
TITLE:

Dramatizing Simple Machines: Wheel and Axle and Inclined Plane

DEVELOPED BY:

Jeanne Wall

ART FORM:

Dance/Movement

Drama

Music

Puppetry

Multi-disciplinary / _____

OBJECTIVE(S)/GOAL:

Children will be able to:

- identify wheel and axle and inclined plane and understand how these simple machines can be used.

CHILDREN'S PRIOR KNOWLEDGE NECESSARY FOR THIS EXPERIENCE:

- Children should have an introduction to the concept of simple machines.
- Children should be familiar with the puppet character Farmer Franny, used in earlier lessons.

VOCABULARY

Arts Vocabulary

Role playing

Creative movement

Singing in a group

Curriculum Content Vocabulary

Machine

Wheel and axle

Rod

Level

Incline

MATERIALS NEEDED:

Costume for Farmer Franny (e.g. hat, bandana, wig), toy tractor and wagon, large piece of brown fabric, wheels (made from cardboard), PVC pipe or wooden dowel, paper plate, basket and apples, cardboard for the ramp

MAIN EXPERIENCE:

Introduction: Machines

“Last time we were talking about machines. What is a machine? Can you show me with your body a movement that a machine can make? What machine movement should we choose for our song today?”

Sing “Machine Song” from lesson one.

Main Experience: Franny Farmer

Ask the children if they remember Farmer Franny. “What did she say we were going to do today? (Help her harvest the apples, ride in the wagon.)”

Teacher in role: Instead of using a puppet, the teacher can become Farmer Franny (in-role) with help of simple props such as a hat with braids and a bandana.

“Do you remember what Farmer Franny was wearing? A HAT like this one, what about her hair? Yes, she had BRAIDS like these. Do you remember what she wore? Yes, this type of scarf is also called a bandana. Right now I’m Ms. Jeanne. I am going to turn around and I want you to count to 10 for me. When I turn back around I will be Farmer Franny.” Have the children help transition to the role by counting to 10.

As Farmer Franny, show the toy tractor and wagon. “Will we all fit on this? We will have to use our imaginations and make our own wagon, so we can ride out to the orchard to pick apples.”

First a large piece of brown fabric is put on the floor to create the bottom of the wagon. Create giant wheels and axles using cardboard wheels and PVC pipes. (A wooden dowel could also be used.) Next Franny puts the large sets of wheels and axles at opposite ends of the fabric to make the wagon. Farmer Franny demonstrates getting in the wagon and sitting down. (I sit on the fabric, but if sitting on the floor is uncomfortable for the teacher, the fabric can be placed on a chair.) One at a time, she asks the children to join her in the wagon.

The Teaching Aid (a child could also play this part) is up in front of the wheels sitting in a chair driving the tractor that pulls the wagon, using a paper plate as a steering wheel. Farmer Franny rides in the wagon with the children and directs movements of the song. As we ride out to the orchard (we stay in circle) we sing the “Wheels on the Axle” song.

Sing “The Wheels on the Axle”

(Sung to the tune of “The Wheels on the Bus”) Create gestures for each line.

The wheels on the axle go round and round, round and round, round and round.

The wheels on the axle go round and round all around the farm

The axle is the rod that turns the wheel, turns the wheel, turns the wheel

The axle is the rod that turns the wheels all around the farm.

The tractor’s the machine that pulls the wagon, pulls the wagon, pulls the wagon pulls

The tractor’s the machine that pulls the wagon all around the farm.

The dramatic play in the wagon is enhanced by explaining we may hit some bumps on the way. Pretend to be bumping up and down while sitting. The children really enjoy this.

Farmer Franny announces we are at the orchard. Franny leads the children out of the wagon and to an area in the room which is the orchard. Farmer Franny demonstrates picking apples and putting them in a small basket. Allow the children a few minutes of apple picking. Have them carry their pretend baskets back to the wagon. Get back on the wagon with the apples.

Travel back to the barn yard in wagon by circling through the room. Sing “Wheels on the Axle” to go back and recreate the bumpy road.

Franny talks about how the apple baskets are full. Ask the children if they think the baskets are heavier now or lighter? “Much heavier! If we have to lift all these baskets out of the wagon, it is going to be hard work. Can you think of anything that can make work easier? Yes, a machine. I think I know the perfect simple machine. It’s called a ramp, or an inclined plane. A plane is any flat surface like our ramp, and incline means it’s not level. Franny uses some cardboard to make a ramp up to the axle. Look at our ramp. How can you tell it’s not level? If it was level it would be the same height on both sides. Ramps make our work easier because it’s easier to push an apple basket down the ramp than it is to lift all those apple baskets. Watch me push my apple basket down the inclined plane. It’s much easier than lifting a heavy basket.” Each child gets to slide the basket down the inclined plane and then sit in the circle. Farmer Franny thanks them for their help, asks them if they can help her harvest her pumpkins tomorrow and leaves. Turns back into the teacher with the help of the children counting to 10 or down from 10 if they are able.

Closing: Body Levels and Inclines

We are going to play a game with our bodies called Incline and Level. Our bodies make an inclined plane when one side is higher than the other. Let’s start with our legs straight out. Our legs are level to the floor because both ends are the same height. Let’s bend one knee. We have made two inclined planes because my knee is higher than my foot. Let’s bend the other knee so we have more inclined planes.

Let’s all lay flat on the floor and make our bodies level with the floor. Let’s use our bodies to make some inclined planes. Can you show me an inclined plane using your legs, arms? Whole body? Can you show me level using your body? Let’s make our body flat and level on the floor and take 3 big breaths. Sit back up.

INTENTIONAL QUESTIONS:

Open-Ended (i.e. children contributing possibilities, thoughts)

How can machines help us?

What machine movement should we choose for our song today?

Demonstration (i.e. "show me...")

Can you show me with your body a movement that a machine can make?

Application to Other Areas (i.e. making connections to other areas)

What machines on the farm use a wheel and axle?

Problem-Solving/Critical Thinking (i.e. prediction)

Can you think of anything that can make work easier?

Factual Questions:

What is a machine?

What is a wheel and axle?

What does level mean?

What is an inclined plane?
