2/7/2015

PROJECT PLAN

INVENTORS AND INVENTIONS UNIT

A Grade 1 and 2 Unit Overview

Table of Contents

Rationale

I was given the freedom to choose any topic that was of interest to me. Therefore I chose to do inventors and inventions. I have always enjoyed science and found inspiration in a teacher's blog for this unit. This unit allowed me to integrate hands-on and enactive activities that allowed the students to think outside the box and utilize what they were learning. The topic excited me, and my lessons fit with the Science PLOs. It also loosely relates to the economy and technology PLOs for grade 1 and 2 students.

Class Descriptions

My first class is made up of 23 enthusiastic and friendly grade 1 and 2 students. Made up of 12 girls and 11 boys, the class enjoys drama, hands-on activities and singing. There are a majority of grade 2 learners in the class, with only 10 grade 1 students. The class enjoys reading and has worked cooperatively to read books to achieve a class goal. There are 7 ELL students in the class and 2 that have difficulties academically. Of the 7 students with ELL designations, 4 of the students are level 3 and higher. Adaptations have been made for the students with academic difficulties and lower ELL designations throughout the unit, including increased teacher attention and modified work sheets. In the classroom, a number of students are writing and comprehending on a grade level higher than their own. Throughout the unit I hope to engage the students through incorporation of hands-on activities that connect the subject to real-life application.

24 eager and excited grade 1 and 2 students make up the second class I taught in. Their abilities ranged broadly. They are a group that needs several reminders to stay focused while seated and to speak only after they have been called upon. It is evenly split between grade 1 and 2 students, with varying abilities between and within grades. The large variation between certain students occasionally requires modifications to be made to lessons to make sure that all students are able to reach their full potential. There are 3 students that are designated ELL level 3 or below. In this class there are 3 students with IEPs. The students on IEPs have difficulties ranging from Attention Deficit Hyperactivity Disorder to Fetal Alcohol Syndrome. One student requires a hearing aid, and the teacher uses a device that broadcasts the lesson directly into his hearing aid. The teacher's voice is also broadcasted through a tower at the back of the class, so all students are able to hear her voice clearly. Each of these students participates in all lessons, but modifications have to be made to ensure they are getting the most out of their learning. The teacher has noted that the class really enjoys listening to stories; therefore I will be engaging the class through read-alouds when appropriate.

Lesson Plans

<table>
<tr><td colspan="2">Lesson 1:
Thomas Edison and the Light bulb</td><td>Theme: Inventors + Inventions
Time required: 40 - 45 minutes</td></tr>
<tr><td colspan="3">Objectives (SWBAT):</td></tr>
<tr><td colspan="3">• Students will learn about the origins of the electric light bulb
• Students will be able to write down their ideas about life without light</td></tr>
<tr><td colspan="3">PLO:</td></tr>
<tr><td colspan="3">• Use their senses to interpret observations
• Infer the probable outcome of an event or behaviour based on observations</td></tr>
<tr><td colspan="2">Materials:</td><td>Main Vocabulary:</td></tr>
<tr><td colspan="2">• Light bulb
• Chart paper
• Chart markers
• Light bulb worksheets
• Black bag</td><td>• Inventor
• Invention
• Thomas Edison
• Light bulb
• Electricity
• Incandescent</td></tr>
<tr><td colspan="3">Hook:</td></tr>
<tr><td colspan="3">• Mystery item: Light bulb (10 – 15 minutes)
o Each student will have the opportunity to touch and feel what is inside a black bag (only with 2 fingers)
▪ *teach students how to touch gently
▪ Students will go back to desks to draw and write about what they think is inside the bag while others are touching
o Then we guess what is in the bag
▪ Whisper to a partner what they think was inside the bag
o Was it round? Was it smooth? Could you feel the shape?
o Hints: I can shine brightly, I use electricity</td></tr>
<tr><td colspan="3">Procedure / Activity</td></tr>
<tr><td colspan="3">1. Introduce Thomas Edison (5 minutes)
a. Talk about how he invented the light bulb. He tried over 1000 times!
i. Show on a number line
b. The light bulb changed the world. Do you know how?
2. Have a discussion about light in their lives (5-10 minutes)
a. Where does light come from?
b. What is light good for?
c. What would we do if we didn’t have electric light bulbs?
d. Have you ever been in a blackout? Where all the electricity in your home is gone?
3. Introduce the worksheet (Appendix A) and model how to fill it out (15 minutes)
a. Put key vocabulary on the chart in a mind map format
b. Stress using complete sentences, and putting a period at the end of each sentence
c. Check for understanding with thumbs up and thumbs down</td></tr>
</table>

Assessment:
• Work Samples: Students will be assessed on their ability to write their ideas on the worksheet. Emphasis will not be on their spelling, rather will be on their creativity and ability to make connections and inferences. These will all be recorded via work sheets that the students are expected to fill out. They will use their sentence writing abilities to complete a sentence. • Oral: Students will be asked to recall the origins of the light bulb during carpet time.
Closure:
• Have students go back to seated on the carpet (3 minutes) • Share any interesting ideas about what life would be like without the electric light bulb
Extensions:
• Have students illustrate one of their sentences
Adaptations:
• Shortened amount of work, or ask student to illustrate their ideas.

Lesson 2: **Alexander Graham Bell and the Telephone**	**Theme: Inventors + Inventions** **Time required:** 40 - 45 minutes
Objectives (SWBAT):	
• Students will learn about the origins of the Telephone • Students will be able to create paper cup telephones	
PLO:	

• Grade 1
  ○ Communicate their observations, experiences, and thinking in a variety of ways (e.g. verbally, pictorially, graphically)
• Grade 2
  ○ Use their senses to interpret observations	

Materials:	**Main Vocabulary:**
• 46 Paper Cups • String • 46+ Paper clips • 46 Descriptions of the "suspect" (silly animals on paper) • Paper • Pencil • Whiteboard marker	• Telephone • Alexander Graham Bell • Sound wave • Vibrations
Hook:	

• Story about Alexander Graham Bell
• Introduce sound waves
  ○ Tell students to gently put their hands on their necks and say "Hello"
  ○ Those are sound vibrations that are made when you talk	

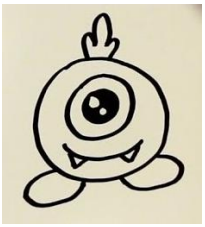
Procedure / Activity

1. Inform students that they will be detectives again today. Detectives must help decode the message and make a drawing of a thief who ate all the cookies from the cookie jar!
2. Introduce paper cup telephone
    a. Will be the Great Green Detective Telephone
    b. Sound vibrations from your voice will travel along the string and into the bottom of the paper cup on the other end.
    c. Sound can travel through air too, but it travels even better through solids
3. Demonstration of how to make a paper cup telephone
    a. Thread the string through the hole gently, and tie the string onto a paperclip on the side
    b. Create a visual on the board for students to refer to
    c. Demonstrate how to tie a sturdy knot
4. Demonstration of how to use the telephone and how to listen and draw the "suspect." (This could be projected on the Smart board).
    a. The speaker must speak normally into the cup, not yelling or whispering
    b. The listener must listen and draw.
    c. Once complete, students will trade roles

Example of Description of the "Suspect"

- The suspect has 3 eyes, 2 heads and 4 very long legs.
- The suspect has a square body, with 3 ears and 1 big eyeball.

Example of Picture of the "Suspect"



5. Pair off students and inform them to be gentle with the paper cups.
6. Once complete, students will go to a teacher for a piece of paper that has descriptions of the "suspect".
7. Students will either go outside the classroom or stay inside to test out their telephones and draw their suspect.

Assessment:

- Observation: While students work on their telephones I will actively walk around and make observations. Students will cooperate together and successfully tie knots around the paper clip. I will observe that students are using the telephones properly and reading to each other. Using these observations I will make anecdotal notes.

Closure:

- Compare photos of the "suspect"

Extensions:

- Read and draw another "suspect" with your partner.

Adaptations:

- Instead of a written description, students who are having trouble will be describing a picture of the "suspect" to their partner.

Lesson 4: **Samuel Morse and Morse Code**	**Theme: Inventors + Inventions** **Time required:** 40 - 45 minutes

Objectives (SWBAT):

- Students will understand how to use a Morse code key to decode messages

PLO:

- Grade 1
  - Communicate their observations, experiences, and thinking in a variety of ways (e.g. verbally, pictorially, graphically)
  - Ways technology is used
- Grade 2
  - Use their senses to interpret observations

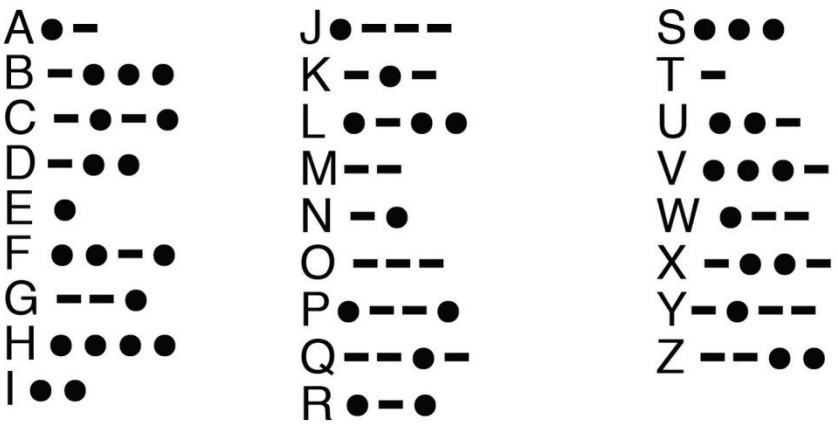
Materials:	**Main Vocabulary:**
• Rosie Revere Engineer by Andrea Beaty • Bingo Grids • Bingo Cards with Pictures and Morse Code • Morse Code decoders • Paper • Smart board	• Decode • Morse Code • Samuel Morse

Hook:

- Read aloud: Rosie Revere Engineer

Procedure / Activity

1. Newest Inventor we will learn about today is Samuel Morse
   a. Samuel liked art and design and he helped invent something called the Morse Code, which was named after him.
   b. It was invented in 1835, before the telephone
   c. Samuel and 2 other inventors had created an electrical machine that could send zaps of electricity along a wire.
   d. They used these zaps to make a code so they could talk to each other
   e. This special code was called Morse code and it sounded like this: https://www.youtube.com/watch?v=_J8YcQETyTw
2. Demonstrate how to translate a Morse code word into spelling on the board (Maybe twice) Have the following image on the smart board and decode a message using Morse code.



3. Today we are playing Morse Code Bingo (Bingo board sample: Appendix B)
    a. Students return to their desk
    b. 1 student hands out a Morse code key, another hands out Bingo grids, another will hand out paper for students to work out codes
    c. Demonstrate that in order to win, you must make a line / fill the square
    d. If your square is full you have to raise your hand and say Bingo!
    e. I will be putting a Morse code secret phrase on the board and it will correspond / link to one of the pictures on the grid.

Assessment:

- Observation: I will watch that students make an effort to decode the Morse code that is provided for them on the white board. Students will also be observed for their abilities to spell and read the words.
- Oral: I will take note of contribution to discussion during reading of Rosie Revere Engineer.

Closure:

- Sit back in a circle, talk about a favourite inventor that they may have learned about or that they know themselves

Extensions:

- Students can write a secret message to their friend and their friend can decode it

Adaptations:

- Extra assistance with spelling and reading words

Resource Critiques

Carroll, C. (2011, January 30). Inventors & Inventions. Retrieved February 7, 2015, from http://thefirstgradeparade.blogspot.ca/2011/01/inventors-inventions.html	This blog post was my main inspiration for this unit. The author of this blog has 13 years of teaching experience and has some great resources. Her unit integrated the elements of hands-on activities that I thought my class would be engaged with. It was also developed for students in the first grade, thus I appropriated her lessons into my unit. The only issue that I had using this resource was that because of its American origins, the inventors that were highlighted were all American. I wanted to integrate some Canadian inventions and inventors in my unit.
Beaty, A., & Roberts, D. (2013). Rosie Revere Engineer. New York: Abrams Books for Young Readers.	Rosie Revere Engineer was a book recommended to me by my school librarian as a picture book that related to inventions and inventors. It is the story of a little girl who dreams of becoming an engineer. She has some failures, and is sometimes discouraged but through it all she pursues her dreams and continues to keep inventing. This book gave the students a relatable story about perseverance. In the prior lesson, I had emphasized that Thomas Edison had tried thousands of times before perfecting the electric light bulb. As a read aloud I also used the pictures to ask students what inventions they saw, and asked them what they thought they might do. The whole picture book was also written in poem, students were quick to realize the rhyming words.
Pinterest	This resource was used to generate general ideas for the unit. As a source of inspiration it is good because there are many ideas that are curated by different people. However, because there are so many resources on Pinterest it is important to pick and choose what is appropriate for my class.
Make a String Phone. (n.d.). Retrieved February 7, 2015, from http://www.sciencekids.co.nz/projects/stringphone.html	I used this specific site to aid me in creating the paper cup telephone lesson. It has a kid-friendly explanation for how the telephone works and has a good connection to how sound waves travel. In my prior research tin cans were recommended to be used for the project. As this material was not easily available to me I was looking for an alternative to using tin cans for the telephones. Therefore this website gave me confirmation that using paper cups also worked for this project.
Thomas Edison. (2015). The Biography.com website. Retrieved February 07, 2015, fromhttp://www.biography.com/people/thomas-edison-9284349	This was a site I used to learn about the different inventors. I cross checked the information with other websites as well, but this one wrote their biographies in a story-like way that I could easily translate into the classroom. Teachers in intermediate grades can provide this website as a reliable source for students to begin biography research.

Appendix A

Thomas Edison and the Light Bulb

If there were no light _____

_____

If there were no light _____

_____

If there were no light _____

_____

If there were no light _____

_____

If there were no light _____

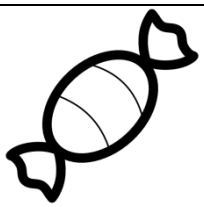
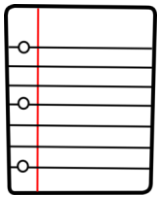
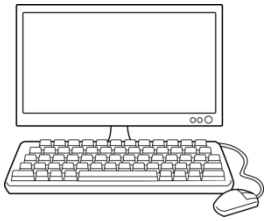
_____

Name: _____

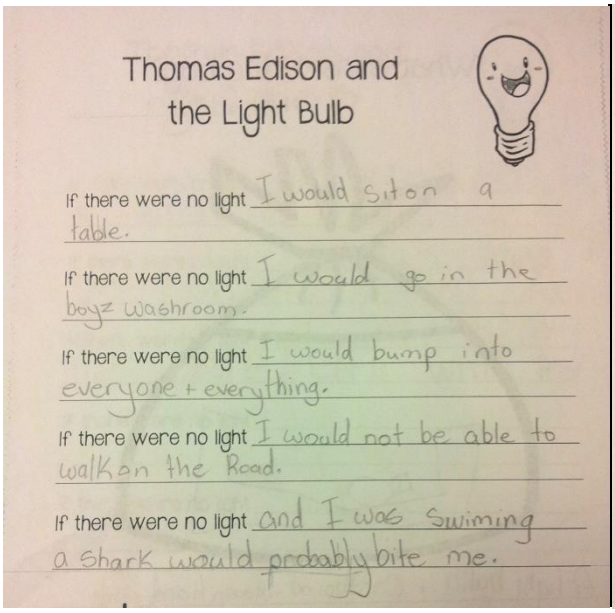
What is inside the bag?

Name: _____

Appendix B

Pictures



Thomas Edison and the Light Bulb

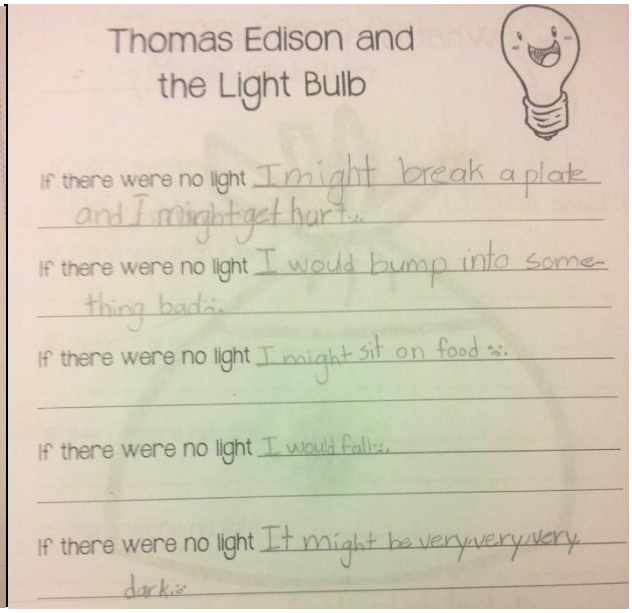
If there were no light I would sit on a table.

If there were no light I would go in the boyz washroom.

If there were no light I would bump into everyone + everything.

If there were no light I would not be able to walk on the Road.

If there were no light and I was swiming a shark would probably bite me.



Thomas Edison and the Light Bulb

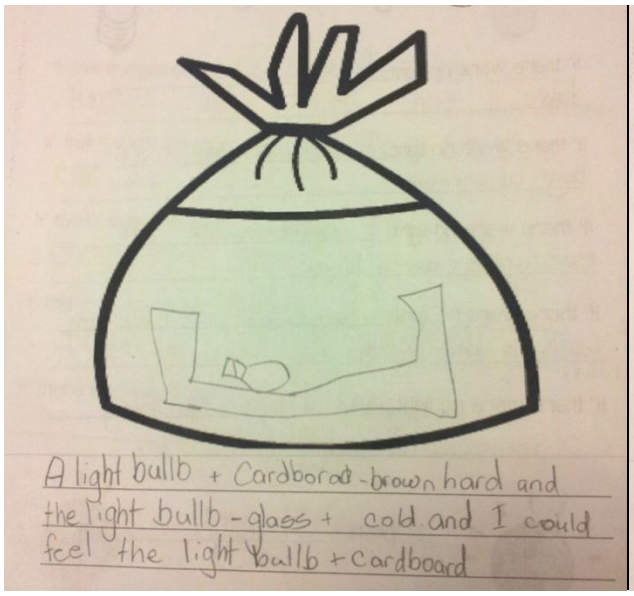
If there were no light I might break a plate and I might get hurt...

If there were no light I would bump into something bad...

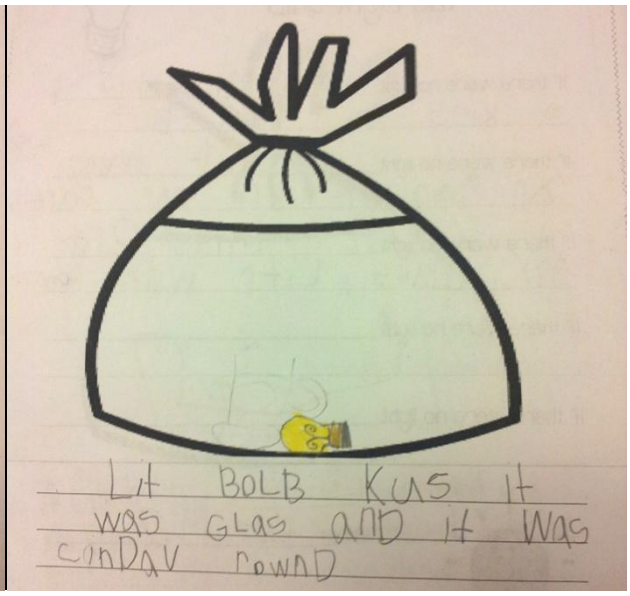
If there were no light I might sit on food...

If there were no light I would fall...

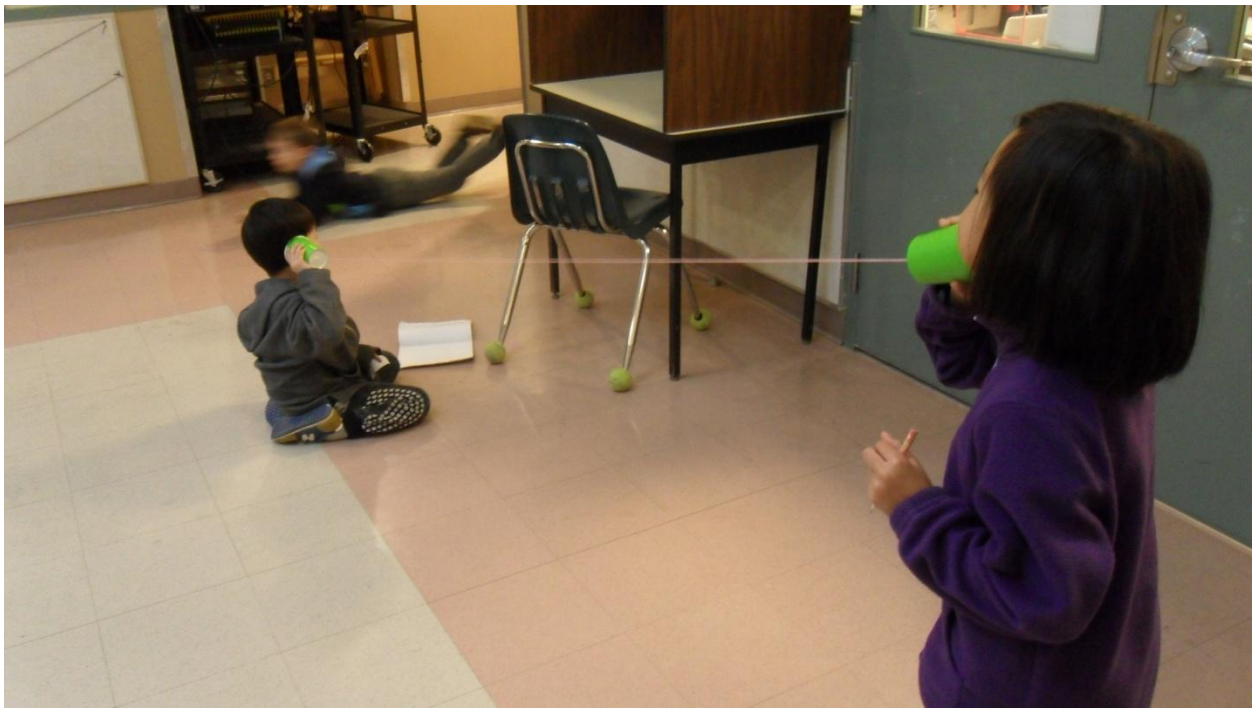
If there were no light It might be veryveryvery dark...



A light bullb + Cardboard - brown hard and the light bullb - glass + cold and I could feel the light bullb + cardboard



Lit BOLB KUS it WAS GLAS AND it WAS CinDAV rawD




rectangle
reindeer
rain
radio
raspberry
read
recorder
Slow Down
Breathe
Focus