

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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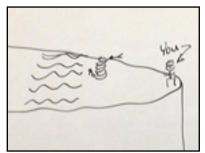
Zoob Tubes A Rock-it Science Lesson Filmed June, 2009

Rock-it Science

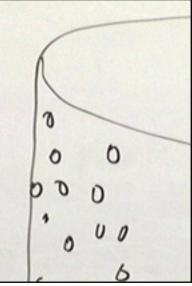
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Intro Quick Recap:

- Suppose you're standing on a cliff, blindfolded, and you can hear a bunch of rattlesnakes coming toward you.
- You've got no place to go, so you need to scare away the rattlesnakes. You say, "Boo!" but the rattlesnakes aren't scared.
- Ask students for suggestions to scare the snakes.
- On the opposite cliff, there's a bunch of creatures living in holes in the rocks. No matter what you say, they repeat it.
- If you say, "I'm going to die!" you hear [*softly*] "I'm going to die ... die ... die ... die."
- You make rattlesnake sounds, and the creatures repeat the sounds. This makes the rattlesnakes ignore you and fly over to the other cliff to find the other rattlesnakes.
- You can get echoes from any solid surface without trees or bushes.
- At the Exploratorium in San Francisco, there's a big cardboard tube about a hundred feet long. You can put your face at one end and hear your voice echo.



There's a bunch of rattlesnakes coming toward you.



The repeaters live in holes in the opposite cliff.

Experiment #1 Quick Recap: "Build a Zoob Tube"

- Instructor has a pair of plastic cups connected by a string. Each student takes a turn listening through the cup.
- Instructor demonstrates how to connect a pair of cups by a spring.
- Use a thumbtack to poke a hole in the bottom of each cup.
- Stick one end of the spring through a cup and dribble a blob of hot glue into the cup to hold the spring in place. Put the other end of the spring though the other cup, but DO NOT glue it in place.
- Pass out cups, springs, and thumbtacks and let students assemble them.
- Students experiment talking and listening through their cups.
- Instructor demonstrates how to wrap a piece of index around a cylinder to make a tube. Use plenty of masking tape to hold the tube together.
- Detach the un-glued end of the spring from one of the cups.
- With the spring hanging down from the cup, place the cup onto the top end of the cardboard tube and tape it into place. Reach into the tube, grab the other end of the spring, and pull it through.
- Attach the end of the spring to the second cup, place the second cup onto the other end of the tube, and tape it into place. Add a blob of hot glue in the second cup to hold the spring in place.
- Students practice making noises by shaking their tubes.
- Warn students not to shake the tube when they're in the car with their parents, because it could distract them from their driving.

Experiment #2 Quick Recap: "Sound Level Meter"

- Use a sound level meter to show students how different levels of sound register on it.
- Rock concerts are supposed to keep it below 105 decibels.
- Have the students make a "shhhh" sound, raising and lowering your hand when you want them to get louder or softer, and tell then what their sound level is.
- Repeat this using a louder sound, such as "hubba, hubba, hubba," to reach higher decibels.
- Keep setting the meter to higher levels to see how loud the student's voices have to get in order to register on the meter. (Their maximum will be about 110 decibels.)
- Shake a zoob tube near the meter to show students that it registers about 126 decibels.
- Caution students not to put the zoob tube's cup next to anyone's ear and shake it, because it's too loud.



A finished Zoob Tube.



The red needle on the sound meter measures loudness in decibels.

Equipment List: "Zoob Tubes"

Items needed for Instructor:

- Sound Level Meter
- Other supplies are same as student supplies.

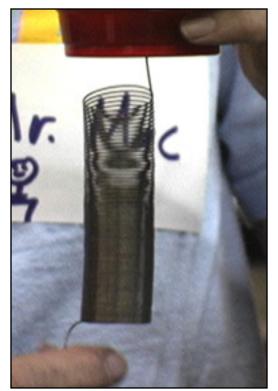
Items needed for Students:

Consumables (per student):

- Two 16-oz. Plastic Cups
- 4" Flexible spring (from Rock-it Science)
- Thin Cardboard or Heavy Index Stock, approx. 12" x 18"
- Masking Tape

Other:

- Plastic or hard cardboard cylinder, approx 12" x 2" (for shaping tubes)
- Pushpin or Thumbtack
- Scissors
- Permanent Markers



Spring attached to cup

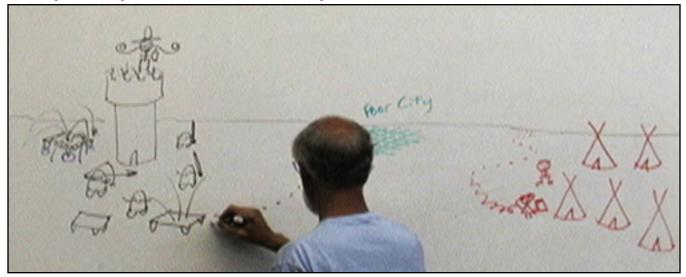
Prep Work:

- Cut spring to 4" lengths.
- Use pliers to bend the ends of the spring so they're slightly open.
- Cut cardboard to approx. 12" x 18" (we used placemats).



Sound Level Meter

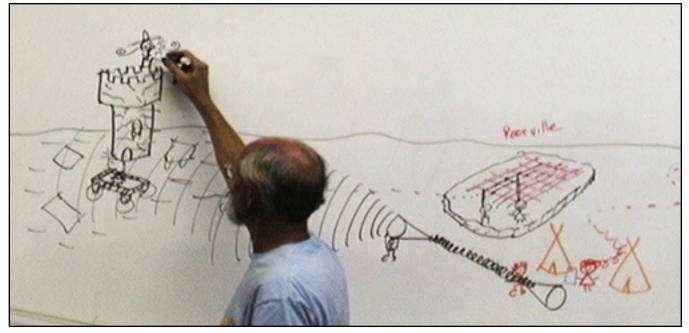
Story Recap: "Minions on Trampolines"



Part 1:

- Evil Mister Fred wondered what to do with his minions. They were running around, fighting and screaming, and he wanted some peace and quiet. He couldn't give them weapons to play with because they'd just poke holes in each other and cut each other into pieces.
- He ordered a bunch of trampolines from the Acme Store of Everything. The minions loved it -- jumping around two or three at a time, fighting in mid-air, knocking each other off.
- Jack and Jill were living in tepees. Jill told Jack that she washes her hair with an Infinite Hair Wash sponge. She just gets it started, and it goes off by itself and washes all the hair.
- Jack wanted to try it, but instead of soap, he grabbed starch. So after Jill's hair was washed and dried, it was all stiff and springy.
- Evil Mister Fred put wheels and motors on the trampolines, and he could control them with a radio controller. He sent the minions out on the trampolines to attack Poor City that night. Whenever someone came out, the minions would hit them on the head with their baseball bats.
- The people called Jack and Jill, who tried to barricade the streets, but the trampolines blasted right through them.
- Then they dug holes at each intersection. The trampolines fell in, but they bounced right back out again.

Story Recap (cont.)



Ending:

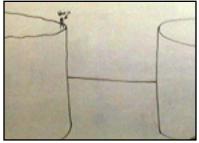
- Jack and Jill built walls around the town, but the trampolines jumped right over the walls. They crashed through the barricades and bounced out of the deep holes.
- Jack and Jill took two tepees and laid them on their sides. Then they took some of Jill's starched hair and stretched it between the two tepees and hooked them together.
- When the minions came, Jack held up one tepee over his head, pointing it toward the minions. Jill grabbed the other tepee, lifted it up, and threw it down. This made her springy hair slam into the ground really hard, so it made a sound that was 250 decibels.
- This made a huge shock wave that blasted the minions back against Evil Mister Fred's castle.
- The castle started to crack, so Jack and Jill hit it with another blast, and it crumbled into a huge pile of rubble, with Evil Mister Fred underneath.

Transcript: Intro

Suppose that you're standing on a cliff. That's you, standing on a cliff. And let's suppose you're blindfolded. You're on a cliff, you're blindfolded, and let's see, what else? There can be a bunch of rattlesnakes coming at you. And you know these rattlesnakes are coming. You can hear them slipping, you can hear their rattles going, "Rrrrrrrr." And you say, "Oh, no! I can sense that there's a cliff here!" because you can feel that you're on the edge of a cliff. And you say, "I've got to scare those rattlesnakes away." So you turn around and you go, "Boo!" And the rattlesnakes go, "Rrrrrrrr -- you can't scare us." What would you do? How would you scare away a whole herd of rattlesnakes?

[Students make suggestions. THERE ARE NO WRONG ANSWERS! Whatever they say, you should reply: "That's a good idea," "They might do that," etc.]

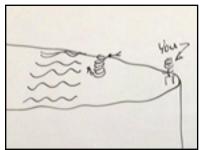
Well, suppose that on the other side of the cliff there's a bunch of creatures living there. And they aren't very smart creatures. They're living in the rocks. And these kind of creatures, no matter what you say to them, they say it back. They repeat it. They're called repeaters. And they don't just say it once, they say it several times. So you're on the cliff, you know the snakes are coming, and you go, "Ahhhh, I'm going to die!" And you hear *[softly]*, "Ahhhh, I'm going to die! I'm



Suppose you're standing on a cliff.



And you're blindfolded.



There's a bunch of rattlesnakes coming toward you.

going to die! I'm going to die! I'm going to die! . . ."

And you say, "Wait a minute! Where'd that come from?" "[softly] . . . from, from, from, from . . ."

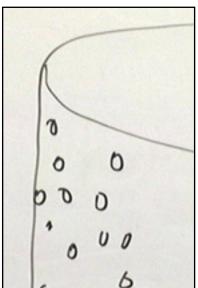
"Who said that?" "[*softly*] . . . that, that, that, that . . ."

"What are you guys doing over there?" "[softly] . . . there, there, there"

And you say, "Ooh, this is pretty cool. There's echo creatures over there, repeaters!" And you say, "Sssssssss." And the little creatures on the other cliff went, "Sssssss."

And then you went "Rrrrrrrrr." And they all went "Rrrrrrrrr."

Those are rattlesnake sounds. And when the rattlesnakes came to the cliff, instead of biting you, they all jumped off trying to get to the other side where they heard all these rattlesnake sounds. So now you have flying rattlesnakes.

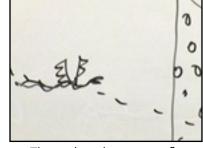


The repeaters live in holes in the opposite cliff.

[Student] Do they have wings?

Sure. Flying rattlesnakes. There.

Have you even investigated how echoes work? Do echoes work good off of trees? No, you can't get a good echo off of trees. Yeah, they work good on mountains. Where else? Caves, yeah. Anytime you have a nice surface that's solid without trees or bushes, you can get echoes off of it. You can do it out on the buildings out here. You can yell loud, and you can hear the echoes on the buildings.



The rattlesnakes want to fly over to where the repeaters are making noises.

There's other ways to make echoes. If you go to the Exploratorium in San Francisco, there's a big tube there. It's a big cardboard tube, and it's about a hundred feet long. You can put your face right at the end of the cardboard tube and say, "Hello!!" And you'll hear it echo (*[softly]* echo, echo, echo, echo) inside of the tube. It works best if the end is closed off like that.

Well today we're going to try to make echoes. But we're not going to be using tubes. And we're not going to be using flat walls. We're going to be using something else. In order to understand how it works, you get to play with it and explore how it works. But first we need a crazy story.

Story: "Minions on Trampolines"

Once upon a time, Evil Mister Fred was thinking what he was going to do with all his minions. The minions kept running around, hitting each other, fighting, screaming, yelling, and causing all kinds of commotion, and he wanted some peace and quiet.

So he's got his castle out there, and the noisy minions are down below. And Evil Mister Fred knows that if he gives the minions certain weapons to play with, they'll just kill each other. But they always get glued back together again. Minions, if you give them bows and arrows, they shoot each other with the arrows, and now you've got minions with arrows stuck in them, and you've got to pull the arrows out and plug up the holes. If you give them spears, they poke each other with the spears. If you give them swords, they cut each other in pieces with the swords, and then use Crazy Glue to put them back together again. The only thing that really works good is that you give them baseball bats, because minions have very hard heads, and they can't hurt each other with baseball bats.

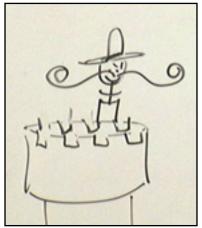
So Evil Mister Fred said, "I have an idea." So he called the Acme Store of Everything. The Acme Store of Everything exists on the top of Mount Everest. And they hear anything you say. And if you say, "Oh, I wish I had a Mercedes Benz car that's worth a million dollars," then poof! -- right there in front of you, you'd have a million-dollar Mercedes Benz.

Evil Mister Fred said, "I want a bunch of trampolines." And the trampolines showed up instantly. And he didn't have to say anything after that. When the minions saw the trampolines, they jumped on them and started bouncing around -- boing, boing, boing! And you get two or three minions on the same trampoline, they're fighting in mid-air. And the minions would knock each other off the trampolines and land on their heads. And this doesn't hurt them at all. There were minions bouncing all over the place, and he thought, "Well, that's not so bad. At least they're out of sight." He kept moving the trampolines farther and farther from the castle so he could get some peace and quiet.

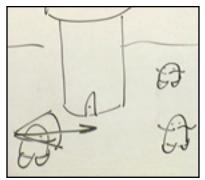
So while he's busy doing that, Jack and Jill are living in tepees over here.

[Student] What's tepees?

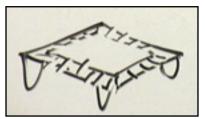
Tepees? Conical houses made out of, usually leather and sticks. And there's Jack, and there's Jill with her long hair.



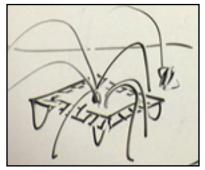
Evil Mister Fred on his castle.



If you give bows and arrows to minions, they'll shoot each other.



Evil Mister Fred's trampoline.



The minions started bouncing off the trampolines.

And Jack said, "Jill, you know that long hair is a problem, isn't it? How do you wash all that hair?" And Jill said, "Well, I just start here and continue until I reach the other end." And Jack said, "But Jill, it's infinitely long. You'll never get to the other end." And Jill said, "Yeah, but I have a sponge. It's called The Infinite Hair Wash Sponge. And when I use it, I just get it started, and it goes off all by itself. And it goes fwooom! -- and washes all the hair."

And Jack said, "Really? That's pretty cool. I like that." He says, "Can I start it?" Jill said, "Sure." So she gave the sponge to Jack. Jack said, "Don't go away. I've just got to put some soap on it." So Jack ran inside of his tepee and he reached for the soap, but instead of soap he got starch. Starch makes things stiff. Jack put starch on the sponge and he started it on Jill's hair, and the sponge went fwooooo -- infinitely fast, and washed all of Jill's hair with starch. At first, you don't know what starch does. But when it dries, it gets real stiff. And Jill's hair became really stiff and springy, and now wherever she walked, she'd hear this sprong! sprong! sprong! sprong! behind her because her hair was all starchy.

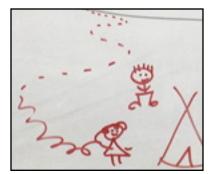
And Evil Mister Fred had his minions bouncing over there and he said, "You know, that trampoline is a good idea." So he called the Acme Store of Everything and he ordered some wheels. And he put wheels on it. Then he put a motor on it. Now he had a motorized trampoline. And he put his minions on there, and he could have this thing zoom around and the minions would fly off in all directions. And he said, "I like that idea -- minions flying off of motorized trampolines. I'll make a whole army of trampolines."

So he had a whole bunch of trampolines with minions and baseball bats, and he had a radio controller so that he could control these trampolines. And he said, "Now, I'm going to send these trampoline minion carts out to attack some poor city." And the city's name was Poor City.

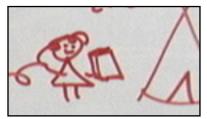
"The minions will go zooming down the streets in their trampolines, they'll bounce off and bang anybody they see on the head with their baseball bats, and give them a bump on their head. And then they'll have to do whatever I tell them or they'll get bumped on the head again."

And the people in Poor City had no idea what was going to happen. And that night, here came all the trampolines. And the minions went down the streets, and anybody that was out on the street got bonked on the head. And Evil Mister Fred said, "Yeah, this is great!" And they all ran inside and they closed their doors. And then they called the rescuers -- Jack and Jill. And they said, "Jack and Jill, we're under attack! Traveling

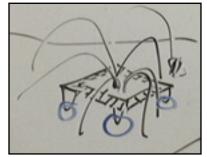
Zoob Tubes -- Page 10



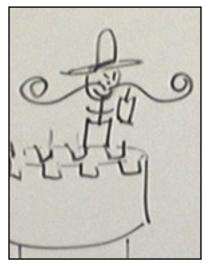
Jack & Jill are living in tepees.



Jill's Infinite Hair Wash Sponge washes her infinitely long hair.



Evil Mister Fred put wheels and a motor on the trampoline.



Evil Mister Fred can remotely control the trampolines with a radio controller.

Zoob Tubes -- Page 11

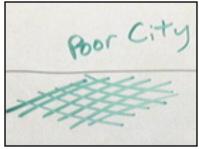
trampolines with minions are banging everybody on the head." And Jack and Jill said, "We'll be right there."

So Jack and Jill ran to the city, and they saw the minions zooming around on the trampolines. And they wondered how they were being controlled. They couldn't see Evil Mister Fred at all. They said, "We've got to stop these guys. We've got to scare them away. We've got to discourage them."

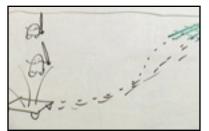
So they first put barricades on the streets. They piled up furniture, cars, cats, rats, bats, elephants, anything they could put into piles. But when the trampolines came, they ran into the piles -- rrrrccch. The trampolines were so powerful, they blasted right through the piles of stuff.

Jack and Jill said, "Okay, that didn't work. We'll dig holes in the ground and they'll fall down the holes." So they dug deep holes at every intersection. And the trampolines came right along and fell right into the holes just as Jack and Jill planned. But they bounced right back out again. And Jack and Jill said, "Ohh, man, that didn't work! What are we going to do?"

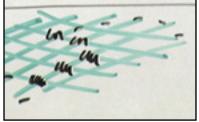
If you were Jack and Jill, what would you do to stop these evil trampoline guys from attacking your city?



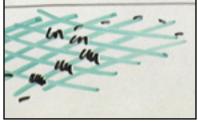
The people in Poor City didn't know what was coming.



The minions came to Poor City on their trampolines.



Barricades in the streets wouldn't stop the minions' trampolines.



Deep holes wouldn't stop them, either.

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.)

And we're going to leave this "To be continued . . ."

Experiment #1: "Build a Zoob Tube"

What we're going to do for the first part of the experiment is attach some springs to cups and see what they do.

[Instructor lets students listen through 2 cups connected by a string.]

Now we're going to make a cup. Instead of a string, we're going to use a spring between the two ends and see what that sounds like.

To make the springs stick to the cups, we need to poke a little hole in the cup. So we just poke the thumbtack in and then pull it out. And then we stick the spring in there, and the spring -- it kind of stays, but not too much. And we'll glue it in. We stick it in the other one. Now, if you put them in with no glue, they can spring back and the wires can poke a hole in your body. So we don't want to do that. We want to put some glue on the inside. See the spring in there? Now, we only want to glue one end, because in a minute we're going to add something between them. So we just dribble some glue inside. Can you see the dribble? It's like you're drooling. You're going to drool inside.

Now the other side, we have to be a little careful of it. The other end you're not going to glue. If it springs away from you, it'll spring toward your hand -- it'll be okay. And you're going to yell into it and see if it does anything. *[Yells into cup]* "Hello, anybody in there?" And see if anything happens.

We need to be able to take the other end off, because later we're going to add a paper tube to it. And you can't get cups into the paper tube if they stay together. Okay, so first we'll give you two cups and a spring. Watch out for the ends -- they can be sharp.

[Instructor passes out cups, spring, and thumbtack. Students punch holes in cups, attach spring, and add hot glue.] After it's glued, you have to sit there and wait for it to dry for a hundred years. While you're waiting for the glue to get hard, you can write something on your cup so



Wrap the cardboard around the cylinder to make a tube.

you know which one is yours.

[Students experiment by talking and listening with their cups.]

Okay, ready for the next part? Now, you're going to make a tube. But you're not going to make it out of a plastic tube because that would be way too easy. You're going to wrap a piece of cardboard on your plastic tube. You can wrap it with the white inside or the white outside -- it doesn't matter. Wrap it so it's long. Wrap it around there. Now you've



Use a pushpin to make a hole in the bottom of the cup.



Poke one end of the spring through the hole.



Dribble some hot glue into the cup to secure the spring in place.

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Wrap masking tape around the cardboard tube to hold it in place.



Pull cylinder out of cardboard tube.



Detach the spring from the unglued cup and drop the end into the tube.

got a tube, right? Of course, when you let go [cardboard springs open] it's not a tube anymore. So you've got to tape it.

So you grab a roll of tape and you have some ready. You can stick it on your ear or something until you need it. Then you wrap the coardboard around the tube, then you grab your tape and you wrap it around. *[Wraps around tube at middle.]* And you take this and you use lots of tape. You can use as much tape as you want to, *[wraps tape around tube near ends.]* until you have something that looks tube-shaped. When you have a tube-shaped thing, you take the plastic tube out, and now you have a tube.

Now, this is something you guys can do but I can't do very well. You're going to put one cup in there and take some tape and tape it on. The problem is, the spring is way at the bottom of the skinny tube. It's in

there somewhere. My hand doesn't fit in there, so I can't get it out. Maybe one of your hands is small enough to fit in there. [To student] Reach up there and see if you can reach it with your hand. Wow, your whole arm in there. [Student reaches into open end of tube and pulls out end of spring, which is attached to cup at the other end.] Oh, lookit -- okay.

Once you have the spring out, then you put it through the hole in your other cup. If you accidentally let go of the spring, it goes back in. Then you have to have *[student]* take them back out again for you. And then, before you tape it on, I usually -- well, you can glue it before you tape it or after you tape it. Try to be careful with it. I'm going to tape it first. Sometimes it falls out while youre taping it, and then you have to take it apart. And then you get to drool more glue.

When you're done, you've got this wonderful thing. It's called a Car Crash Maker. Because when your mom is driving you home, you hold it behind your head and go [shakes tube, which makes a loud noise]. And she goes, "Aaaaaahhhh!" Not highly recommended.



Attach the cup to the tube with masking tape.



Reach into the tube and pull out the other end of the spring.

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Reattach the spring to the second cup, tape it to the other end of the tube, and dribble in some hot glue to hold it in place.

[Instructor passes out cardboard, plastic tubes, and masking tape. Students assemble tubes and attach them to cups. Then they practice making noise with them.]



A finished Zoob Tube.

Experiment #2: "Decibel Levels"

If you can sit there quietly, you can hold your gun. This is a sound level meter. If you go to a rock concert, they're supposed to keep the sound level below 105 decibels. This will measure anything from sixty up to one hundred and twenty. And we're going to try making different sound levels. It's set at sixty right now. There's a red needle in there, and I'm going to walk around and let you see the needle. Don't make any noise. If the needle moves clear over to the edge, you're above sixty. If it's right in the center, you're right at sixty. So as I walk around, just look at the needle and see where it is. Don't shake your thing at it, because it's too sensitive for that. Just look at it. See what sixty decibels is like. If you're doing a movie, they try to keep sound levels at certain places.

Now, set your sound makers on the table. Now, suppose we're at a movie and it's Harry Potter, and there's a big snake coming toward everyone, and we want to scare the snake away. So you're all going to go "Shh-



The red needle on the sound meter measures loudness in decibels.

hhh." If I move my hand up like this, you go "shhhh" louder; if I move my hand down, you go "shhhh" quieter. Okay, we're going to try to make seventy decibels. Okay, everybody go "shhhh." [Students go "shhh," while Instructor raises and lowers his hand until the correct level is reached.] Right there, it's about seventy.

Now, we're going to go to a hawaiian scene, and you're going to be going, "hubba hubba hubba hubba hubba." If I move my hand up, you go "hubba hubba" louder; if I move my hand down, you go "hubba hubba" quieter. Okay, this is going to be eighty decibels of "hubba hubba." So, okay, go "hubba hubba." [Students go "hubba hubba," while Instructor raises and lowers his hand until the correct level is reached.] Right there, that was eighty decibels.

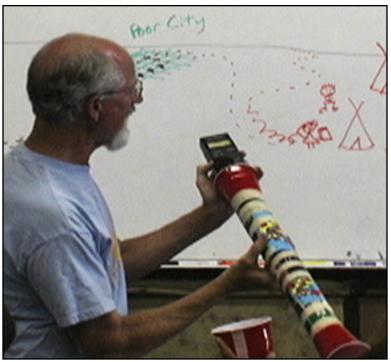
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Now, we're going to do a ninety decibel "hubba hubba." Are you ready? Okay, ninety decibels of "hubba hubba," ready, go. [Students go "hubba hubba," while Instructor raises and lowers his hand until the correct level is reached.] That's it -- that's ninety decibels of "hubba hubba." If you had to listen to ninety decibels of "hubba hubba" all day, you'd have a headache.

Now, we're going to do a hundred decibels of "hubba hubba." Are you ready? Okay, go. [Students yell "hubba hubba."] That was a hundred decibels of "hubba hubba."

Now, we're going to do a hundred ten decibels of "hubba hubba." Are you ready? Okay, go. [Students yell "hubba hubba" very loudly, but the needle remains on the left side of the scale.] Not even close. This time, instead of "hubba hubba," you're just going to yell. Let's yell, "Pizza pie!" really loud. Ready, get set, go! [Students yell "Pizza pie!" but the needle still doesn't move past the left edge of the scale.] Not even close. You've got to get louder -- this is a hundred and ten decibels. Are you ready? Top of your lungs. Ready, get set, go! [Students scream.] Perfect! That was a hundred and ten decibels.

Now, we're going for a hundred and twenty. This is going to take some concentration. You're going to yell "Pizza pie" as loud as you possibly can. I'm going to point it a little closer toward you. Ready, get set, go! [Students yell as loud as they can.] Didn't even make the needle wiggle.



Measuring the decibel level from a Zoob Tube.

Sometimes at concerts, they turn the speakers up to a hundred and twenty. After a hundred and twenty decibels, you go home and your ears are ringing, and you can't hear things very well.

Now, here is a shaky-shaky thing [picks up one of the Zoob Tubes]. Don't shake yours yet, leave yours there. Set them down. I'm going to put the decibel meter right where your ear would be if you held it over your ear [puts decibel meter in one of the cups], and shake it. That was a hundred and twenty-six decibels. So, imagine somebody screaming as loud as they possibly can, right in your ear. That's what happens right in here [points to cup]. So don't put this against anybody's ear and shake it, because it's too loud. Now you need to take your tubes, put them away over there, and come back and we'll finish the story.

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

So Jack and Jill are trying to figure out a way to stop those minions from going into Poorville and bonking everybody on the head. They're going along on their trampolines, bouncing all over the place, saying, "Here's one for you (bonk)! Here's one for you (bonk)! Everybody's running around going, "No, stop, please don't!" And they can't stop them.

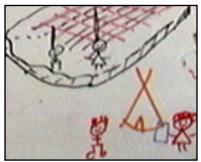
So Jack and Jill said, "First, let's put some walls around the town." So they built walls around the town. But they jumped right over the walls, they bounced their trampolines staight over the walls. And they said, "Oh, that didn't work." So they dug some deep holes, hoping that they would fall into the deep holes. But they bounced right out of the deep holes. Then they started putting barricades at all the street corners. And they just crashed right through the barricades.

And Jack and Jill said, "What are we going to do? Everything we've tried doesn't work." And Jack said, "Hmmmm. I have an idea. I think we need a couple of tepees here." Jill said, "Okay. Wait, I think I know what you're thinking about."

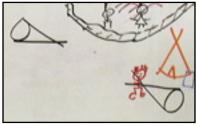
So they took one tepee and they laid it on its side, like that. And they took another tepee over here and put it out here and laid it on its side, like that. And Jill said, "You need some scissors, don't you?" And Jack said, "Yeah, this is going to be great!"

So they took some of Jill's hair that had been starched. Remember they starched her hair? And they put Jill's starched hair in this tepee, down to that tepee, and hooked them up. And then, they waited for the next day, and all of the guys came out, all of the minions came out on their trampolines, heading for town again. And Jack and Jill said, "Yeah, we're going to get them." Jill says, "I want to do it -- it's my hair, I get to do it." Jack said, "Okay."

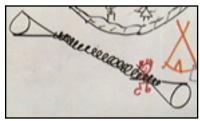
So Jack was holding this one out here over his head, and Jill grabbed the other tepee back here. And she picked the tepee up off the ground and she went ke-rash! And she slammed this springy part of her hair against the ground really hard. And it made a sound coming out of here that was two hundred and fifty decibels. And it just blasted the minions backwards. It was a huge, huge shock, and they came and hit the castle -crash, crash, crash, crash into the castle. So many minions hit the castle that it started to crack, like that. But it didn't fall down.



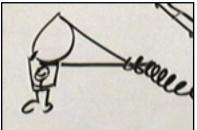
Jack & Jill built a wall around the city, but it didn't keep the minions out.



Then they laid two tepees on their sides.



The connected the tepees with Jill's starched curly hair.



Jack held up one end pointed toward the minions while Jill slammed the springy part against the ground.

And Jack said, "Jill, I think we need just one more." And Jill said, "Yeah!" So she slammed the spring down on the ground, another huge blast, and the castle came tumbling down into a huge pile of rubble, with Evil Mister Fred inside. All you saw was a little bit of mustache sticking out here and a little bit sticking out there. And they all lived happily ever after, except Evil Mister Fred.



The minions hit the castle so hard it started to crack.



Another blast made the castle crumble, leaving just a moustache sticking out.

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.

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