Why did the Goat Cross the Bridge?

3rd Grade
Science/Language Arts/Drama
by Linda Gold

Science
Standard 3.2.6 Design a solution to a problem caused by a change in the environment that impacts the types of plants and animals living in that environment. *Define the problem, identify criteria and constraints, and develop possible solutions*. Examples of environmental changes could include changes in land use, water availability, temperature, food, or changes caused by other organisms
Standard 3.3.1 Plan and carry out investigations that provide evidence of the effects of balanced and unbalanced forces on the motion of an object. Emphasize investigations where only one variable is tested at a time.
Standard 3.3.3 Construct an explanation that the gravitational force exerted by Earth causes objects to be directed downward, toward the center of the spherical Earth.

Writing
Standard 3b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.

Drama
Standard 3.T.CR.5:
Create character through imagination, physical movement, gesture, sound and/or speech and facial expression based on stories or through improvisation.
Standard 3.T.P.2:
Demonstrate the ability to work effectively alone and cooperatively, with a partner or in an ensemble.
Standard 3.T.R.1:
Demonstrate audience skills of observing attentively and responding appropriately.

Objective: The students will demonstrate their understanding of the effects of temperature, light and moisture on plants and animals. They will also demonstrate their understanding of force when objects of different weights collide. They will do this by planning and acting out a new version of The Billy Goats Gruff.

Materials:
You will need to make copies of the attached play.

Warm-up: Fruit Basket Variation

For this version of the game, we will be using three elements that cause change in the environment and have an impact on living and non-living things; moisture, temperature and light. One chair for each participant is placed in a circle. One player stands in the middle of the circle. This player does not have a chair. Assign each participant, including the player in the middle, one of the elements. They will remain the same element throughout the game. Decide how each element will move and demonstrate the movements to the class. Explain to the students that their goal is to stay out of the middle. The goal of the person in the middle is to get out of the middle. The middle person will call out an element and everyone who has been assigned that element will trade chairs. While they are trading chairs, the player in the middle will sit in one of their chairs, leaving a new player in the middle. If the player in the middle would like everyone to change places, they will say, "Change the environment."

Everyone must find a new seat. They are not allowed to move over just one seat. They must move at least two places. Players are also not allowed to return to the seat they were just in. However, they may return to that seat later in the game.

Some children love to be in the middle and will hang around the middle, waiting for everyone else to find a seat. I always add the rule that no one can be in the middle more than once. If they end up in the middle more than once, the teacher should choose someone to take their place. I do not allow the students to pick someone. I have found that there are those who will hang around the middle so they can pick the next person!

Instruction:

If needed, go over the effects of moisture, temperature and light on the environment. Discuss the effect sunlight has on living things. Also discuss the variables that determine force and motion.

Define the term dialogue. Demonstrate script formatting and teach the students how to write dialogue. Place emphasis on the fact that all of the information they want their audience to have must be put into the dialogue.

Three Billy Goats Gruff

Give everyone a copy of the attached play. Read the first part of the play together. Stop when you come to the first set of blank lines and ask the students why the Little Billy Goat is colder than the others. Show them how to take their ideas and turn them into dialogue by writing the dialogue on the board. Have the students copy the dialogue into their own scripts. Explain that all of the other blank spots in the script need to have dialogue written for them as well. Put the students into groups of 4. Have them work in their groups to fill in the dialogue. Every student should write out the dialogue so they will have a copy of the script when it is time to perform.

When they are finished writing, give each group time to rehearse. Coach the groups to stage their plays so that the audience will be able to see them. Also coach them to speak loudly and clearly so the audience will be able to hear them. Talk to them about their characters and how they will portray each Billy Goat with a different personality. Allow each group the chance to perform for the class.

Performance tip: Place the groups in a circle, with each group having their own performing area around the circle. Act out the parts of the play that are prewritten in unison. When you come to parts that are written by the groups, pause and have each group act out their part individually.

Assessment/Discussion

Discuss the ideas that each group came up with. Decide if each group's explanations were correct and discuss why or why not. Also discuss the acting.

The Three Billy Goats Gruff
and the Laws of Science

By Linda Gold

Chaacters: Little Billy Goat *(small and frightened)*
Medium Billy Goat *(scientific)*
Big Billy Goat *(big and brave)*
Troll *(cranky and hungry)*
(Actors may be used for inanimate object such as trees and a bridge)

Big Billy Goat: Good morning little brothers Gruff.

Medium Billy Goat: Good morning big brother Gruff.

Little Billy Goat: It's a fine morning to be a Billy Goat.

Medium Billy Goat: Yes, but it would be even finer if we could be eating the grass on the other side of the river.

Little Billy Goat: That would be wonderful. It looks much warmer over there too. I'm cold.

(Think of a reason why the Little Billy Goat would be colder than the other two. Also think of a way he could keep warm without building a fire. Create dialogue for the Medium Billy Goat to explain why the Little Billy Goat is colder than the others. Have the Medium Billy Goat tell him how to warm up. Use as many of the following vocabulary words as you can: temperature, degrees, heat source.)

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Big Billy Goat: Yes, that grass is much more green and lush than our grass. I wonder why?

(Think of a reason why the grass on the other side of the river would be more green and lush. Create dialogue to explain to the Big Billy Goat, why the grass is more green and lush. Use as many of the following vocabulary words as you can: environment, organism, moisture.)

Big Billy Goat: Well, then we must cross over to the other side of the bridge.

Little Billy Goat: But brother, we cannot. Did you forget about the troll that lives under the bridge? He will surely eat us if we try to cross.

Big Billy Goat: Eat me? Not a chance. You go first and just tell him that I'm right behind you. That will scare him off the bridge.

Little Billy Goat: I go first? But…but…

Big Billy Goat: Just go. Our medium sized brother will follow you and I will come last.

Medium Billy Goat: I will?

Big Billy Goat: Yes, of course you will. Now go, before I eat you!

Little Billy Goat: Aaaaaaaa! *(Little Billy Goat starts across the bridge.)*

Medium Billy Goat: You weren't really going to eat him, were you?

Big Billy Goat: Of course not. I'm a vegetarian.

(The little Billy Goat is carefully making his way across the bridge when a troll jumps out from under the bridge.)

Troll: Who's that tripping across my bridge?

Little Billy Goat: It is I, the littlest Billy Goat Gruff.

Troll: You will make a nice little snack for me.

Little Billy Goat: Oh! Please don't eat me! My brother is following behind me. He is much larger and will make an entire meal for you.

Troll: *(Looking beyond the Little Billy Goat, trying to catch a glimpse of the next one.)* Bigger, you say? Well you are pretty scrawny. All right. Move on across the bridge and don't come back this way again.

Little Billy Goat: Oh thank you Mr. Troll. You won't be disappointed. *(The Troll goes back under the bridge and the Little Billy Goat hurries across to wait on the other side for his brothers.)*

Big Billy Goat: There, you see? Easy as pie. It's your turn now.

Medium Billy Goat: Well, here goes. *(The Medium Billy Goat starts across the bridge. He gets half way across when the Troll jumps out at him.)*

Troll: Who's that tramping across my bridge.

Medium Billy Goat: It is I, the medium sized Billy Goat.

Troll: The little guy was telling the truth. You are much bigger. You will make a fine meal for me.

Medium Billy Goat: I suppose you could eat me but I would not advise it. You see, behind me is my bigger brother. My much bigger brother. He will make a feast for you.

Troll: I don't know if I'm hungry enough for a feast. You look pretty tasty right now.

Medium Billy Goat: You know troll, I have theory on why you are so cranky.

Troll: Huh?

(The Troll lives under the bridge, in the dark all day. Think about the effect the sun has on living things to explain why the Troll is so cranky. Use as many of the following vocabulary words as you can: environment, interaction, survive.)

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Troll: Enough already! You talk too much! Stop your jabbering and get on across the bridge. Your brother better be worth the wait.

Medium Billy Goat: Oh he is. In fact, you will find that he…

Troll: I said stop the jabbering! Go on! Get off my bridge! I got to get out of this sun. *(The Troll goes back under the bridge and the Medium Billy Goat hurries on across to wait on the other side with his brother.)*

Big Billy Goat: Well, looks like it's my turn. Heheheheheh. *(The Big Billy Goat starts across the bridge. When he is half way across, the Troll jumps in front of him.)*

Toll: Who's that stomping across my bridge?

Big Billy Goat: It is I, the Big Billy Goat Gruff.

Troll: Well I'm going to eat you up!

Big Billy Goat: I'd like to see you try it!

(The Big Billy Goat and the Troll stand for a moment, staring at each other with contempt. While they are standing there, the Medium Billy Goat explains to the Little Billy Goat why the Troll doesn't stand a chance. The Big Billy Goat outweighs the troll. Think about the principle of force and what happens when objects of various weights collide with each other. Write dialogue to explain to the Little Billy Goat, what is about to happen. Use as many of the following vocabulary words that you can: force, unbalanced, motion.)

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(Following the explanation, the Big Billy Goat and the Troll run at each other. The Big Billy Goat hits the Troll with his horns and the Troll goes flying off the bridge. The Big Billy Goat joins his brothers.)

Big Billy Goat: Well what are you waiting for? Let's go eat.

Medium Billy Goat: And that, my brothers, was a great demonstration of the force of _____. It is the same force that keeps us from floating into space. You see, when the troll…

Little Billy Goat: You do talk too much.

Big Billy Goat: Ya, stop your jabbering and eat.

(All three Billy Goats begin eating, stop, turn to the audience and bow. The Troll also stands and bows.)