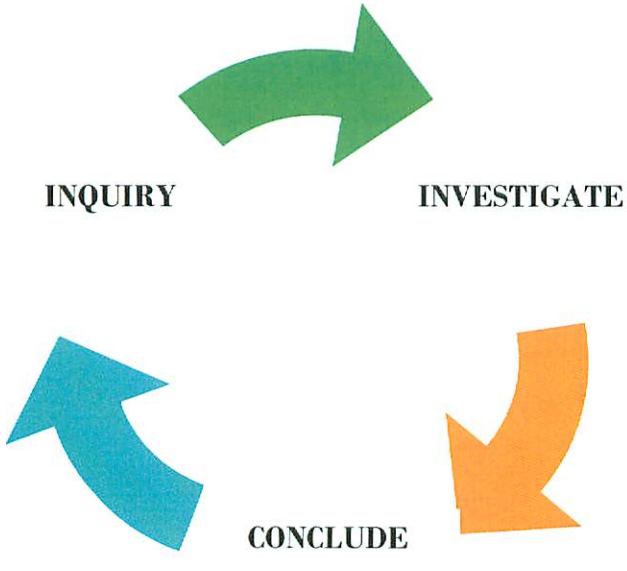
Ashaway School Science Journal

June of 2010
Trimester 3

The Ashaway School Science Journal highlights the observation and investigative work of our school's young scientists.



Ashaway School Teachers

Kindergarten

Kerri Smith
Tricia Koukas

Grade 1

Christine Austin
Patience Breault

Grade 1and 2 Split

Annie Campbell

Grade 2

Kim Allen
Gina Lee

Grade 3

Patricia Pearce
Kelly Vocatura

Grade 4

Clare Ornburn
Julie Young

Published by Principal Steven Morrone
Edited by Lori Bouchard

TABLE OF CONTENTS

Extended Day Kindergarten

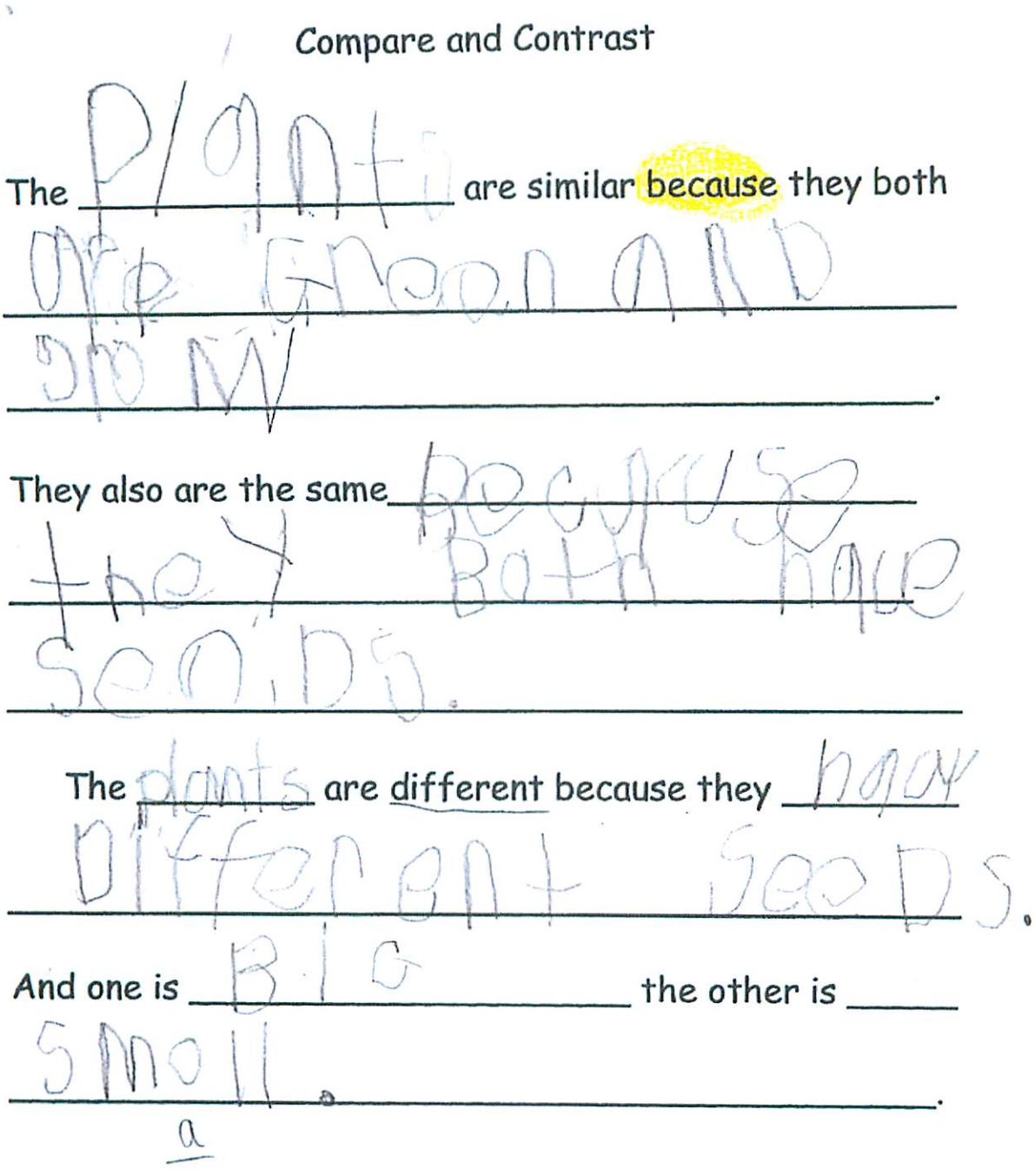
Plant Growth

The class observed the two types of plants that grew from the seeds we planted. We had a class discussion to compare the two and recorded responses on a T-chart. Then Mrs.Koukas modeled how to use the chart to complete our Compare and Contrast sheet from Writing in Science by Betsy Fulwiler. On the first day, the children wrote about the similarities using the T-chart. On the second day, they completed the differences of the two plants.

Mrs. Koukas
Mrs. Hall

The following two examples are from students that were able to identify what were the similarities or differences. They used the T-chart correctly to assist in completing the comparison sheet and to spell new words as kindergarten students are learning to do.

Nick and Jordan
E. Kindergarten



Compare and Contrast

The PLANTS are similar because they both are growing And Ned Water.

They also are the same because They have LeAVES and FLOWers

The PLANT are different because they are different FLOWers.

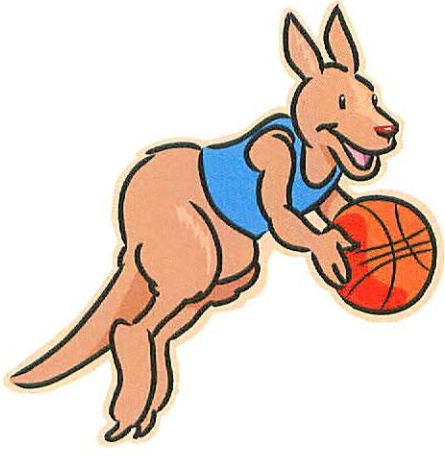
And one is TALL the other is SMALL.

Kindergarten

Balls and Ramps

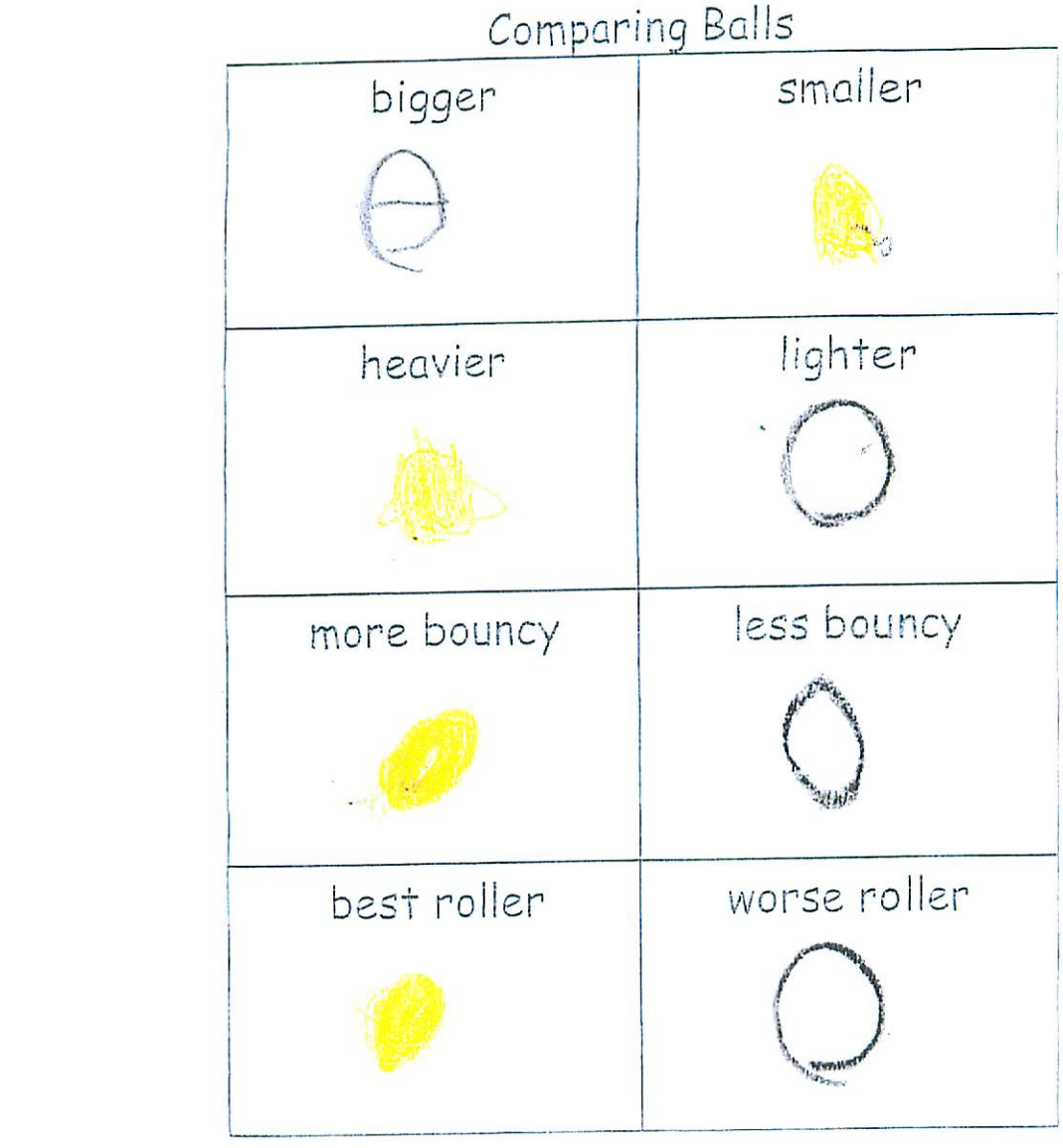
Kindergarten students at Ashaway School investigated the characteristics of different types of balls and their motion. They explored the physical properties of the balls and their behavior on inclined planes. Children learned about gravity, friction, and momentum.

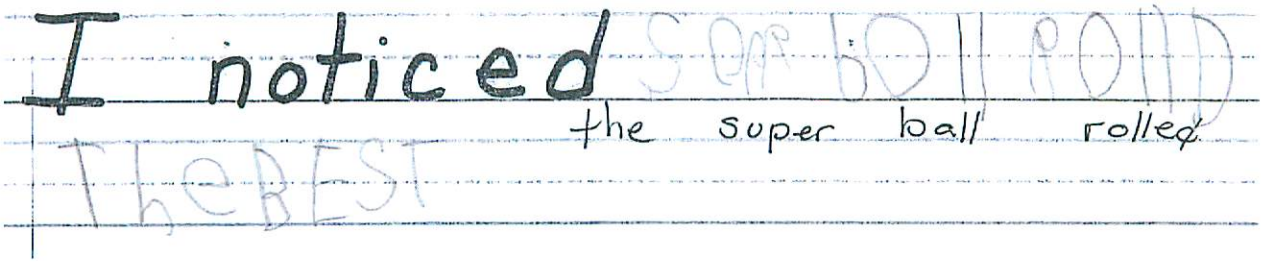
Mrs. Smith



In preparation for the science exploration kindergarteners were asked to draw a picture of them playing with their favorite ball. This student enjoys going to the beach and playing with a beach ball.

Kylee W.
Kindergarten





The students had to compare two different balls and then write down what they noticed. Kindergartens writing focus in science is to learn how to accurately make observations and write "I notice and I observe" statements.

Mathew K.
Kindergarten

How many seconds does each ball bounce?

beach ball 2 seconds	golf ball bouncy 16 seconds
pink ball 17 seconds	ping pong ball 10 seconds
tennis ball 7 seconds	Which ball bounced the longest? PINK ball

I noticed the pink ball
bounced
does the best
best

The students had to observe which ball bounced the longest by timing how long the ball kept bouncing until it stopped. The longest amount of time was considered the best ball in kindergarten.

Eddie S.
Kindergarten

First Grade

Balance and Motion

Overview:

This kit consists of three sequential investigations. Each one is designed to introduce concepts in balance and motion. The students explore stable (balanced) and unstable systems using counterweighing to change the center of mass in the systems. They explore two types of motion—spinning and rolling—through trial & error and through exploration. Students begin to develop a sense of variables, which they control to produce outcomes.

Goals:

*Students investigate materials during free exploration and in guided discovery

*Students explore concepts of balance, counterweight, and stability

*Students observe unstable systems and modify them to reach equilibrium

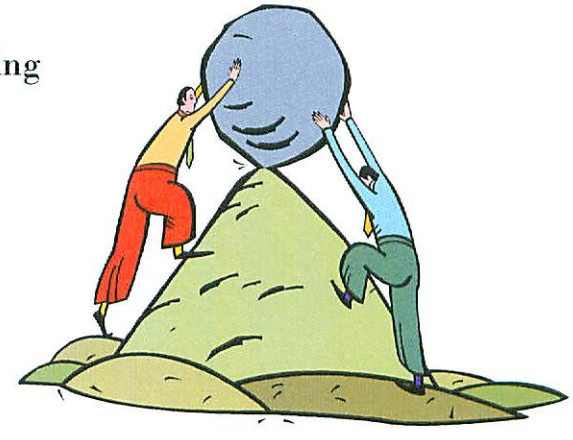
*Students discover different ways to produce motion

*Students construct and observe toys that spin

*Students explore and describe variables that influence the spinning of objects

*Students observe and compare rolling systems with different-sized wheels

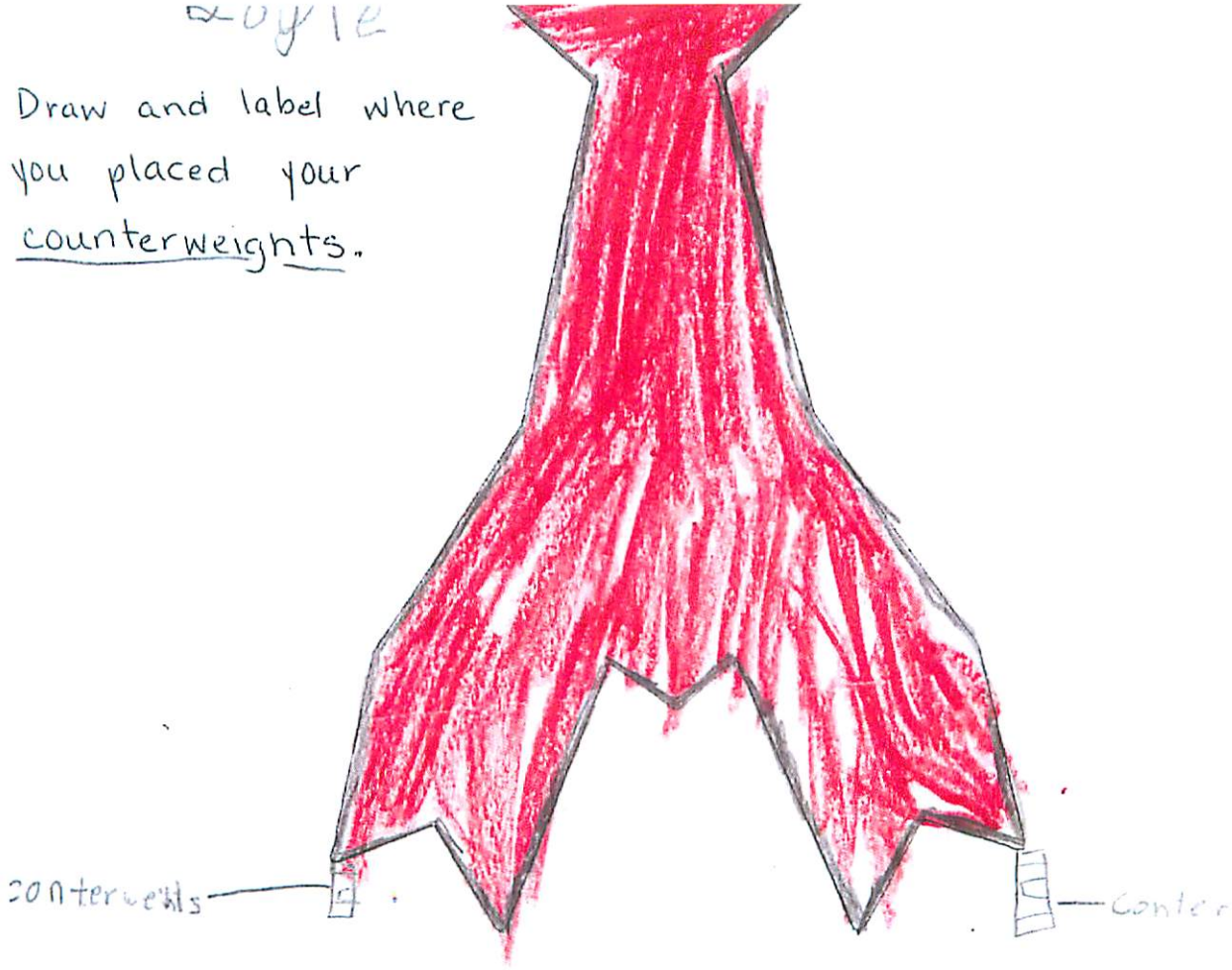
*Students explore and describe the motion of rolling spheres



Mrs. Austin
Mrs. Breault
Mrs. Campbell

Doyle

Draw and label where you placed your counterweights.



Tell why you placed your counterweights where you did.

it helps balance it becaus the top whighs more then the bottom.

In the first investigation, students experimented with crayfish made out of oak tag. The students had to balance the crayfish on their finger using the nose as its balance point. They were given clothespins as counter weights to help balance the crayfish.

Meganne provides a thorough explanation of what she did to help balance the crayfish.

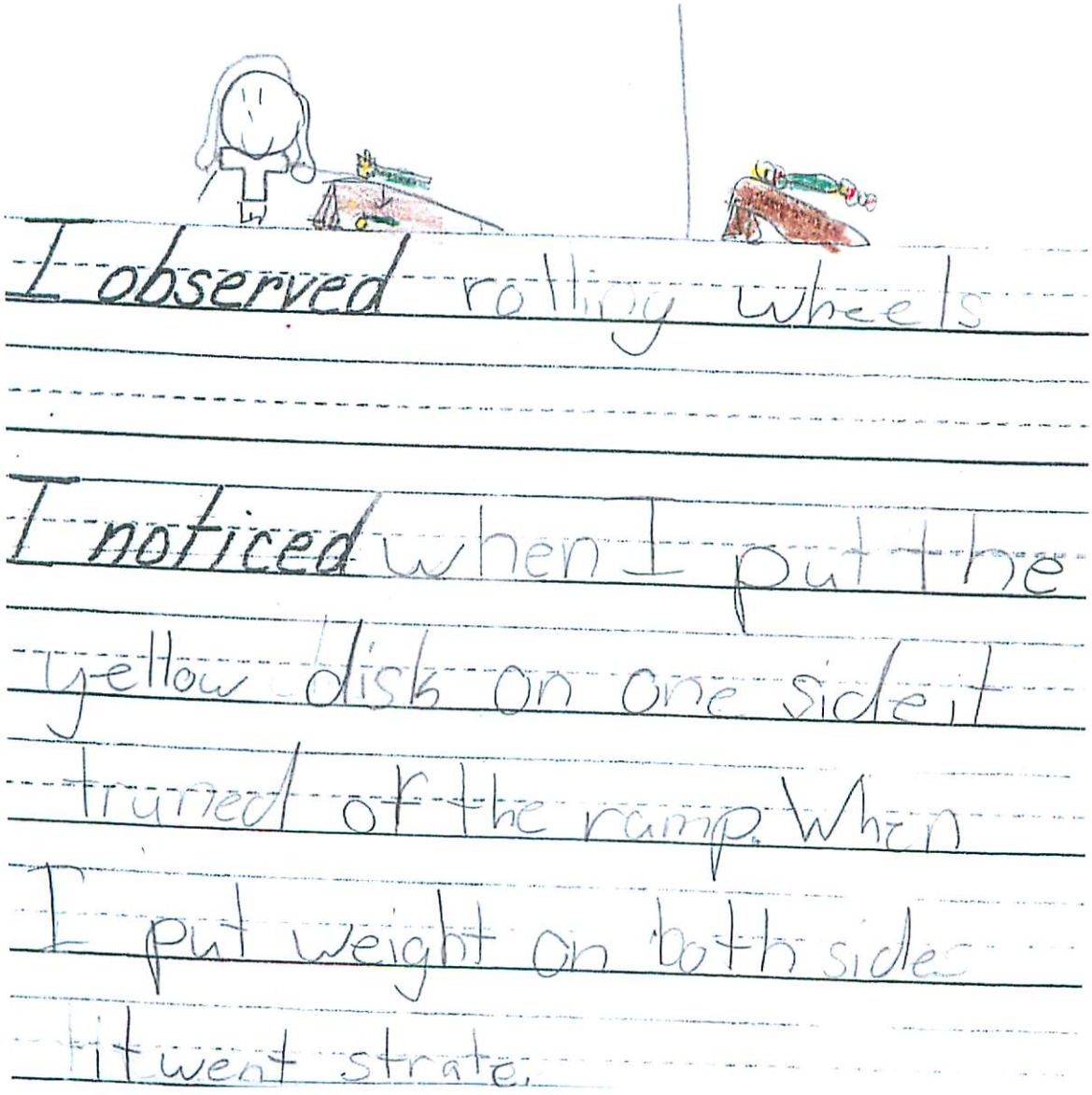
Meganne D.
Grade 1

When I balanced the pencil it reminded me of the crayfish we had to put the counter weights blow the balanced point.

The students were asked to balance a pencil on a popsicle stick. They were given wire and clothespins to help balance the pencil.

Jackson used prior knowledge from a previous experiment (balancing the crayfish) in order to successfully balance the pencil using counter weights.

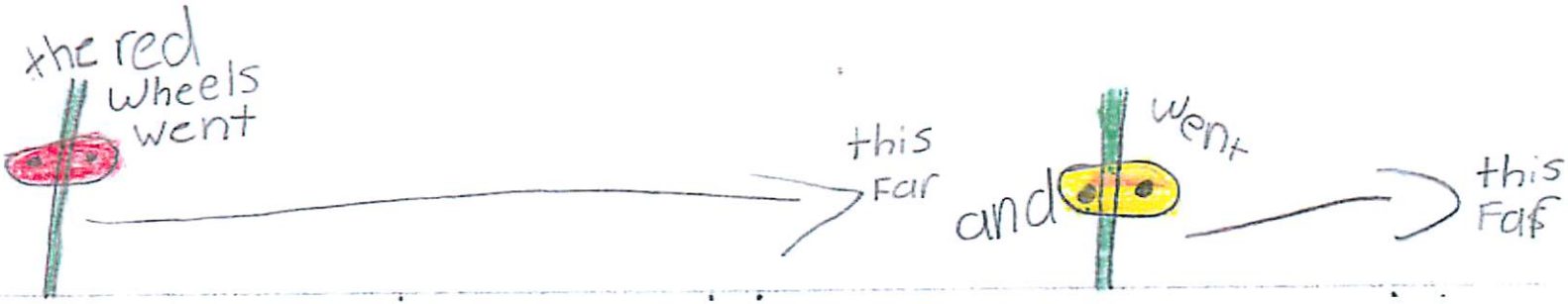
Jackson B.
Grade 1



The students used small and large wheels to create a wheel and axle system. They experimented by rolling it down a ramp to discover how the size of the wheel affects the movement of the wheel and axle system.

Shelby's writing is an exemplary piece because she provides a clear explanation of how she changed the position of the wheels in order to affect the direction of the wheel and axle system.

Shelby R.
Grade 1



I predict that the axle with the large wheels will go farther
I think this because it ha
mor wat because the
wheels are heyr than the
little wone and bigr

In this lesson, the students explored the concept of motion. They built wheel and axle systems using different size wheels. They made predictions about which one would go further and did an experiment by rolling the wheel and axle system down a ramp.

Michaela's prediction shows that she understands that the weight and size of an object has an impact on how an object moves. Spencer's scientific illustration is an exemplary piece because she used realistic colors, clear labels and included data.

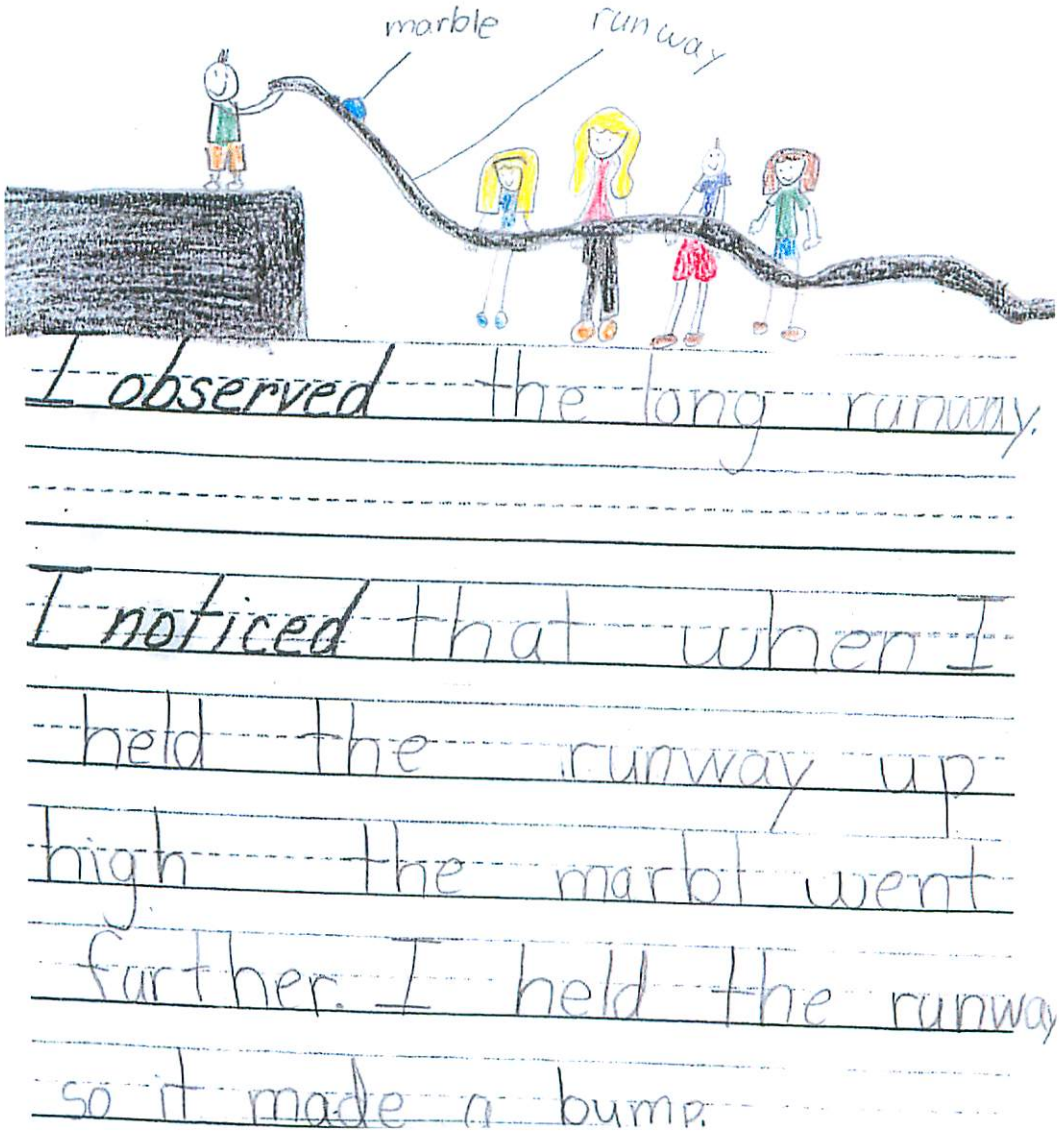
Michaela A.
Spencer S.
Grade 1

I predict that the cup will fall off the ramp
I think this because one side is big and the
other side is smaller than the big side.

The students further explored the concept of motion by rolling cups down a ramp. The objective was to get the cup to land under the ramp ("park itself in the garage"). In order to be successful, the students had to make a connection to the previous experiment with the large and small wheels.

This is a good example because Maddy was able to use prior knowledge (about the size of the wheels) from the experiment with the wheel and axle system in order to make a logical prediction.

Maddy S.
Grade 1



First, the students experimented with a partner using a marble and three foot long section of runway to discover how to use the concept of motion to make the marble move from one end of the runway to the other. After experimenting with a partner, the entire first grade class worked together to create a long runway system that would allow the ball to move all the way to the end of the runway.

Michaela provides a clear & complete explanation and a detailed illustration showing how the students had to manipulate the runway system to get the marble to move from the beginning to the end of the runway.

Michaela A.
Grade 1

Second Grade

Solids and Liquids

The solids and liquids unit provides experiences that heighten students' awareness of the physical world. They worked with 2 states of matter. Students developed a curiosity and interest in objects around them. They investigated during free exploration and guided discovery. They determined properties of solids and liquids while sorting, combining, describing and observing. They worked with solids alone, liquids alone, solids in liquids, and liquids in liquids. Throughout the unit, they acquired new vocabulary, and demonstrated their knowledge through oral and written observations.

Mrs. Allen
Mrs. Lee
Mrs. Campbell

SOLIDS and LIQUIDS

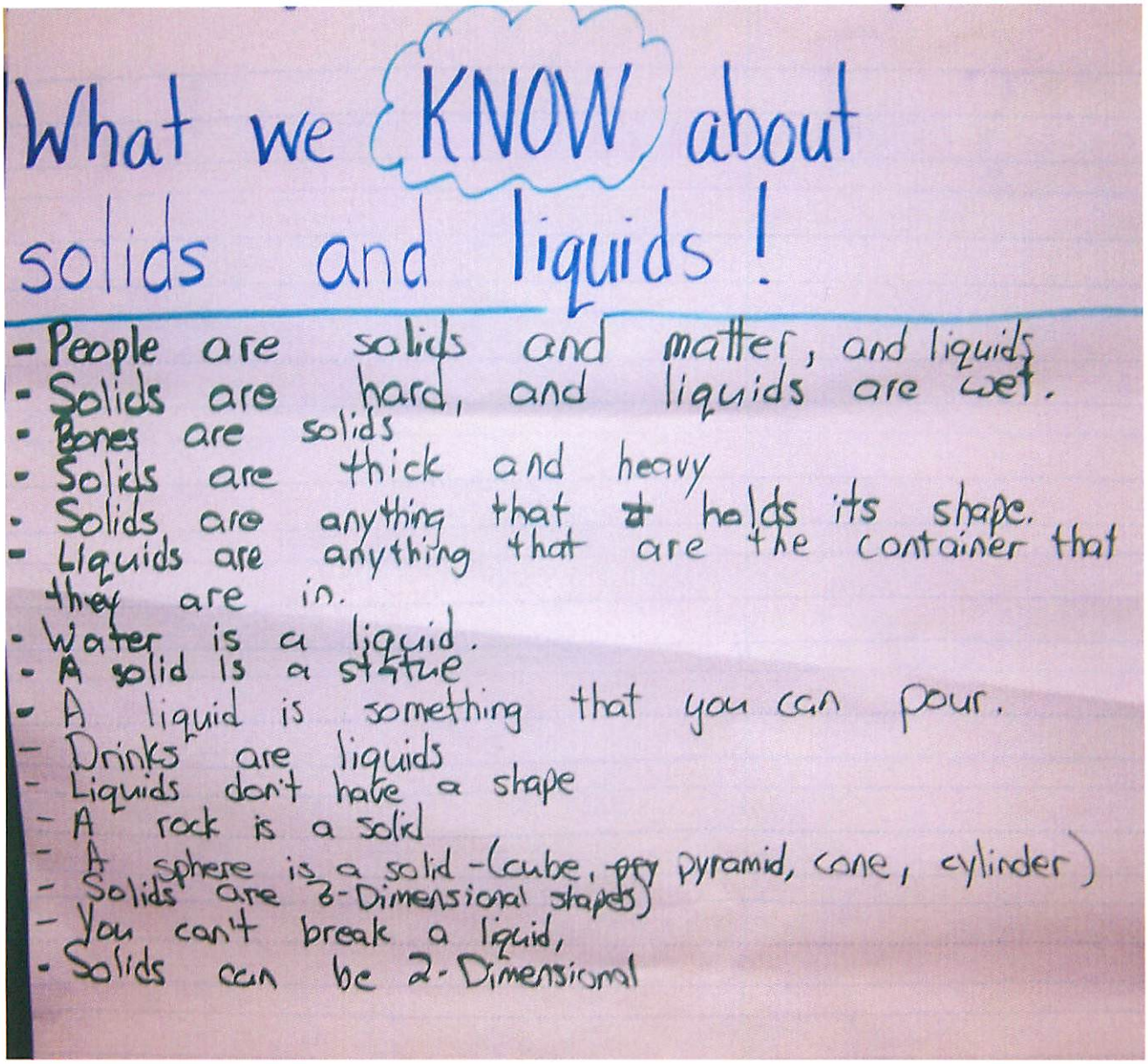
Date: 11/26/10

What we **KNOW** about solids and liquids.

- Water is a liquid.
- people are solids, matter, and liquid
- A rock is a solid.
- A liquid is something you can pour.
- A shape is a solid
- A cube is a solid
- All 3-D shapes are solid.
- You cant break a liquid
- Solids are hard, and an wet A solid holds its shape
- a liquid is the same shape as its container.

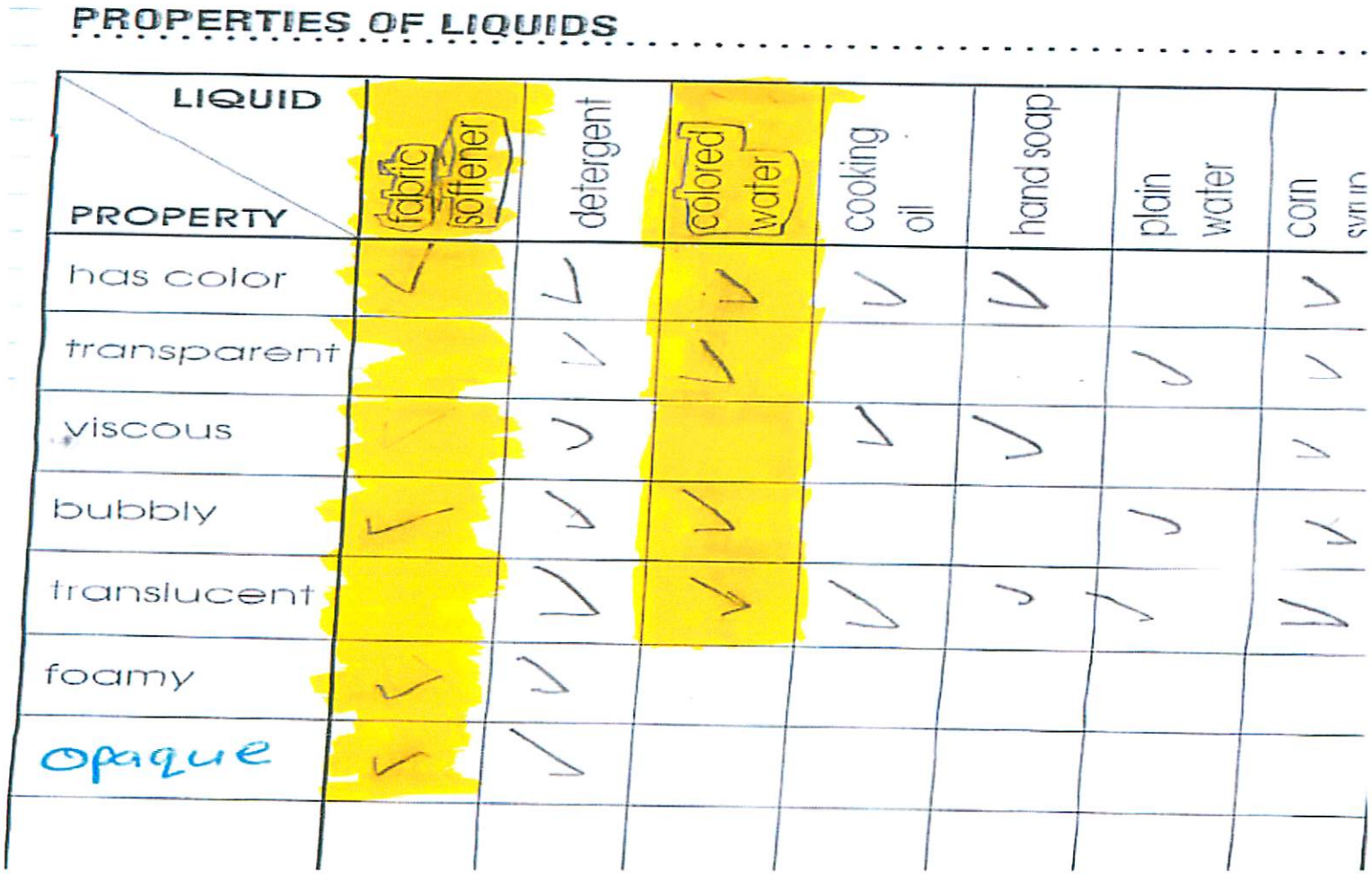
Students began the unit by thinking about what they know about "solids and liquids." They charted their own thinking before developing a class chart.

Hunter H.
Grade 2



This is a class chart of what second grade students know about solids and liquids.

Students were given 7 bottles of a mystery liquid. They could roll, shake, or make tornadoes to identify the properties of liquids. Next, they completed a chart noting the properties. Lastly they chose 2 liquids to compare and contrast using an organizer to assist their thinking.



PROPERTIES OF LIQUIDS

PROPERTY \ LIQUID	fabric softener	detergent	colored water	cooking oil	hand soap	plain water	corn syrup
has color	✓	✓	✓	✓	✓		✓
transparent		✓	✓			✓	✓
viscous		✓		✓	✓		✓
bubbly	✓	✓	✓			✓	✓
translucent		✓	✓	✓	✓	✓	✓
foamy	✓	✓					
opaque	✓	✓					

Jack H.
Grade 2

Colored water	hand Soap
dark blue	white
transparent	opaque
bubbly	not bubbly
foamy	not foamy

Talia J.
Grade 2

Some Similaretys are that thay are both liquids and you can Pour every one. And ther both: ... tranlucent and that meens you can see light thro it. and thay move fast and Not viscous at all. And finily it is both Water.

Some differences are that one has color and the other one has No color at all. and one is bubbly and the other one is Not bubbly. the Pan Water is transparent. finily the colord Water can make a tornato.

Jessica L.
Grade 2

The next two pieces represent the previous investigation but done with solids.

PROPERTIES OF SOLID OBJECTS

OBJECT / PROPERTY	plastic tube	cloth square	plastic triangle	metal screw	craft stick	wood cylinder	wire
flexible	✓	✓	✓		✓		✓
rigid				✓	✓	✓	
smooth	✓	✓	✓		✓	✓	✓
rough		✓	✓	✓			✓
soft		✓					
hard			✓	✓	✓	✓	✓
has color		✓	✓	✓	✓	✓	✓
pointed		✓	✓				✓
flat		✓	✓	✓	✓	✓	✓
cylinder	✓			✓		✓	

Matt P.
Grade 2

Good first paragraph - are

The The Cloth and the wi
are similar because th
are both solids. There bot
flexible like a folde
There both have colors
like the triangle.
~~The~~ ~~yell~~ ~~is~~

They are different
because the cloth is not rigi
but the wire is rigid

Add more sentences to the 2nd TP.

The cloth falls flat but
the wire holds in plac
The wire ~~end~~ has ~~with~~ a
rough end and the
cloth does not
The wire is gray and
the cloth is blue.
The cloth is flat and
the wire isn't flat. If
is a cylender cylinder

Rowan U.
Grade 2

Date: 5/2/10

How can the properties of solids be *used*?

The tower Emma and I made was 22 inches tall. We used the bag, the cups, and the triangle for the base because the bag and the triangle have large flat surfaces and the cups are sturdy. The popsicle stick at the bottom is for decoration. I stretched the rubber band around the rubber tube and the cylinder. I wraped one end of the foil around the straw and the other end to the craft stick so the craft stick stood up. the foil was larger and didn't spring back like the cloth did. It held the shape we made. We put the foil and the craft stick on the top because they are both tall and are light in weight

Excellent. ☆

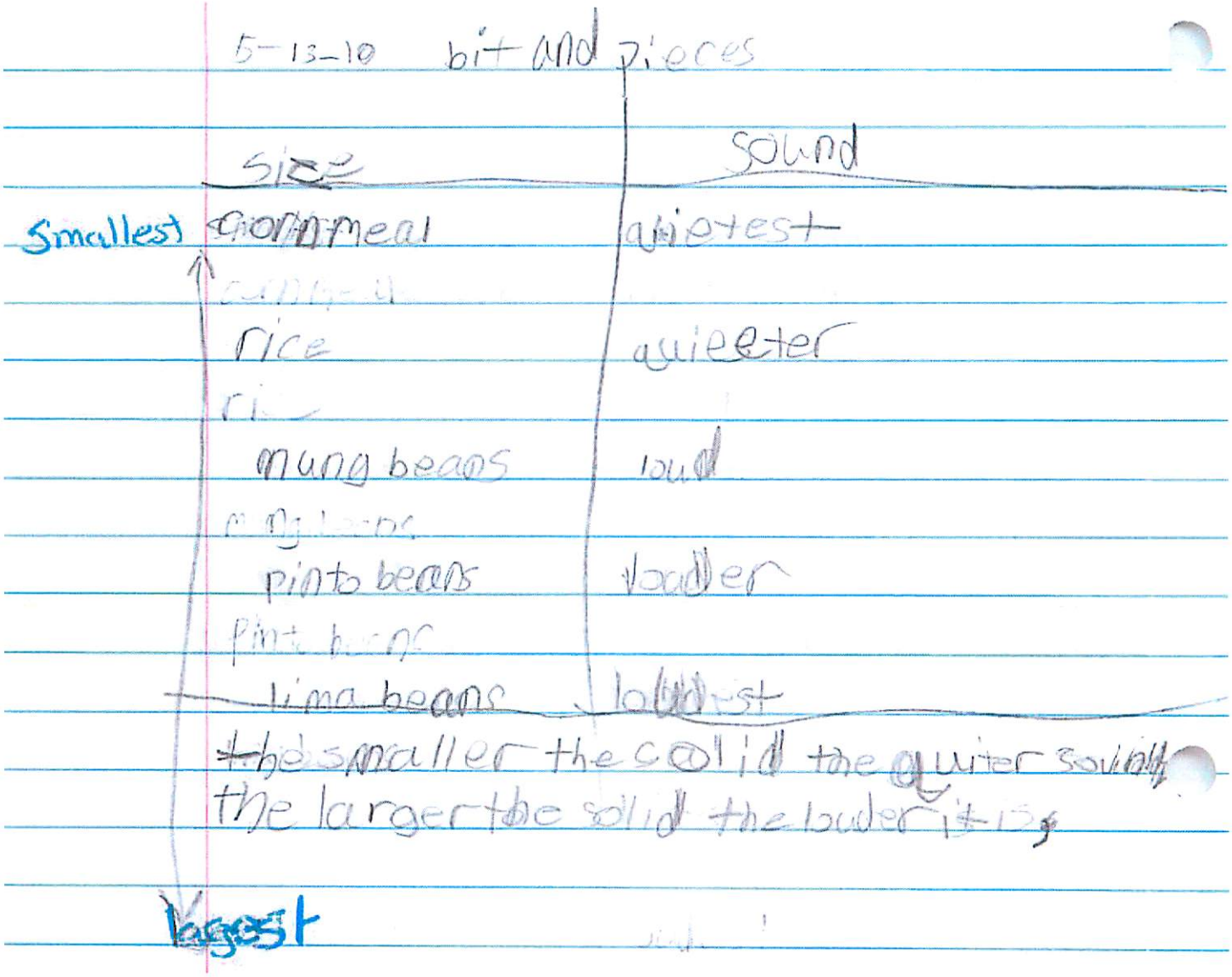
Students were given a bag of solid objects to build the tallest tower. They needed to use all the objects, including the bag they came in, and their knowledge of all the different properties. Emma and Simon constructed the tallest tower and challenged Principal Morrone. However, in the end, their 22 inches stood tall. Finally, they wrote about how they constructed the towers and explained why they used each object.

Simon M.
Grade 2

Students separated solids using screens. They analyzed their observations, charted the results, and wrote a statement explaining their conclusion.

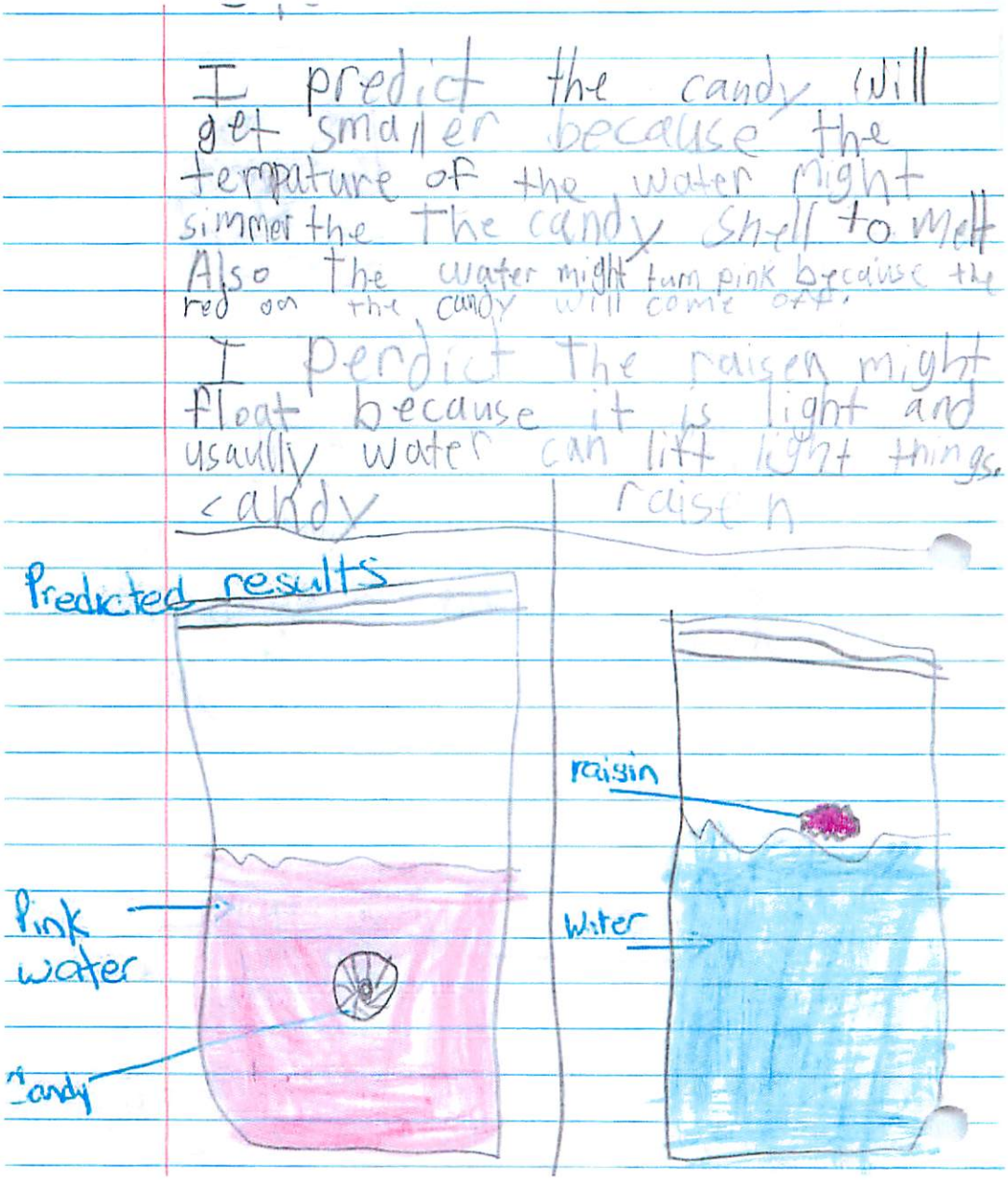
Solid Material	Observations
Lima Beans	the lima beans were way too big they kept getting stuck in the tall container they are brown on the inside and yellow on the outside no scent of smell they can break easily.
Pinto Beans	the pinto beans were smaller than the lima beans. they are different colors. they go through the funnel easily. there stack was a wide stack. they scooped easily. they dont have a scent all the colors are like a brownish color
Mung Beans	the mung Beans were very small. they were hard. a light green and dark brown. have a hard shell around them.
Rice	the rice made a miracle In the tall bottle. It is little. it is very hard. It sticks to your fingers. It is brownish yellowish. They are the shape of an oval they can pour.
Cornmeal	cornmeal stinks cornmeal is soft it is very little It sticks to your hand. the color is yellow + white. It is very very messy.

Anna H.
Grade 2



Cameron
Grade 2

Students took a variety of solids: crackers, candy, erasers, beans, chalk, etc. and added them to 1 beaker full of water. They made diagram predictions and then observed the solids in liquids a few days later. They noted what had happened to the original.



Anna H.
Grade 2

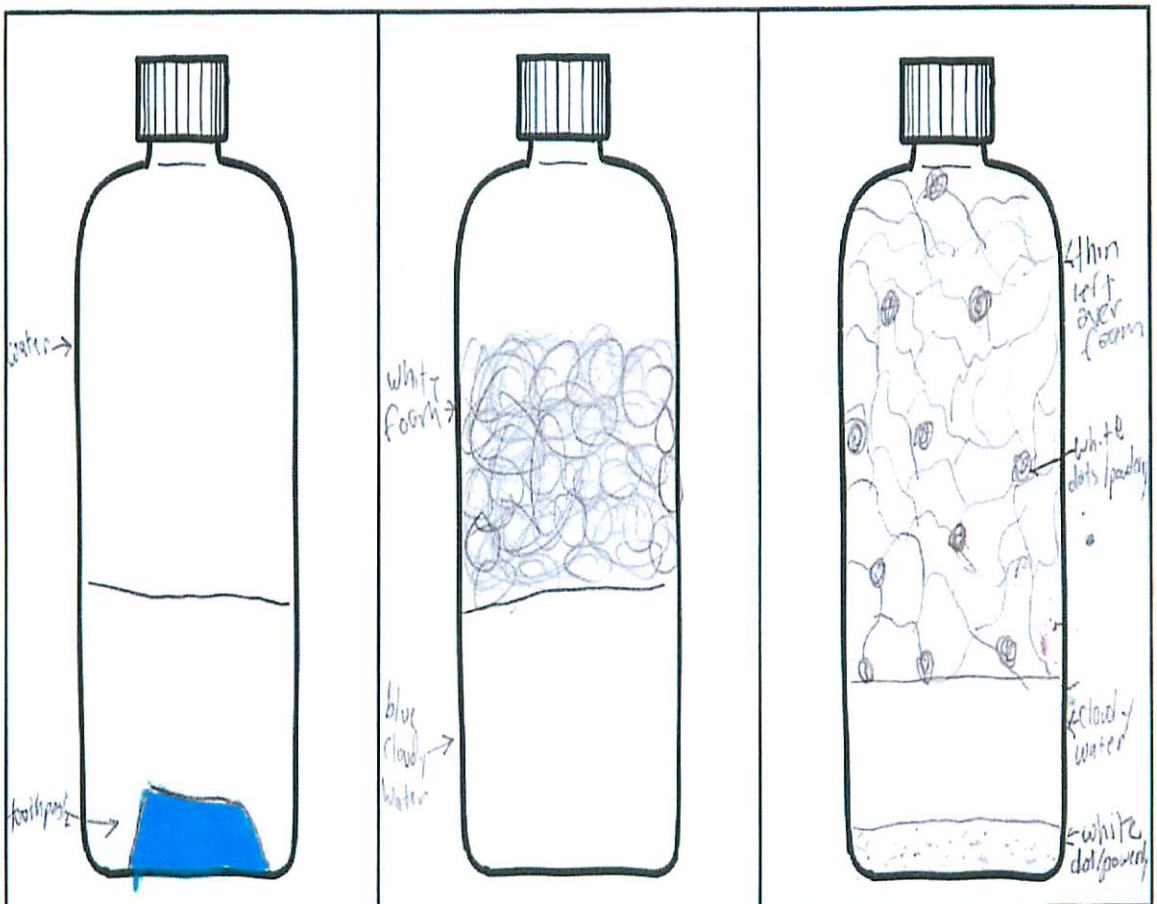
I observed that the rice stuck to the bag, and was easier to brake. I predicted that it will brake easier and that prediction was true, but the rice stuck to the bag that was not my prediction.

I observed that the raisin got fat, and it turned light brown. It was also mushy (gross). My prediction were; was that it would not taste good. So none of it what I observed was true, (that I know of).

Katie D.
Grade 2

For their final investigation students, predicted whether toothpaste was a solid or a liquid using their acquired knowledge. They put toothpaste on tin-foil and in water to observe. They made scientific illustrations, and then they rethought/revised their predictions after some more discoveries.

INVESTIGATING TOOTHPASTE



1. This is toothpaste soon after it is put in water.

The toothpaste sank to bottom

2. This is toothpaste in water after mixing and waiting 5 minutes.

The toothpaste dissolved in water and it made it blerish whitish. It made foam.

3. This is toothpaste after sitting overnight.

The toothpaste separated into the cloudy water, leftover foam and a layer of white powdy dots.

Isabella C.
Grade 2

I predict toothpaste is a soild because it turns foamy and it is flexible

Solid	Toothpaste Liquid
- C has weaber	- viscous
-opaque	- foamy
- smooth	- opaque
- flexible	- took shape of the tube
- sticky	- smells good
- smell good	- has taste
- has taste	- different smell
- looks like peppermint.	- 2 layers
- makes shapes	
- stretchey	
- 1 layer	

Emma D.
Grade 2

Third Grade

Wondrous World of Water!

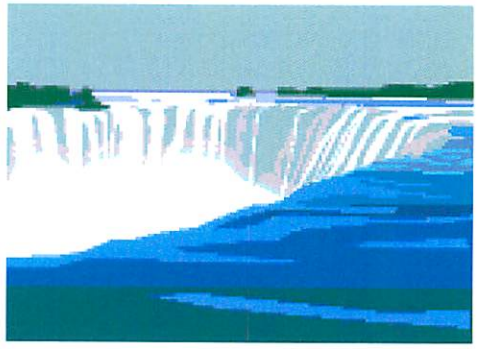
Third Graders here at Ashaway School were very excited to explore the liquid that surrounds them everyday – WATER. There were three main concepts we focused upon and they are listed below:

Water Observations:
Students investigate properties of water. They compare the way water interacts with four different surfaces, observe the property of surface tension, and investigate how to change this property. They compare the rates of different amounts of water flowing downhill.

Hot Water, Cold Water:
Students observe the properties of water as it is heated, cooled and frozen. They make a water thermometer and find that water expands as it is heated. Student compare the density of water at different temperatures and find that warm water is less dense than cool water, and ice is less dense than liquid water.

Waterworks:
Students compare what happens when water is poured through two different earth materials, soil and gravel. Students construct a water wheel and use it to lift objects, learning about the power of water.

Mrs. Pearce
Mrs. Vocatura



WATER PROPERTIES

I noticed that when I dropped the water on the white paper it didn't go through which I thought it would. When the drop hit the white paper it looked like a dome of a castle. The water dome felt smooth and when I hit it with your finger it breaks up.

Next I did the tinfoil when I dropped water from the eyedropper you couldn't even see it! The water dome was invisible and you could barely see it. I thought it was the most fun to explore

I observed that when I dropped water on the paper towel it just soaked up into the paper towel. When the water dropped the water it made very cool shapes like a gear and other weird shapes. When I was done the paper towel was soaking wet and there was a lot of water in it.

Last of all the water domes on the wax paper were easy to see. I like to drag the domes around. The water domes didn't soak in the wax paper because it is covered in wax. I liked dragging the water domes around the wax paper.

The water reminds me of the big flood that we had a month ago because it had a lot of water in it. When I dropped water from the eye dropper it looked like a dome. At first I thought the water would be puddles, but then I saw the water domes. I'm curious about water on plastic wrap.

In this first entry, Ethan had an excellent connection to the flood we just had here in RI. His science observations are accurate and honest. He supports his thoughts with his observational data and uses similes to compare the observations to his world. For example, he wrote, "when the drop hit the dome it looked like the dome of a castle." His writing meets each development criteria on the rubric and he uses the write traits very effectively to make his writing easy to read and understand.

Ethan K.
Grade 3

Wonderful Water

I noticed that when I dropped water on the white paper it slowly soaked through. I could see blue lines. The water made a wet spot on the paper when it soaked through the paper.

I observed that when I dropped the water on the tin foil I could not see the water because water is transparent. I could see silver through the water. The water was a little puddle on the tin foil.

Next, when I dropped water on the paper towel the water soaked through the paper towel. It turned dark brown. It was easy to rip.

Last, when I dropped the water on the wax paper, the water did not soak through because the wax is protecting the paper from getting wet. It was the most FUN because I could drag the water with the eye dropper.

The water reminds me of rain because when it hits the grass it turns into a water dome just like the water on the wax paper. When I dropped water on the white paper it slowly soaked through. At first I thought the water would soak through quickly, but now I know that it will soak through slowly. I wonder why the water soaked through the paper towel faster then the plane paper?

Taylor's piece is equally strong and she includes vocabulary from the word chart like transparent and dome. One can picture her connection to the dew drops on the blades of grass and it was clever of her to think about. It is awesome to know she observes the world around her as closely as she does.

Taylor K.
Grade 3

4-29-10

WATER

I noticed that when I put a drop of water on the paper towel it just absorbed through. You can't make a bubble. You also can't make a big water dome. The paper was brown until it got touched by the water, then it turned blue. The paper had tiny dots on the back of the paper towel. It was light until the water got soaked into the paper then, it was heavy. The paper was small and square.

I observed that you can't make a small bubble, but you can make a big puddle. The tinfoil did not absorb the water. The tin foil is wrinkly and silver. It was light before you put water in it and it was light after you put water in it. The tinfoil is square and the tinfoil is scratchy.

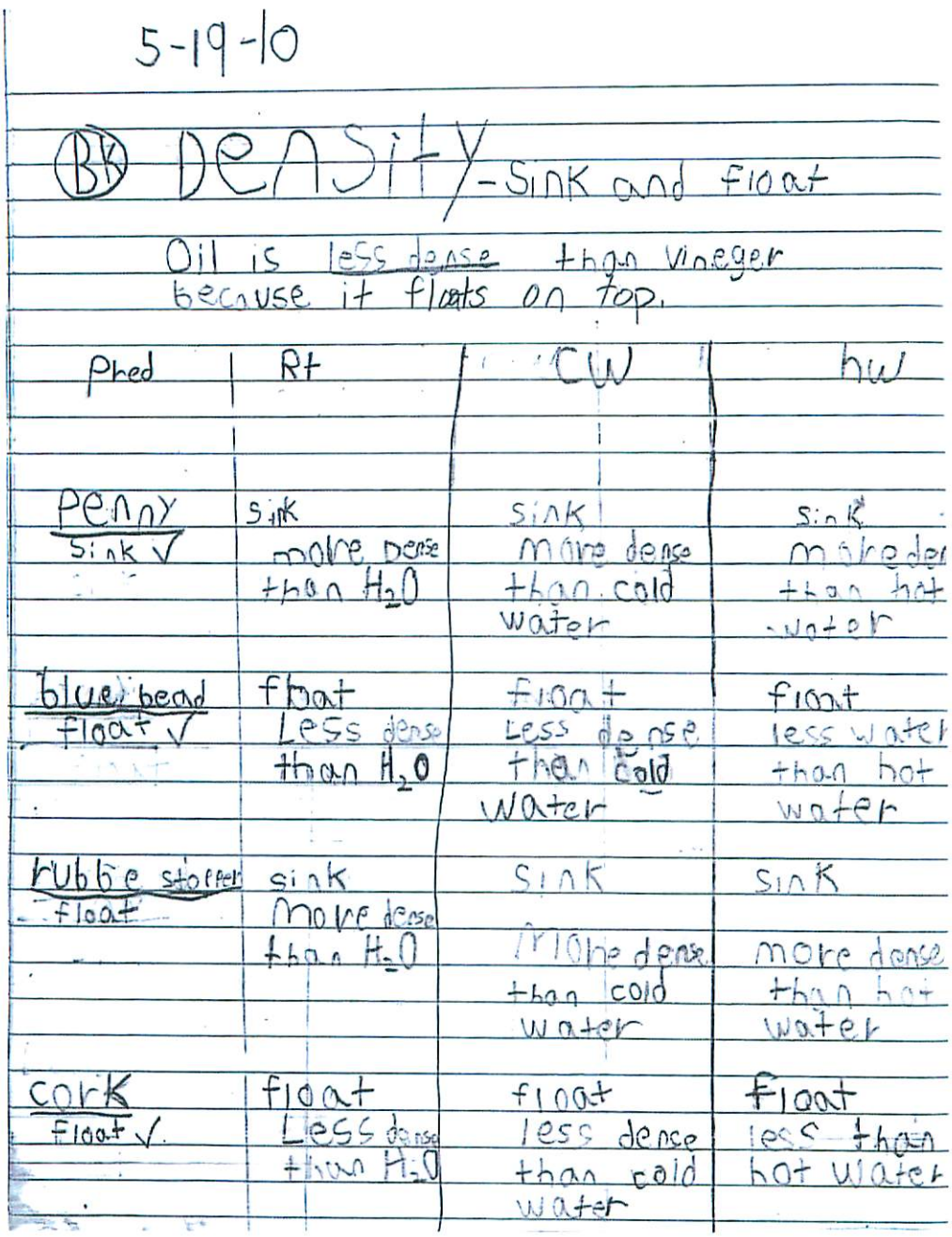
Next the white paper took a while for all of the water to soak in. You can't make a bubble or a puddle. It has blue lines, white, small and it is square. It was light until the paper absorbed the water.

The paper didn't absorb all the water right away. You can make a bubble and a puddle. It was clear, square and small. You can move bubbles! It was light but then when the wax paper absorbed the water it was a little heavier. The wax paper was the most fun to explore!

The water reminds me of cooking because we use wax paper and tinfoil for cooking but instead of water on the wax on the wax paper and the tinfoil we use oils. When I dropped a drop of water on the wax paper I tried to move the bubble and it worked, it was really cool! At first I thought the water would just soak through the wax paper pretty fast, but now I know it takes a while for the paper to absorb the water. I wonder what would happen if we added salt to the water and add the water to the wax paper?

In Maura's piece, she is much more thorough with her observational notes. She naturally uses the transition words in her writing and her write traits were very apparent. Her curiosity question at the end is very good and relates to the following investigations very well. Salt will be used to test density later on in the exploration.

Maura B.
Grade 3



5-19-10

BB DENSITY - Sink and float

Oil is less dense than vinegar because it floats on top.

Pred	Rt	CW	hw
penny sink ✓	sink more dense than H_2O	sink more dense than cold water	sink more dense than hot water
blue bead float ✓	float less dense than H_2O	float less dense than cold water	float less water than hot water
rubber stopper float	sink more dense than H_2O	sink more dense than cold water	sink more dense than hot water
cork float ✓	float less dense than H_2O	float less dense than cold water	float less than hot water

In the second investigation, students explored the concept of density. On Ricky's data collection chart, he was able to collect the data using his observational skills and then tell whether the item was more or less dense. His chart set-up was very good and he has checkmarks on his correct predictions. The only object that stumped him was the rubber stopper.

Ricky E.
Grade 3

5-26-10 1:45 pm Very hot

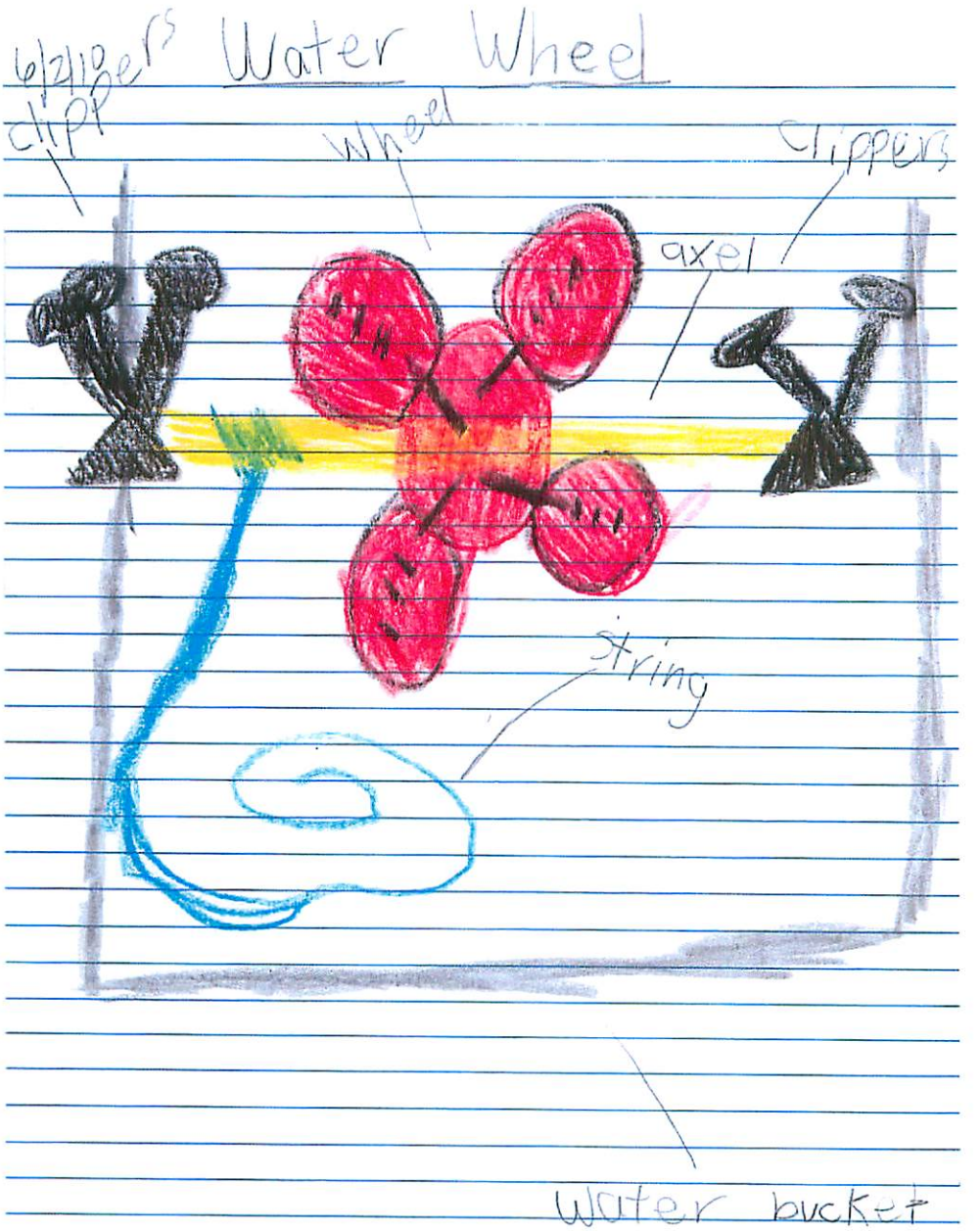
What will happen when cold water and room teperature water meet?

I Observed the the room teperture water turns green and the green water coloring Sank to the bottom. The icecube melted and then the icecube was gone.

When the cold green water heaved to the bottom of the room temperture water it made a layer of cold green water. At first there was a gre layer of green water on the bottom of the cup. It reminds me of Easter because of the tablets to dieing Easter eggs. But now, the water has green everywhe because the green water is turning room temperature.

Also, in the second investigation, students were asked to observe cold water as it sunk to the bottom of room temperature water. Malese has an especially good entry because she understood that the ice cube melted to leave cold green water in a layer on the bottom of the cup. She also added in a connection on her own. How clever of her to think of Easter egg dye on the bottom of the cups before you stir it up. This is exemplary work on her part.

Malese F.
Grade 3



In our third investigation, Waterwheels, we asked the students to draw scientific illustrations. Tiffany's illustration of her waterwheel was done very well. She labeled each piece and realistically colored each and every piece of equipment.

Tiffany B.
Grade 3

Fourth Grade

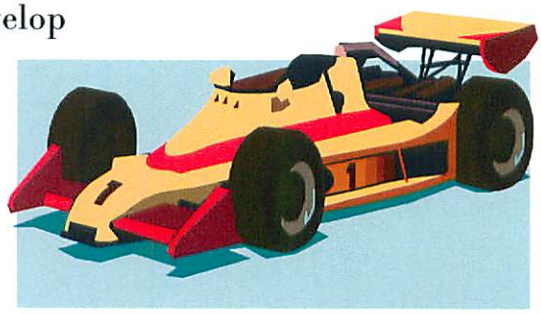
Motion and Design

This unit provides students an opportunity to explore the physics of motion and to apply those concepts to technological design. From their experiences, students are introduced to many concepts, skills, and attitudes.

Students learn that a force is any push or pull on an object. They discover that unbalanced force is needed to make a resting object move, to bring a moving object to rest, or to change the direction of a moving object. They investigate how force can change the speed of an object and how far an object can travel. Potential and kinetic energy is discovered while students work with the power of rubber band energy.

Some of the skills students work on while using the Motion and Design kit are designing, building, testing, and modifying vehicles to meet design requirements. Students also learn how to build vehicles from technical drawings. Observational skills are worked on as students describe a vehicle's motion and change in motion. Other skills that are focused on during this unit are data collection and analyzing, measuring, and predicting the affect of an applied force on how a vehicle moves.

Throughout this unit, students develop attitudes and opinions about the role that technological design plays in daily problem solving. They learn to appreciate how science can be used to solve practical problems and they recognize the importance of repeating trials to gain valid test results.



Mrs. Ornburn
Mrs. Young

Can you make a vehicle that will move at least 100cm. 39in?

I notice	I wonder
you need 4 wheels four it two run. the plactic wheels need the rubber wheels around the border of the plastic wheels The wheels can be diffrent sizes. The car run smooth. very small. 2 red plastic bars, 2 yellow plastic bars connected with 4 red conectors. Can run upside down and right side up. The back wheels guieded the front	if you could make a car run with only two wheels? Does the weight affect the speed of the car? would the car breath if it crashed? could you make a car with one wheel? does the weight change the speed of the car. the more wheels the faster the car? more part would the car go faste if the wheels were closer togheter.

In this introductory activity, students were asked to construct a vehicle using K'Nex building materials that could travel at least 100 cm. Students were then asked to record their observations and their questions as they attempted the task.

Lauren's chart demonstrates that she is making careful observations and her questioning shows that she is aware of the types of questions that can be investigated through science inquiry.

Lauren P.
Grade 4

When I made my car, I made it skinny and light so it travels very fast. Also, since its skinny and light it can travel long distances without stopping.

When we started biulding, we had a problem. The wheels kept sliding off and together on th axel. So first we put a conecter on the end to stop the wheels from falling off. But, they kept sliding together. We tried putting conectors on the inside of the axel but they slid with the wheels. Finaly, we found a yellow conecter that stopped the wheels from going in and wouldent buge. Because of our Oh-So-Tight conecter the car runs very smooth.

We used tires because #1, it went faster, #2, it was more of a silent ride, and #3, it could go farther. We put small wheels in the front and big wheels in the back. I thought it would help the car go farther, witch it does, but it also helps the car re-balence when it goes off a ledge.

I also observed that my car cant flip. I cant because the tight yellow conectors have points that stop the car from tipping. If you turn the car over it can still run because the wheels are higher than the body of the car so they touch first and keeps the car going.

Our car can also run on rough turain.

I wonder witch way our car goes faster. Right side up, Upside down, or one yellow conecter facing up and one down? I also wonder if a car can move with one wheel. Will more wheels make a car faster?

From the "I notice, I wonder" charts created while building vehicles, students were asked to write an observational piece of writing based on their notes. Christian made accurate and full observations using appropriate transition words. His ideas were clearly stated and the information was developed fully with relevant details and explanations. Christian also used his observations to infer about different situations and develop questions that he was still wondering about.

Christian S.
Grade 4

How does changing the force (push or pull) affect the speed of the car

I think changing the force will affect the speed because if the force is big the speed will be really fast so when you make the force smaller it'll go slower so changing the force will change the speed

Number and size of washers	Observation of how vehicle moved	Ranking the speed (1-5) 1=slowest 5=fastest
1 small washer	moved a little and very slow	1
2 small washers	Move half way and a little bit faster	2
4 small washers	it went kind of slow and kind of fast and it almost got to end	3
8 small washers	fast and got to end	4
16 small washers	really fast and got to end almost rock over blocks thing	4
1 large washer	super fast rocked of table	5

In this investigation, students were asked to predict whether changing the force on a vehicle would affect the speed it would travel. Nikki's prediction demonstrates that she is using prior knowledge to apply to new situations. After completing the investigation, Nikki neatly and accurately recorded her data.

Nikki D.

Grade 4

I noticed that as we increased the force the speed of the car also increased.

For example, when I used one small washer, I noticed our vehicle didn't move at all. However, when we used one large washer I noticed our vehicle moved very, very fast and smooth.

Therefore, the more force placed on an object, the faster the object will go.

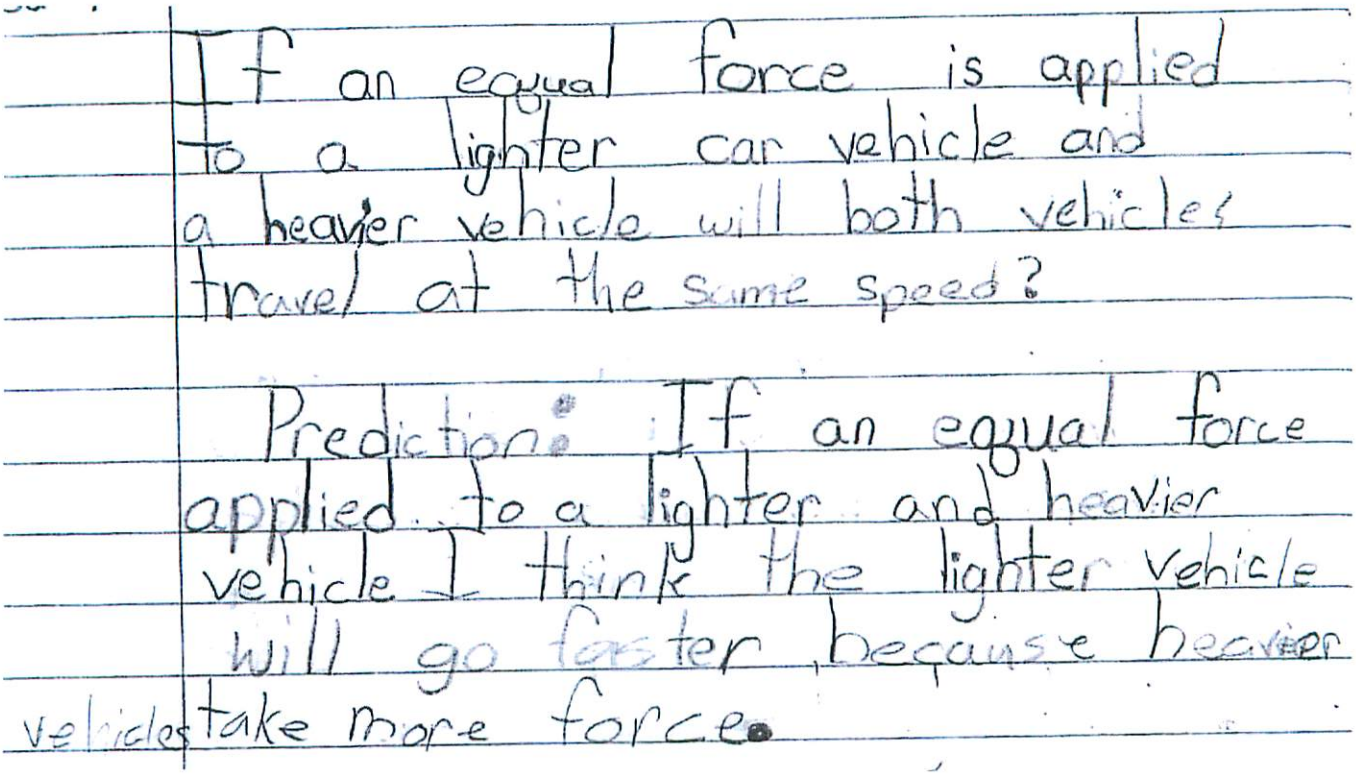
The data did support my prediction because I said in my prediction that the more force the faster the vehicle will go.

I think that this happens because more weight made gravity pull more.

I wonder how fast the vehicle would go if we put more weight on the vehicle using all 16 small washers and 1 large washer on the hook?

This scientific conclusion writing was chosen because it demonstrates an understanding of the relationship between data and explanation. She supports her explanations with the appropriate data. She also used scientific vocabulary accurately and effectively. She shows a full grasp of the idea that increasing the force will increase the speed of a vehicle.

Nicole E.
Grade 4



In this investigation, students were asked to investigate what would happen to the speed of a vehicle if the weight of the vehicle was changed.

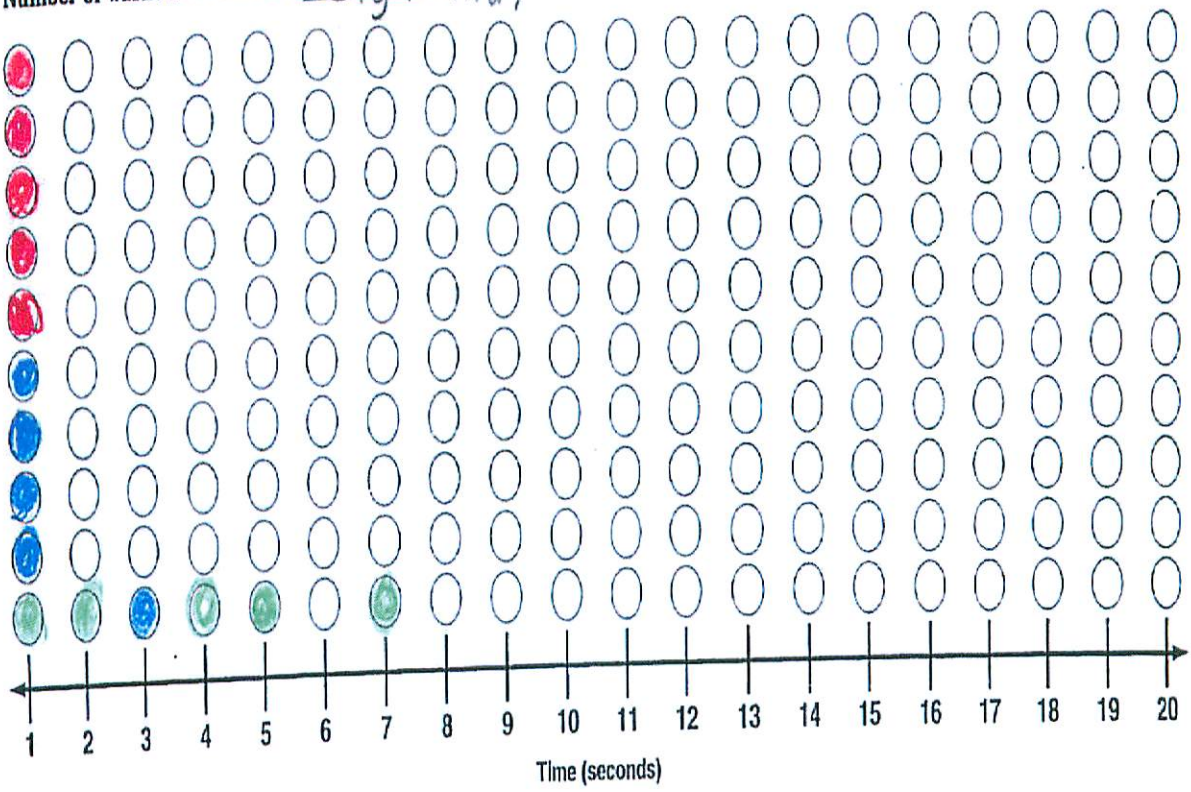
Alex's prediction demonstrates that he is accurately applying previous learning to make a prediction that extends to a new problem. He also demonstrates the use of appropriate science vocabulary.

Alex R.
Grade 4

Date: 5/11/10

Graphing Data: How Load Affects the Time a Vehicle Travels

Number of washers we will use: 1 big & small



Red dots, vehicle only

Blue dots, vehicle + 1 block

Green dots, vehicle + 2 blocks

Now look at your dots. About how long did it take your vehicle to travel while carrying each of the following loads? (Pick the number in the middle of your five trials, or the number that has the most dots of one color.) Record the numbers below.

Vehicle only (red dots) 1 seconds

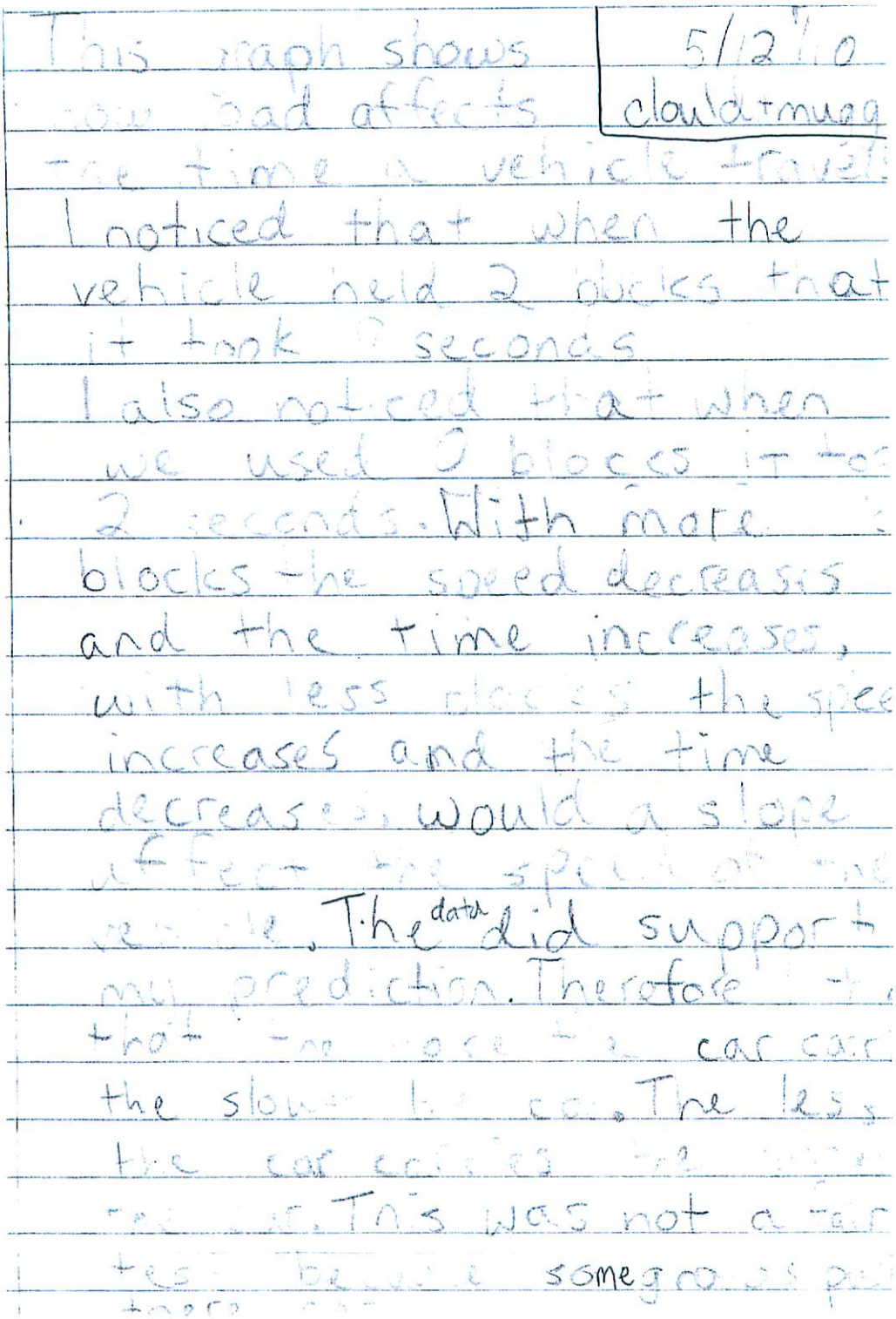
Vehicle + 1 block (blue dots) 1 seconds

Vehicle + 2 blocks (green dots) 4 seconds

LESSON 4

The data was collected from the investigation and then graphed. Reid neatly and accurately graphed the time (in seconds) it took for the vehicle to travel across the table. Red dots were used to graph the time it took the vehicle with no added weight to travel across the table. Blue dots were used to graph vehicles with 1 block added. Green dots were used to graph vehicles with 2 blocks added. Reid was then able to find the median of the three trials for each vehicle.

Reid R.
Grade 4



This graph shows how bad affects the time a vehicle travels. I noticed that when the vehicle held 2 blocks that it took 2 seconds. I also noticed that when we used 2 blocks it took 2 seconds. With more blocks the speed decreases and the time increases, with less blocks the speed increases and the time decreases. I would a slope affect the speed of the vehicle. The data did support my prediction. Therefore that the more blocks the car carr the slower the car. The less the car carries the faster it goes. This was not a fair test because some groups put more

5/12 7.0
claudia mung

In the final part of the investigation, students were asked to analyze the data that was collected in their groups. In Caroline's writing, she supported her explanations with the data she collected. Her writing was clear and organized using appropriate transition words and relevant details. She was also able to refer back to her prediction to determine if her data supported her initial thinking.

Caroline F.
Grade 4

Can you power your vehicle with rubber band energy?

I notice	I wonder
• you have to wind the car up several times • the bars sometimes snap off • goes very fast • wind rubber band around back axel. • car sometimes moved backwards • don't put on to much force The more you wind the faster the vehicle. rubber band runs under the car	• how do I do this • will the rubber band ever snap? Take away bars go faster? why did car turn? can the car go faster? is there another way to attach and power the car? can the car go up a hill? can the car go on a bumpy surface? go faster going down the slope?

In this investigation, students were asked if they could power their vehicle using rubber band energy. They were then asked to make an "I Notice, I Wonder" chart in their notebooks as they attempted the task. It is evident from Lauren's chart that she is making accurate and full observations and recording information completely and honestly. She is also asking the types of questions that she will be able to investigate in future lessons.

Lauren P.
Grade 4

When we tried rubber band energy I noticed when we put the rubber band on the back acel and tried to slingshot it the vehicle stayed still. Also I noticed when we set the rubber band up right and tried to slingshot it the vehicle moved backwards. Another thing is the more times you wind the back acel the faster the car will go.

Trying to get my car to move using a rubber band made me wonder afew things such as why you have to wine up the back acel to get the car to move. Also I wondered if the vehicle could go up a bumpy hill. Lastly I wondered why the vehicle wouldn't move if you slingshot it.

Rubber band energy reminded me of the toy cars that you wind up the handle and when you let go it moves because the more you wine the more it moves and the faster. Also because you have to wine them both a certain amount before it moves.

After recording information in an "I notice, I wonder" chart, students were asked to write an observational piece of writing. Nikki's writing was logically sequenced using appropriate transition words, and she used relevant details to fully develop her writing. She was also able to make connections to her own life and extend her thinking beyond the investigation by asking relevant questions.

Nikki D.
Grade 4

I notice that as we increased the force the speed of the car also increased. For example, when I used one small washer it didn't move very far, and when I used one large washer it moved very far and moved the bookend back further. Therefore, the more force placed on an object, the faster the object will move. The data did support my prediction because I said that it will go faster when you give it a push and when you give it a pull it will go slower. I think this happened because when you put more force it makes power. It would knock the bookend off the table if we had two larger washer if it would knock the bookend off the table.

Luke E.
Grade 4

In previous investigations, many students were curious about whether the size of the wheel would affect the distance the vehicle would travel. Students were asked to write a prediction about this situation. Students then completed the investigation and recorded data into their notebooks.

The following predictions by Chandler and Mason demonstrate that they appropriately and accurately applied previous learning from both science and math to make predictions. They also collected and recorded data accurately and completely.

Does the size of the wheels affect the distance a car will travel?

I Predict that the size of the wheels will affect the distance of the car because if the wheels were big, I think the car would go slower because the bigger wheels have more weight, and if the wheels were small, I think the car would go faster because the smaller wheels have less weight.

wheel size	T1	T2	T3	Median
Large	136 cm	169 cm	143 cm	143 cm
Small	43 cm	51 cm	45 cm	45 cm

Chandler C.
Grade 4

Does the size of the wheels affect the distance your vehicle will travel.

I think the bigger the wheels the farther it will go cause on a bigger wheel it takes more space for the wheel to go around once so it will go farther than the smaller wheels.

Wheel Size	T1	T2	T3	median
Large	250	(280)	290	280
Small	(100)	102	80	100

Mason T.
Grade 4

After collecting data, students were asked to analyze the results of the investigation. Both Bryanna and Ethan logically sequenced their writing with appropriate transition words. Their explanations were supported by data, and different data points were accurately compared. Both students referred back to their predictions to determine if the data supported their initial thinking. Each piece of writing was fully developed with relevant details, evidence, and explanations.

This graph shows how the size of the wheels affect the distance the car will travel. The larger the wheels go farther than smaller wheels do.

For example the median (when we used the small wheels) was 43cm and with the large wheels it was 200cm. The median increased from the large wheels.

Therefore the bigger the wheels on the car are, the farther the car will go. The data did support my perdiction because My perdiction said the bigger the wheels are the more the distance. This was a fair test because we all used the same materials and only changed 1 thing.

Bryanna M.
Grade 4

The size of the wheels did affect the distance a vehicle travels.

I know this because the big wheeled car went further then small wheels becayse with large wheels the car went 214 cm while, with small wheels it went 42 cm.

Therefore the size of the wheels did affect the distance a vehicle travels.

this reminds me of a bike when you put it in different gears.

I wonder if thickness of wheels affect the distance [illegible]

The data did support my prediction because I predicted the with larger wheels it went further than small wheels.

Ethan B.
Grade 4

Another question that students were curious about was whether or not the number of winds of the rubber band would affect the distance the vehicle would travel. The predictions of both Devon and Andrew demonstrate that they are looking for a relationship between the number of winds and the distance. Their predictions are written clearly with an explanation. As students completed the investigation, they accurately recorded data into their notebooks.

Will the number of winds of the rubber band affect the distance the car will travel.

I think that the number of winds of the rubber band will affect the distance a car will travel because the more you wind the rubber band the more force and the further it will go.

in (cm)

Number of Winds	Distance travel			Median
	T1	T2	T3	
2	58	56	3[illegible]	56 cm
4	90	125	152	125 cm
8	128	116	72	128 cm

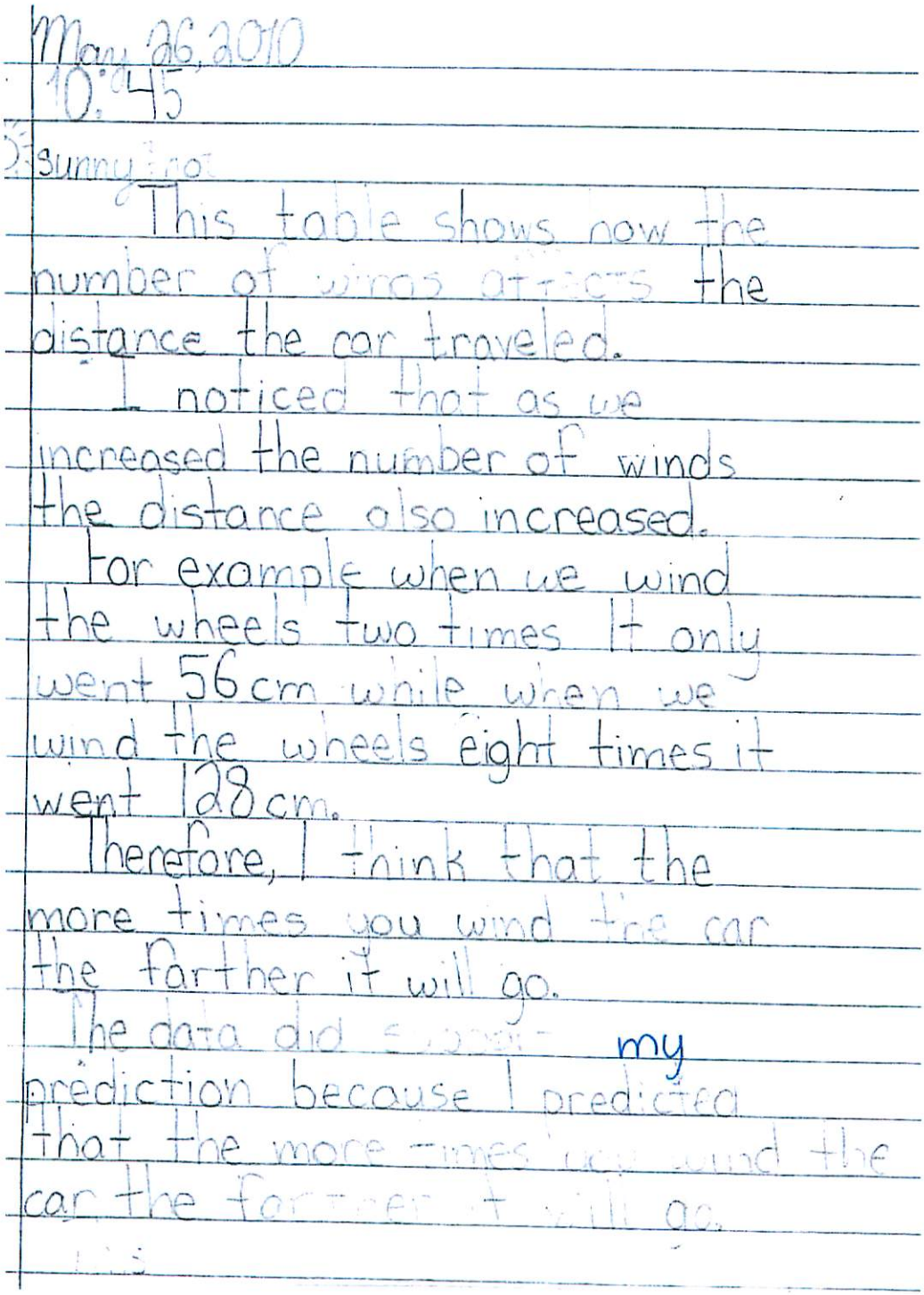
Devon D.
Grade 4

will the number of wind of the rubber band effect the distance the car will travle.

I think the more winds the far ther the car went because the more times the whel will turn.

number of winds	distance travled T 1	T 2	T 3	median
2	67	67	47	67 cm
4	87	194	183	183
8	160	258	312	258

Andrew K.
Grade 4



May 26, 2010
10:45

Sunny hot

This table shows how the number of winds affects the distance the car traveled.

I noticed that as we increased the number of winds the distance also increased.

For example when we wind the wheels two times it only went 56 cm while when we wind the wheels eight times it went 128 cm.

Therefore, I think that the more times you wind the car the farther it will go.

The data did support my prediction because I predicted that the more times we wind the car the farther it will go.

After collecting the data, students were asked to write a data analysis to examine the results of the investigation. Devon's writing was clearly written and fully developed with details and evidence. She compared data points accurately, and referred back to her initial prediction. Her conclusion was accurate, and her writing was organized using appropriate transition words and scientific vocabulary.

Devon D.
Grade 4

Ashaway Elementary School
12A Hillside Avenue
Ashaway, RI 02804
401-377-2211

For previous journals, go to:

http://www.orgsites.com/ri/principalmorrone/index.html