Name:

Dippin' Dinos! (Teacher Version)

Pushing & Pulling

The following pictures show different kind of forces. Label each one as a push or a pull, and describe the motion:

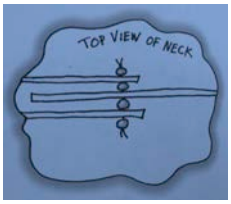
a) Push / **Pull** ; Motion *The horse pulls the cart forward in a straight line.*

b) Push / **Pull** ; Motion *The static electricity pulls the child's hair outwards.*

c) Push / **Pull** ; Motion *The ball is pulled back to the ground by gravity.*

d) **Push** / **Pull** ; Motion *The swing is pushed away by the adult, and pulled back down by gravity.*

Up & Down Dino



Materials:

- Pencil
- Posterboard & Corrugated Cardboard
- Scissors
- Coloured Markers
- Hole Punch
- String (15cm)
- Metal Nut
- 4 Plastic Beads
- Thread & Needle
- Glue

Instructions:

1. Trace the dino shape onto the posterboard and cut it out. Cut the base from the corrugated cardboard. Decorate with the markers, if you wish.

2. Punch holes in the head and body where shown. Make the weight by adding the nut to the string, and tie it to the two bottom holes on the dino's head.

3. Assemble the neck as shown using the beads and thread. Fold the tabs on the dino's feet and glue them to the cardboard base.

4. To work the dino, hold the handle and move it so the nut swings back and forth.

Source: Hauser, Jill. Gizmos & Gadgets. Charlotte: Williamson Publishing Co., 1999. Print.

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Talk About It!

1. What's happening as the nut swings below the dino's head? *The heavy nut adds weight to the front of the dino, pulling its head down.*

2. What's happening as the nut swings below the dino's body? *As the nut swings back beneath the dino's body, it repositions the weight and the head pops back up.*

3. Why is it easier to jump off a chair than back on? *Gravity pulls you down when you jump off the chair, but you're working against gravity when you jump back up.*

Practical Pendulums!

A **pendulum** is made by hanging an object from something else. When you pull a pendulum and let it go, it swings back and forth in the same pattern.

You can find pendulums in grandfather clocks! Why do you think they are used to keep time? *Because they take the same amount of time to make each swing.*

What force do you think pulls the pendulum down towards the ground? *Gravity.*

Why do you think a pendulum slows down over time? *The force of friction or air resistance.*

Fun Foucault Facts:

Leon Foucault was a French scientist who wanted to prove the Earth spins around each day. In 1948, he built a huge pendulum with a cannon ball weighing 60lbs (about 4 bowling balls) and a big wire that was 67 metres long (about 6 school busses)! He put a sand pit beneath it to see the pattern the cannon ball traced. If the Earth didn't spin, we would just see one straight line, but Foucault noticed that the pendulum seemed to be moving:

The Earth was actually spinning beneath the pendulum! Foucault proved the Earth spins using his invention.

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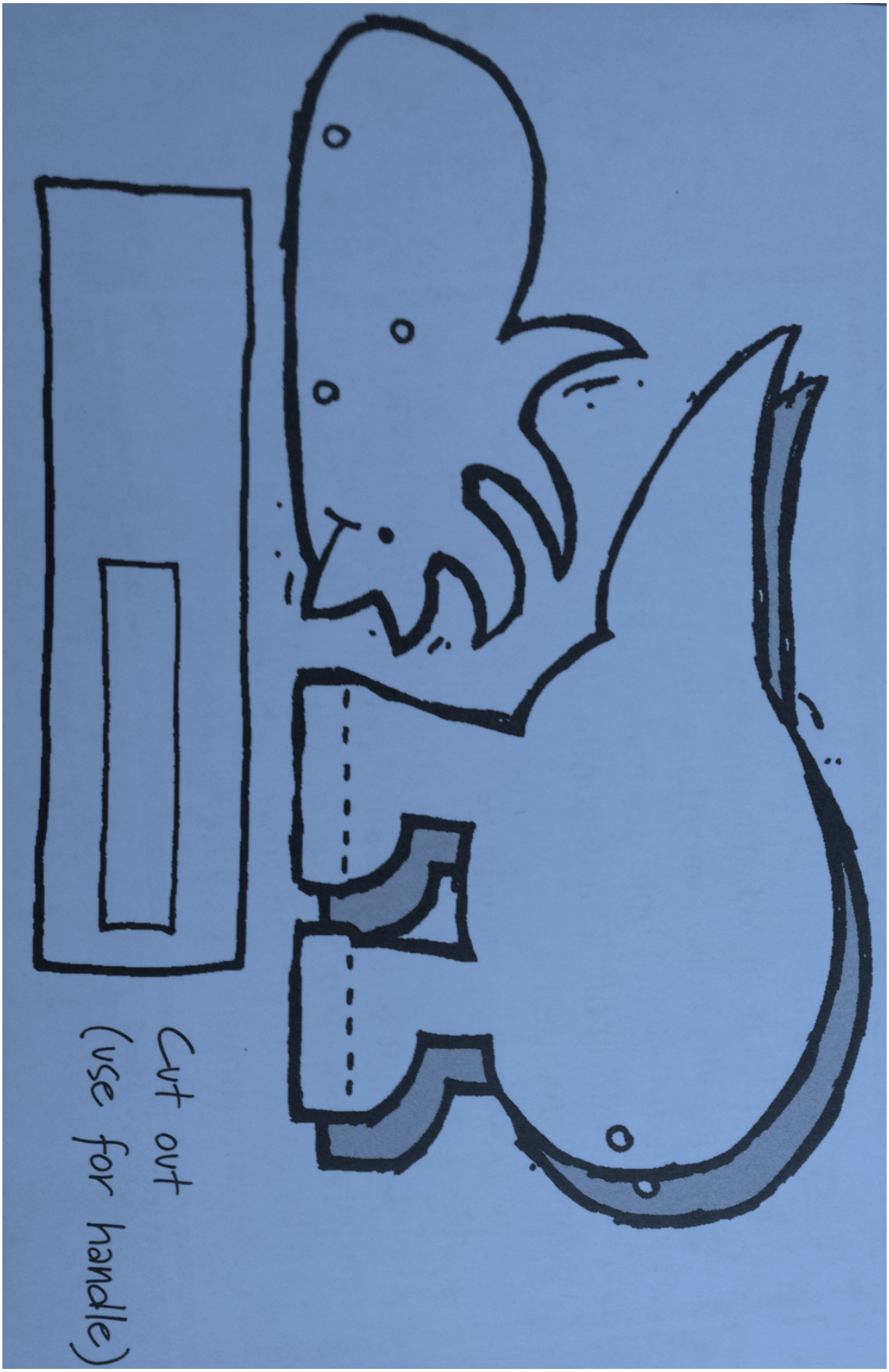

Source: Hauser, Jill. Gizmos & Gadgets. Charlotte: Williamson Publishing Co., 1999. Print.

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Image Sources:

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3. Background Pictures: http://background-pictures.vidzshare.net/golf-ball/backgroundsy.com*file*preview*golf-ball.jpg/
4. Wisegeek: http://www.wisegeek.org/what-is-an-electrostatic-force.htm

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10. The M Power Group: http://blog.thempowergroup.com/2013/05/23/where's-the-glue/

Talk About It!

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Practical Pendulums:

1. The Clock Depot: http://www.theclockdepot.com/Grandfather_Clocks.html

Fun Foucault Facts:

2. Try Err: http://www.tryerr.com/2013/08/learning-without-working-product-our.html