food. The baby giants only eat once a month, but they eat two tons of pizza every time they have a meal. So you need to have some sort of source for all those pizzas. If I were a pizza source, I could be a pizza tree.



Pizza cloud raining pizzas.

ground. So they have a catcher's mitt.

You could have a pizza cloud. It could rain pizzas. So there are pizzas that fall from the sky, and they're all different flavors. Apple pizzas, licorice pizzas, burger-flavored pizzas, blueberry pizzas. And there was a village nearby where all the people had to run around with catcher's mitts and catch the pizzas before they hit the



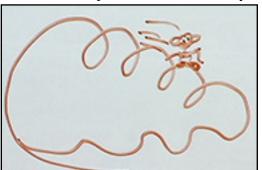
Jack and Jill with baby giant.



People with catcher's mitts.

And so life is going pretty good. You've got all those. Occasionally the giants like to have a sandwich, not a pizza. Luckily, they have heffalumps nearby. They look like a loaf of bread with some legs. And heffalumps can divide themselves. They can divide themselves and just shed off nice fresh slices of bread so that you can make sandwiches.

And the heffalumps are pretty big, and they can talk to each other because they have a trunk. And they can play the trunk like elephants do [makes a sound like an elephant]. Like that. And communicate with other heffalumps that are far, far away. There might be a heffalump out



Monkey on roller coaster.

here, and they want to share the latest news. So they can share the latest news by yelling at each other through their trunks.



Heffalump with slice of bread.

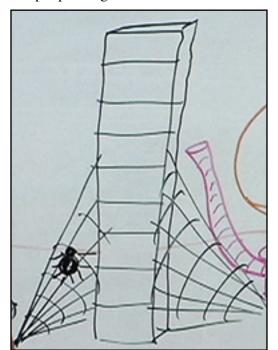
There's also some monkeys out there. Monkeys play on roller coasters. There's monkeys out there. They use roller skates and go really fast. And the monkeys can also sing really loud.

And there are birds up in the sky. Bluebirds. These are the bluebirds of happiness, so they always sing happy songs. And the monkeys only sing monkey songs.



Bluebirds singing happy songs.

And people would come from all over just to see the baby giants, hear the people sing, build all kinds of stuff. When the baby giants weren't eating, they had to find some



Spider webs keep the tower from falling.

place to rest. So they made a baby giant apartment building. It's about a hundred stories tall, a thousand feet tall. And they didn't build it very well. It was like the leaning tower of pizza pie. So they called in some spiders, and the spiders had to reinforce it with webs. So they could hold it up with spider webs, and the spiders could sing, too. Spider songs.

Well, of course, Evil Mister Fred heard about this. And he heard about these spiders that had web so strong they could hold up buildings. And he said, "Wow! If I could catch some of those spiders, I could use them. I could trap people. I could conquer the world with this."

So he built one of his castles nearby and wanted to capture some of the animals so he could sell them because they could sing songs. He wanted to catch some spiders so he could use them in his army to

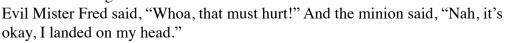
conquer the world. But he needed some way to catch them. He didn't think that his minions were going to be very good at catching these creatures. But of course, he had to try.

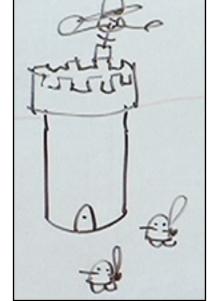
So as soon as he got there in his castle, he said, "Minions, go catch something. Something big. And bring it back." The minions said, "Yeayyyy!" And they all ran away to catch something. Okay, so they ran out there and tried to catch a heffalump. And they were grabbing the heffalump's leg, and they said, "Come with me, you heffalump!" And the heffalump said, "Not a chance!" And the heffalump grabbed one of



Minions crash on tower.

the minions with his trunk, stuffed him inside and shot him out. Right next to Evil Mister Fred. And





Evil Mister Fred and minions.

Another minion went and tried to catch one of the bluebirds. It jumped up into the air, climbed the falling pizzas, got onto the cloud, and grabbed the bluebird by its beak. And the bluebird said, "Let go of me! What are you doing?" And the minion said, "I gotcha! You can't escape now!" The bluebird said, "Well, maybe,"

and started flying with the minion, and dropped him -- crash -- right next to Evil Mister Fred. And Evil Mister Fred said, "Ooh, that must have hurt!" And the minion said, "Yeah, it did." And Evil Mister Fred said, "Okay, we need something better than this. The minions are not doing it."

So he called the Acme Store of Everything. He said, "Acme Store of Everything, I need a trap, a really good trap. A trap to catch giant babies, or baby giants." And they said, "Oh, yes, we have fifteen models that'll do exactly that. Which one would you like?" And Evil Mister Fred said, "Oh, the best, the best." And they said, "Great! Those are eight hundred thousand dollars each." And he said, "Ooohh, too expensive. What's a cheap one cost?" "Five cents." "We'll take a dozen of those."



Grocery sack trap.

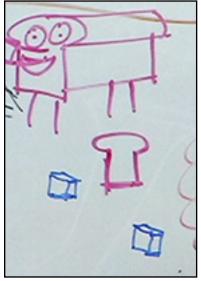
So the traps arrived, and they looked suspiciously like a grocery sack, the one with the little paper handles on each side that always rip off. And it had a button drawn on it with a crayola. And another button drawn over there with a crayola. One of them said, "Don't Push." And the other one said, "Push." And he said, "Huh. That can't work. A nickel? There's no way that's going to work." He said, "Minions, take that out there, set it on the ground, and push that one."

So they did. The minons set it on the ground, they pushed the button, the heffalump went over there, and he saw this bag. And there's something about just an ordinary paper bag that makes heffalumps

want to crawl inside and circle around and take a nap. And the heffalump got close to it and stuck his trunk in there, and all of a sudden the heffalump got sucked inside, and all you could see was little heffalump eyes looking out. And the minions could pick it up. It was light now. And they picked it up and brought it back to Evil Mister Fred and said, "Look! We caught a heffalump!"



Heffalump eyes in the trap.



Traps set out all around.

And Evil Mister Fred said, "No, you didn't. Couldn't possibly have a heffalump. It's too light." And they said, "But see -- heffalump eyes." And he said, "Nah!"

So he pushed the button that said, "Don't Push," and baroom! -- there was the heffalump. He said, "Whoa! That's pretty cool! A heffalump catcher." Then he pushed the other button and the heffalump went back into the bag. He said, "All right!"

So he got all the bags out there and he put them all over the place. And now the creatures are being caught by the bags, and the minions would drag them back. And then Evil Mister Fred said, "Whoa! You caught some giant babies. You caught some heffalumps. You caught some bluebirds. You caught some monkeys and some big spiders. This is great! Let's catch Jack and Jill, too."

And Jack and Jill saw what they were doing, and they said, "Uh-oh. We've got a problem." If you were Jack and Jill, how would you stop Evil Mister Fred and save your friends?

Imagination and Brainstorming Time

[Students make suggestions] (THERE ARE NO WRONG ANSWERS! Whatever they say, you should reply: "That's a good idea," "They might do that," etc. After brainstorming, proceed with the experiments, then finish the story.)

We'll leave this "To be Continued . . ."

Experiment: "Woodwinds"

Part One: Straw



Bite straw to flatten end.

This one is so hard I can't do it myself, but sometimes [the assistant] can. You take a straw and you try to flatten out the end a little bit [bites the end of the straw several times]. I'm not sure you're supposed to do that, but it feels good.

And then once it's kind of flat, you cut a little bit of it off to make a reed. There. See, now I kind of tapered it. You've got a reed. And if you can kind of squeeze it in your lips so the reeds are





Views of cut straw. Left: front, Right: side

close when you put it in your mouth, if you get it just the right distance apart and blow hard enough -- [blows on the straw]. That one worked! [Continues blowing on the straw while cutting pieces of it off with scissors, making the tone change.] Then, when you leave here today, you'll have this in your pocket, see?

And your mom is driving home. And you're right behind her. [Blows on the straw.] She'll think she's being attacked by aliens. [Students laugh.]

Okay, well, that one works. They usually don't. So we'll see if you guys can make something like that work. So first flatten out the end, and we'll do the cutting for you. First you've got to chew on the end. [Students chew on their straws, instructor cuts the reed, and students try to make sound.] You have to blow really hard to make it work. It has to be quite a ways in, but you'll find out. You have to put it way in your mouth, in the middle of your mouth.

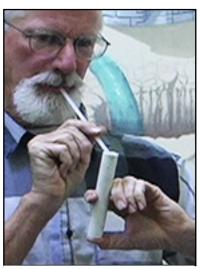
If you get yours to work, there are scissors here and you can try to cut it shorter.



Cutting the straw shorter.

Part Two: Straw and PVC Pipe

Are you ready for a slightly easier one, but still not totally easy? Okay, stick those in your pocket. There's a couple of different ways to do this one. Way number one is, you get a straw and a pipe. If you blow through the straw at just the right way, you can [blows through straw] make the pipe sing. If you plug up the bottom [blows again], you make a different note. Or you can blow with your mouth [blows directly across the top of the pipe]. And if you blow harder [makes a higher-pitched sound]. There are three sizes of pipes. There's a small pipe, there's a medium pipe, and a really, really, really long pipe. This one you might need to put a cork in. Oh, this one's already got a cork. If your finger won't reach, you jam one of these corks into it. So there are three pipes, there



Blowing over top of pipe.

are new straws here, there are corks here. Make noise. Don't use your vibratey thing; use a new straw. [Students get straws and pipes and try to make sounds.]

Try moving it in and out and squeezing it gently with your lips. You'll feel it start to vibrate. Blow, and then move it in and out until you reach a spot where it starts to vibrate. You have to blow hard, though. Put it right where it blows over the top, like that. Start with a little pipe. The big ones are harder to do. Then blow your straw right over the top.

Are you ready to try something else? [Students: Yes.] Okay, put those tubes on the table, put the straws in the [wastebasket].

Part Three: Whistling Tube

Here is a thing [holds up a 3-ft plastic "whistling tube"]. It's got a funnel that you don't really need. You can try it two ways. Way number one is you can blow on the funnel [makes sound]. The other way is to

Whistling tube.



Using the hair dryer.

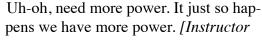
swing it [swings tube overhead so it makes sound]. So take one of those, go hit yourself with it. You get extra points if you hit yourself, but none if you hit some one else.

[Students get tubes and start swinging them.] Try it upside down -- try holding the other end. See if it still works. Try swinging it really fast.

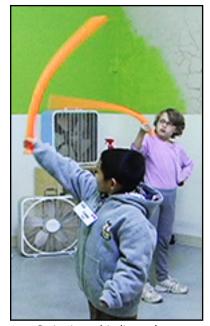
Do you think it would work with a hair dryer? [Instructor gets a hair dryer.] We'll put it on "cold." Okay, hold it up. [A student holds a tube near the hair dryer and Instructor blows air into the tube. The tone changes as the hair dryer is moved closer or farther from the tube]. If you want to try it, bring yours nearby and I'll point the hair dryer at it.

[Student: Make a chain!] Okay, make a chain. [Students hold one end of their tube against the end of another student's tube, chaining them together.] You have

to hold it tight if you want a chain to work. They have to be tight together. Check your joints.



turns on the shop vac and blows air into the tube.] Check your joints. If you want to try yours, bring yours over here and put it on this.



Swinging whistling tubes.



Using the shop vac.

Part Four: Longer Whistling Tubes

[Instructor gets a new set of tubes, about 6-foot length.] We're going to take these outside because these are kid-smackers. Put the ones that you have back in the box. [Instructor and students go outside.] Choose someone to work with, and you're going to share them. Spread far, far apart and swing them so you don't smack anybody. You just do one at a time, and then you give it to [your partner] to try. Swing it, just like you were doing. You have to swing it in the air one person at a time. It doesn't work too well jumprope-wise. One of you has to let go.

[After a few minutes] Now go switch with someone else. [Students try different tubes.] If you can make a sound out of it, try running and



Longer whistling tubes.

swinging at the same time. But if you're going to run and swing, make sure you don't smack anybody. [After a minute or two] Switch with somebody else. You've got about thirty more seconds, so if you see one lying around, better use it while you can.

Part Five: Cut-off Balloon Tops



Balloon

[Instructor and students go back inside.] Here's the boring one. Plain old cut-off balloon tops. Now what could you possible do with that? You put it in your mouth [puts balloon top between his lips and stretches the other end while blowing, making a screeching sound. Then students do the same.]



Stretching the cut-off balloon.

Part Six: Party Whistles

[After a few minutes the Instructor takes out a party whistle and starts blowing into it.] Okay, everyone stop. We have these party gift things. Put the balloony thing in your pocket. First try to play these as loud and as obnoxiously as you can, and then try to see how many notes you can get with four holes. [Students blow into their party whistles.] Does it work if you blow backwards through it? Does it work if you blow on the other end?



Party whistle.

Does it work if you put your balloon on it? [At end of experiment, students can keep their whistle and balloon if they like.]

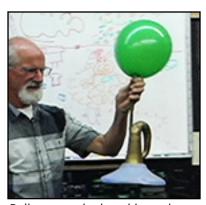
Part Seven (optional): Car Horn and Balloon

Okay, put all the instruments away. [The assistant] has something that I thought could totally never work, ever. And she didn't know that it couldn't work. So she tried it. [Assistant blows up a balloon while the Instructor holds an old car horn.] And of course, it worked. You have to blow really hard on this to make a sound [blows into the horn]. It used to be on a car with a rubber ball, and there'd be a horse crossing the road,



Cut-off balloon on party whistle.

and honk! honk! They hung out the side of the car. And then [the assistant] said, "Oh, let's put a balloon on there!" [Assistant pinches the mouth of the balloon closed while the Instructor stretches it over the mouth of the horn. When the assistant lets go, the air from the balloon goes into the horn and makes a noise.] Isn't that cool? Who would have thought?

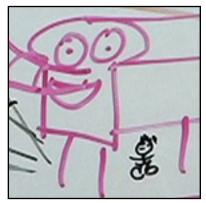


Balloon attached to old auto horn.

End of Story

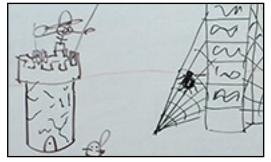
* DO NOT * present this part of the lesson until after the experiments!

Now we need an ending for our story. So Evil Mister Fred has ordered these grocery bags that catch big animals, and he's trying to catch all of them so he can take them away. And he also wants to catch Jack and Jill. And Jill says, "Jack! What are we going to do?" And Jack says,"I don't know! It's a hot day, I can't think. I need some shade." So Jack went and sat under the heffalump. And Jill said, "Jack, always about you, think about you, nothing else." And Jack said, "Well, I was hot." And while he was under the heffalump, he said, "You know, heffalump, that's really a big trunk you've got there. Can you make some sound with that thing?" The heffalump said, "Of course! That's how we communicate. We can talk hundreds of miles by noises from our trunks."

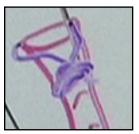


Jack under the heffalump.

And Jack said, "No, you can't." And the heffalump said, "Of course I can." Jack said, "All right. Show me. Make a really loud sound." And the heffalump went [takes a very deep breath, then makes a sound like an elephant] with his trunk, just like those things that you were swinging. And the sound was so loud it broke the windows in the baby giant tower. It was so loud it started making cracks in Evil Mister Fred's tower. It was so loud that even the minions stuck their baseball bats in their ears. Ow!



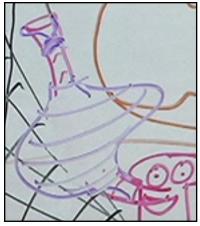
Windows broke and the castle cracked.



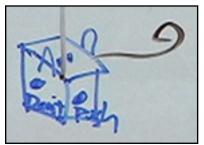
Jack put a twist in the heffalump's trunk.

And then Jack said, "Well, that was pretty good, I guess. I mean, can't you make something even louder than that?" And the heffalump said, "Well, yeah, but the last time bad things happened." And Jack said, "Cool! Do that!" And the heffalump says, "I need you to climb up to the top." So Jack climbed up to the top and twisted his trunk and held on tight.

And the heffalump said, "Are you ready?" Jack said, "Yeah!" And the heffalump went [takes a deep breath], and his trunk went [draws a bulge in the heffalump's



Heffalump's inflated trunk.

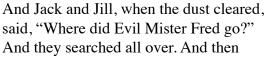


Mustache sticking out of trap.

blocked trunk] like that. It got all inflated like a balloon, like that. It's full of compressed air. And then Jack let go.

And it made the world's loudest [elephant sound] sound. And it made the base of the tower crack. And all the giant babies said, "Aaaahhhh!" and jumped out the windows where they were broken, and slid down the spider web. Giant babies sliding.

And the sound was so loud now, Evil Mister Fred's tower started to disintegrate. And one of the baby giants slid down this thing and tumbled into the tower, and the tower collapsed. And Evil Mister Fred slipped off. "Aaaaahhhhh!" And landed -- kerplunk -- right in one of his own grocery sacks. And it sucked him in.





Castle collapsing.

Jack looked in the bag, and he said, "Hey! Look at this! There's a little piece of mustache sticking out." And Jill said, "Wow! I wonder what it

is." And one of the giant baby things came over and looked, "Awwww! Toy! Nice!" And sat on it. And they all lived happily ever after, except Evil Mister Fred.

End of Lesson

If you have questions about this lesson, please ask them through the online <u>Teacher</u> <u>Support Forum</u> on our web site.