Teacher Work Sample

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Elementary Education
Spring 2018

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1. **Learning Context:**

**Mountain View School**  
Box Elder District (2016 - 2017 school year)

**Principal/Director:** Day, Bryce  
**Address:** 650 E 700 S  
BRIGHAM CITY, UT 84302

**School Type:** Traditional  
**Students:** 372  
**Principals:** 1  
**Counselors:** 0  
**Teachers:** 23  
**% Endorsed:** 100%  
**% Grad Degree:** 25%

<table>
<thead>
<tr>
<th>Grade</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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**Enrollment by Grade**

- Grade K: 48
- Grade 1: 72
- Grade 2: 65
- Grade 3: 83
- Grade 4: 66
- Grade 5: 58

**Enrollment by Ethnicity**

- American Indian: 10
- Asian: 1
- Black: 2
- Caucasian: 288
- Hispanic: 63
- Multi Race: 6
- Pacific Islander: 2

**Enrollment by Gender**

- Female: 177
- Male: 195

**Subgroup Percentages**

- Econ Disadv: 57.8%
- ELL: 7.8%
- Ethnic Minority: 22.6%
- Special Ed: 20.2%

**School district:** Box Elder School District

**Name of school:** Mountain View Elementary

**Title 1 school?** Yes

**Demographics of school:**

Mountain View Elementary is located in Brigham City, Utah at the foot of Sardine Canyon. It is one of fifteen K-5 elementary schools in Box Elder School District, one of four located in the Brigham City. The population of Brigham City is 18,975 as of 2016. There are 372 students enrolled at Mountain View Elementary, of these 77% are white and 17% are hispanic. More than half (57.8%) of the students are eligible for free or discounted lunch. The school takes in neighborhoods in the central and east parts of Brigham City, as well as students who reside in the town of Mantua. Mantua is located just 5 miles east of Brigham City in Sardine Canyon. Mantua’s population is about 800 people and is 96% white.

*Resource Data Gateway, Utah State Board of Education.*
As can be seen in the image above, Mountain View Elementary received a C score for the last 3 school years. This grade is a composite from the SAGE scores for the 2016-17 school year for the whole school and measures progress from one year to the next.

During the 2016-17 school year, students at Mountain View Elementary School performed slightly below the district average in language arts on the standardized SAGE tests, and well below the district average in math and science. Results for the school are also slightly lower than the state average in language arts and well below the state average in math and science. The 5th grade SAGE test results for the 2016-17 school year can be seen below. *Resource Data Gateway, Utah State Board of Education.

Description of school climate:
Leadership Style
Mountain View Elementary’s theme is leadership which is reflected in the school’s vision statement, motto and mission statement. Mountain View Elementary’s vision statement is: “Children are our future. We are dedicated to their success.” The school motto is “Mountain View Mustangs are respectful, responsible and safe.” The school mission statement is “Mountain View Mustangs are leaders. We learn today so we can lead tomorrow.” Evidence of this leadership theme can also be seen in the school’s current implementation of a program called the Leader in Me, which is “an innovative, school-wide model that enables educators to unleash each child's full potential. ... A school is designated as a Lighthouse School only after completing a training regimen for The Leader in Me and completing an extensive on-site review by FranklinCovey to ensure the fidelity of the implementation” (www.theleaderinme.org/).
Mountain View has been implementing and practicing the Leader in Me program since Fall of 2015. During their Monday morning rally assembly the whole school repeats the 7 habits chorally. These are 1. Be proactive, 2. Begin with the end in mind, 3. Put first things first, 4. Think win-win, 5. Seek first to understand then to be understood, 6. Synergize, and 7. Sharpen the saw. The students have been taught what each of these steps mean. They focus on one principle at a time and they have in the hall near the office displays with student work that teach each one. When they are an approved Lighthouse School, the school will benefit from the status and the increased school and community morale that such a program provides.
This emphasis on leadership can be seen in the physical environment at Mountain View Elementary. As you enter the school you can see displays of the 7 habits on the wall near the office. There is also a Leader Wall of Fame display where celebrities’ and famous leaders’ photos and quotes are highlighted. There are also displays of reading minutes, with Star Wars figures showing each grade and class’ progress toward school reading minutes goals.

Parent Community Involvement
Mountain View Elementary also benefits from strong parent and community support. Mrs. Henrie’s class had 60% parent attendance at her parent teacher conference last October. The school holds family activity nights on a regular basis. One recent event was their Family Code Night where the families attending could see and participate in the computer coding that is being taught at school. This is an activity that the students enjoy, especially when they earn a certificate that can be put on display in their classroom. Several families attended and the activity was very successful. In addition to these family activities, the PTA at Mountain View is continually working to provide volunteers to help in classrooms. One way they are doing this is through the WatchDOG (Dads Of Great kids) program, which is a program that encourages dads of students to volunteer to be a presence in the school. The idea is to provide male role models for students who don’t have strong male support in their lives. When the WatchDOGS come in they help in any classroom, not just their own kids classroom, they go outside during break, during lunch in the cafeteria, just anywhere they can be visible. It’s been a positive program for this school and they hope that the dads in the community will continue to be part of it.
School Wide Discipline Plan
Below is a screenshot of the school wide discipline plan taken from the student handbook available on the school website (http://mountainview-besd.weebly.com/).

Mountain View Elementary School Wide Discipline

It is our expectation that Mountain View Mustangs will follow the rules. These students making good choices will be positively rewarded and recognized. They will feel more confident and happy. There are times, however, when students make poor choices and do not follow the rules. Therefore, the following plan has been established. Every month every child’s slate is wiped clean.

If a student chooses not to follow the rules, he/she will be given a pink slip. A copy of the pink slip will be given to the principal and the student’s teacher. It is expected that the child take the pink slip home and have his/her parent sign the slip. This will provide the family with an opportunity to discuss appropriate school behavior. The signed slip must then be returned to the principal. If the slip is not returned, the principal will contact the parents by phone to discuss the behavior.

First Offense: (Warning)
- Student conference with the principal
- Parents notified

Second Offense: (One Day In-School Suspension)
- Student conference with the principal
- Parent/Principal conference by phone

Third Offense: (Three Days In-School Suspension & Miss the End-of-Month Activity)
- Student/Parent conference with the principal

Severe Clause: In the event that a child violates the district’s Safe Schools Policy, a parent contact will happen immediately. Consequences could include those listed in the policy. In addition, the student will be moved right to the consequences of the third offense.

Mrs. Henrie has only filled out pink slips twice this year, both for the same student. She has three other students who are constantly being monitored with behavior trackers. Two of these students are part of the district’s behavior unit which is housed at Mountain View Elementary. These 15 students are bused here from all over the district because they need more behavior assistance and management than what their neighborhood schools are able to provide. The district provides 1 full time teacher and 3 part time paraprofessionals to teach and manage this class. The behavior students are still part of the regular classroom for most of the day, but they spend certain times of the day in their behavior class with their behavior teacher. The behavior teachers come around to the regular classrooms regularly to check on the students and to make sure their behavior trackers are being signed at regular intervals.

When Mr. Day became the principal 3 years ago he implemented several new ways to recognize positive behaviors in the school: He started the Principal’s 100 Club which is for students who are have been recognized for exhibiting leader qualities in class or anywhere in the school. He also started the Golden Ticket drawing which is a ticket filled out by a teacher and when that ticket is drawn the student gets lunch with the principal. The Super Stang Award is another way to recognize students with exceptional behavior. A teacher fills out a Super Stang certificate to be read during morning announcements and the student redeems it for a prize from the office secretary.
Academic Environment
At Mountain View Elementary the teachers and principal are unified in their goals to provide an excellent education to their students. They meet on Wednesday mornings for Faculty Meeting and Wednesday afternoons for Professional Learning Communities. These PLC meetings help the teachers within each grade level to collaborate and plan for a unified curriculum and to collaborate from grade to grade to provide cohesive transition from one level to the next, to make sure there are no holes in the subjects that are being taught. Each grade has a team leader who is responsible for attending district trainings to continually improve their PLC meetings.

There is definitely a schoolwide focus for improvement in reading and math as can be seen on displays by the office where reading minutes and timed math skills are tracked for competition between classes and grades.

Another program that this school has implemented is called the Assessment to Achievement Program. This came about as the result of a district wide effort to increase effect sizes. Three years ago the district held a meeting and discussed principles from John Hattie’s book Visible Learning. Each school chose to focus on a different strategy that came from this book. Mountain View Elementary chose to focus on metacognition. Their first effort in this direction was to model metacognition through think alouds. The rationale was that if teachers demonstrated metacognition by making clear why they were teaching each step and voicing aloud their thinking that students would pick up on this skill.

After the school felt they had mastered this thinking aloud skill, they began to implement Success Criteria. The idea was that after that the students had heard and seen their teachers modeling thinking aloud, Success Criteria would make this process more visual as they could see the multiple steps displayed as they pass off Success Criteria. Mountain View Elementary took the GVC (Guaranteed Viable Curriculum) standards based off of BELS (Box Elder Learning Standards) and created learning targets for each subject.

Grade level: 5th

Learning environment:

Academic Environment (continued)
Mrs. Henrie has taken these Success Criteria learning targets (as described above) and developed mastery checkpoints. She and the math coach, Mr. Blake, spent some time last year co-teaching math lessons while customizing these objectives. They wanted to be sure they were teaching each skill in the proper sequence. When they saw a gap where a skill was needed to transition to the next, they created another mastery checkpoint.
Mrs. Henrie has a journal where she keeps her notes and lesson plans and continues to improve and customize them as she teaches them. She also has placed at the front of the room two magnet boards where the learning target for math (blue) and reading (red) are displayed as well as the mastery checkpoints for each. The mastery checkpoints are laminated cards with magnets on them and there are several for each target. When the class has mastered a skill, Mrs. Henrie puts a magnet ‘get rek’d’ on top of that checkpoint and they say that they ‘beat the boss’. ‘Get rek’d’ and ‘beat the boss’ are gaming sayings that translate to ‘mission accomplished’. She chose this gaming theme to keep her students interested and to make this process fun for them.

Since she implemented Success Criteria in her classroom, Mrs. Henrie has seen a huge improvement in her students’ math scores and in the flow of the lessons and the general atmosphere of learning in her classroom. The kids are excited when they pass off a skill. They are understanding the skills being taught because they are taught in a logical sequence and build on from previous skills taught and mastered. Mrs. Henrie is excited because this year’s class is further along in their lessons and getting higher scores than last year.

Class Size
Mrs. Henrie’s 5th grade class consists of 37 students, the other 5th grade teacher has 36 students. These are unusually large class sizes for this school. Mrs. Henrie’s class last year was 31 students, the year before that she had 27. There have been a lot of new apartments built in this area recently. There aren’t enough classrooms or teachers to accommodate this growth, but the principal and teachers are determined to provide the best education possible despite the limitations of these large classes and they have plans in place for next year to alleviate the problem including forming a 4th and 5th grade combined class. This year the class size has fluctuated, because of move outs and move ins, from 34 at the beginning of the year to 37 then down to 35 then up to 37 again.

Seating Arrangement
This large number of students restrictions the possibilities for how the seating can be arranged in this average sized classroom. This classroom would probably be ideal for 25 students, so 37 is a tight fit. The arrangement that Mrs. Henrie has found works best is 4 long horizontal rows. There are also two vertical rows, one on each end. The horizontal rows are closer together than
is ideal as the students chairs sometimes hit the desks behind them. Transitions are a challenge, as are putting chairs up and cleaning the floor at the end of the day with so many bodies moving at the same time in such a tight space. But Mrs. Henrie has trained her students well with practiced procedures that make these transitions as smooth as possible. Mrs. Henrie also rearranges seat assignments quite regularly. She typically does this once a month, but will switch students around as needed. She is currently trying a slightly different arrangement of seats as she has broken up and moved the vertical rows so that there are 2 seats of each end of the horizontal row angled diagonally. This seems to be helping with both behavior and movement flow in the room.

Attendance
There is a school wide effort to improve attendance. The classes all keep track of their attendance percentages and these are reported to the office and awards are given at the Monday morning rally assembly to the class with the best attendance the week before. Besides the rally assembly, the principal has also organized a system to address chronic absenteeism. He hired an attendance aide to keep track of these students. She sits at a desk in the entrance lobby and checks for these students. Those who go an entire trimester without an absence are awarded attendance stars that are displayed on a bulletin board near the office. Mrs. Henrie has only 2 of these students with chronic absenteeism in her class and she hasn’t seen any noticeable improvement in their attendance since this program started.

Mrs. Henrie’s average attendance for the month of December was 94%, January was about 93% which both exceeded their goal of 90%. February’s percentages will likely be much lower as there have been a lot more absences because of illness. In the last 6 weeks there have only been 4 days with 100% attendance.

Classroom Management Plan
Mrs. Henrie tries to have her class own and contribute to as much of the class management as possible. At the beginning of the year she has them write the class mission statement, class goals and the ‘looks like’ and ‘sounds like’ expectations for their daily procedures. The mission statement that the class wrote and voted for is:

We are Mrs. Henrie’s class and....
The more we LEARN, the more we KNOW, the more we KNOW, the more we GROW.
We are HONEST, TRUE and GOOD EXAMPLES to others around us.
WE LEAD!!

These are the ‘looks like and sounds like’ expectations:
Mrs. Henrie does not rule with an iron fist. Her goal is for the students to have fun and to go home happy. One way she does this is by playing upbeat music as they clean up and prepare to leave during the last 5 minutes of class. Her goal is to finish the day feeling happy, even if the day was hard. She keeps control of the class, but does so with patience and joy. She has established a connection with her students. They trust her and they want to please her. She teaches them more than just math and reading, science and social studies, she teaches them about moral character, decision making, and how to practice kindness, happiness and joy. She takes every opportunity to share her life experiences with them in a meaningful way. Her walls are covered in motivational sayings. The class motto is “I can do hard things!” They say this every morning after reciting the pledge and the school motto. Another mantra she says and lives by is to “choose happy”. Her happy and positive outlook on live is contagious and has an impact on the environment of her classroom. It is a feeling I felt as soon as I arrived there and I will be sad to leave it. I hope to have the same feeling in my future classroom.
Level of Student Engagement in Learning
The large class size is the biggest obstacle with engagement in this class, but Mrs. Henrie’s fun personality keeps the kids interested and engaged. Sometimes the kids take the fun too far, but Mrs. Henrie is very good at knowing when this is happening and when it’s time to redirect the lesson or move on to something else. I have noticed her use most of the Big 8 engagement strategies from Class Acts by Brinkman, Forlini and Williams. She states expectations by asking frequently “what does this procedure look like?” She uses positive cueing and signals when she points out those who are following procedures for example “I see Wallace ready with his pencil up.” She uses attention prompts and time limits by ringing a bell and then saying “I’m looking for a class that’s ready in 5,4,3,2,1,0” at which time the class knows that they are expected to be ready to listen.

Mrs. Henrie also tries to maximize the engagement of her class through the seating arrangement. When she sees that there are students unengaged, she switches 2 or 3 seats around. The students are so used to this that it is not a big deal and doesn’t cause undue distraction and the result of the switch is usually beneficial. There are of course a few kids whose limitations keep them from maximum engagement in the class. Mrs. Henrie does her best and uses her proximity to keep them on task as best as she can.

Subject matter of lessons: Static Electricity and Lightning

Total number of students: 37

Students with special needs: 7

With IEPs: 6
These students (whose names I have replaced with pseudonyms) have IEPs and are receiving various accommodations in the resource classroom.

Adam - math, reading, writing
Andrea - math, reading, writing, ESL
Debbie - math, reading, writing, ESL
Lori - math, reading
Emerson - reading
Kobe - reading
Maria - ESL

Students who receive speech/language services: 1

English language learners: 3
Maria is one of the ELL students who is actually very proficient in speaking and understanding English. Mrs. Henrie gives her more time when she needs it and pairs her with another student who is able to assist her if she gets lost. Mrs. Henrie often asks Maria for help pronouncing Spanish words from the book they are reading for their Language Arts program, Esperanza Rising. The other two ELL students are also doing well with the accommodations that Mrs. Henrie provides.

Gifted and talented: 0
There are no students who are receiving gifted and talented resources.
Other (Behavioral Unit students): 2

Two of Mrs. Henrie’s students are part of the district’s behavior unit which is housed at Mountain View Elementary. The behavior students are still part of the regular classroom for most of the day, but they spend certain times of the day in their behavior class. When they are in Mrs. Henrie’s class, the behavior teachers come to check on the students and to make sure their behavior trackers are being signed at regular intervals.

Students’ prior knowledge for these lessons:

Prior to my lessons on static electricity the 5th graders had just finished a unit on current electricity. I observed their last lesson in this unit where they performed experiments using wires and batteries and a lightbulb. This activity gave them a hands on opportunity to learn about open and closed circuits and to see how and why current electricity works. This became a great springboard for my unit on static electricity. I was able to use their background knowledge of current electricity to connect to and introduce the concept of static electricity.

Students’ background and interest for these lessons:

They really loved the current electricity experiment. They showed great interest in static electricity, especially when we discovered together several examples of static electricity that they see every day.

How did your knowledge of these students and assessment of their prior knowledge inform your lesson planning?

Observing their excitement for the current electricity experiment gave me ideas for my static electricity lessons. I wanted to carry on the same excitement and interactive fun. I also noticed in the SAGE scores from the previous year that science had the very low proficiency scores in both the 5th grade and the whole school. This informed my lesson planning because I could see that science had been neglected here in favor of more time needed for math and language arts. This gave me the idea to do a writing lesson integration in order to make these lessons more relevant to what the students need.
2. Lesson Plans

Lesson 1: Introduction to Static Electricity

Subject and grade Level
5th grade science

Approximate time
40 minutes

Rationale for methods
I have used a combination of methods in teaching the lessons in this unit. When I decided to teach science for these lessons, I felt that an inquiry-based outline would be best, so I followed this inquiry-based outline: First I rely on explicit teaching while presenting the I DO portion of the lesson. Even though this portion of the lesson is focused on instruction and demonstration by the teacher, it is also my intention to LAUNCH the lesson by capturing the students' attention and to prepare them for more engagement as the lesson progresses. For the second part of the lesson, the WE DO, I am gradually building their interest through engagement strategies and through inquiry-based EXPLORATION. By the end of the lesson, I allow the students to demonstrate what they have learned in the I DO portion of the lesson, which is also the DISCUSS portion of the lesson. This lesson models the gradual release of responsibility (I DO, WE DO, YOU DO) and inquiry based learning (LAUNCH, EXPLORE, DISCUSS) that encourages the students to discover learning for themselves.

I have also tried to implement as many of the Big 8 engagement strategies as outlined in Class Acts by Brinkman, Fortlini and Williams in teaching this unit. This means that I am setting my expectations at the beginning of the lesson, I am explicit with instructions, including setting time limits to complete a task, I am using positive cueing to clarify my expectations, I am using attention prompts with clear and precise language, I am moving purposefully around the room to keep the students' focus, I am giving the students a signal to indicate they understand and are ready to move on, I am using my voice in an effective way and I am using questioning strategies that require all students to respond.

Content standards
Standard 4 Students will understand features of static and current electricity.
Objective 1 Describe the behavior of static electricity as observed in nature and everyday occurrences.
   a. List several occurrences of static electricity that happen in everyday life.
   b. Describe the relationship between static electricity and lightning.
   c. Describe the behavior of objects charged with static electricity in attracting or repelling without touching.
   d. Compare the amount of static charge produced by rubbing various materials together (e.g., rubbing fur on a glass rod produces a greater charge than rubbing the fur with a metal rod, the static charge produced when a balloon is rubbed on hair is greater than when a plastic bag is
rubbed on hair).
Investigate how various materials react differently to statically charged objects.

**Academic language/vocabulary objectives**
1. The language skills needed to engage with content in this 5th grade science unit are: experiment, hypothesis, observation, record data, analyze data, summarize data, conclusion.

2. The discipline-specific vocabulary the students will need to know are: static electricity vs current electricity, atom, electrons - flow and transfer, protons, negative charge, positive charge, attract, repel, triboelectric series, electroscope conductors - materials that conduct electrical current easily because of their free electrons (copper, aluminum, gold, silver) insulators - materials that oppose electrical current and make poor conductors (glass, air, plastic, rubber, wood)

**Required materials, resources, and technology**
Bean bag
Fun size candy bars
Glass bowl
2 balloons
String
Volunteer
Model of atom on smartboard

**Technology Tool: Balloon interactive on smartboard - this interactive tool is a great visual aid for this lesson about static electricity. I can push the balloon towards the sweater and then to the wall. Both the sweater and the wall show changes in their electrons, so the students can understand what is happening and why the balloon is attracted to the sweater and the wall.**


10 Static testing kits (balloon, kleenex, tissue, paper clip, yarn pieces, string, paper dots, paper clip), 1 for each group
10 copies of Data Sheet, 1 for each group
Static Electricity Data Sheet

<table>
<thead>
<tr>
<th>Items to test</th>
<th>Prediction (What do you think will happen?)</th>
<th>Observation (What happened?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PINK PAPER TISSUE</td>
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<td></td>
</tr>
<tr>
<td>YARN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STRING</td>
<td></td>
<td></td>
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<tr>
<td>KLEENEX</td>
<td></td>
<td></td>
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<tr>
<td>PAPER CLIP</td>
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</tr>
<tr>
<td>STYROFOAM PIECES</td>
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<td></td>
</tr>
<tr>
<td>DRINKING STRAW PIECES</td>
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</tbody>
</table>

**Instructional Procedures**

1. **Name Game/Candy Wrappers - 5 minutes**
   a. Have all students stand
   b. I say their name, give a multiplication problem, throw a bean bag
   c. They answer, throw it back and I say their name again
   d. If they get their math fact and I get their name twice, they get their candy and they sit down
   e. Collect candy wrappers in a glass bowl

2. **LAUNCH (I DO) 10 minutes**
   Demo 1: candy wrappers “I’ve collected all the candy wrappers in this bowl, what is going on with these wrappers?” (they should all be sticking to each other and to my fingers)
   Demo 2: socks on carpet “Have any of you ever rubbed your feet on the carpet and touched the doorknob? I’m going to try. Why won’t it happen with this carpet and these shoes?”
   Demo 3: balloon on hair “Have any of you ever seen this trick before?” (rub balloon on my hair or sweater, stick to wall)
   Demo 4: 2 balloons hanging from ceiling “see these two balloons hanging here, what will happen if I rub one with someone’s hair?” (get a volunteer)
   1. Use the string to hang the two inflated balloons from the ceiling about 1 foot apart.
   2. Rub one of the balloons on a student's head.
   3. Ask students to predict what will happen when you release the balloon.
   4. Release the balloon and the two balloons should come together.
5. Ask the students why this happens. [Rubbing the balloon has created a charge. Because the balloon is now electrically unstable, it is attracted to the other balloon.]
6. Now rub the other balloon on someone's head.
7. Ask the students to predict what will happen when you release the balloon.
8. Observe what happens when you stand back. The two balloons should move apart.
9. Discuss the reason the balloons are no longer attracted. (The charges are now alike and like charges repel.)

What is happening? STATIC ELECTRICITY

3. DISCUSS (WE DO) 10 minutes
Activate Background Knowledge - I wasn't here for your lessons on current electricity, so you need to teach me…

What is the difference between current electricity and static electricity?

<table>
<thead>
<tr>
<th>CURRENT</th>
<th>STATIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow of electrons</td>
<td>Build up of electrons</td>
</tr>
<tr>
<td>Needs a conductor</td>
<td>Imbalance of protons and electrons</td>
</tr>
<tr>
<td>Needs a circuit</td>
<td>Result of friction</td>
</tr>
<tr>
<td>Needs a power source</td>
<td>A charge build up</td>
</tr>
</tbody>
</table>

SHOW PICTURE OF ATOM ON SMART BOARD
Everything we see is made up of tiny little parts called atoms. The atoms are made of even smaller parts. These are called protons, electrons and neutrons. They are very different from each other in many ways.

One way they are different is their "charge." Protons have a positive (+) charge. Electrons have a negative (-) charge. Neutrons have no charge.

Usually, atoms have the same number of electrons and protons. Then the atom has no charge, it is "neutral."

But if you rub things together, electrons can move from one atom to another. Some atoms get extra electrons. They have a negative charge. Other atoms lose electrons. They have a positive charge. When charges are separated like this, it is called static electricity.
So, why did _____’s hair stand up when I rubbed it with the balloon?

**Technology Tool:** (show balloon interactive online)


When I rubbed the balloon on his head electrons moved from his hair to the balloon. Now each of the hairs has the same positive charge. Things with the same charge repel each other. So the hairs try to move away from each other. The farthest they can get is to stand up and away from all the other hairs.

If you walk across a carpet, electrons move from the rug to you. Now you have extra electrons (you’re negatively charged). Touch a door knob and ZAP! The electrons move from you to the knob. You get a shock.


**Explain that opposite charges attract and like charges repel.** The balloon has a big negative charge on it through friction from rubbing it on the volunteer ‘s hair. This has left the hair with a positive charge. The positively charged hair and the negatively charged balloon are attracted to one another because opposite charges attract. When the balloon is taken away, the hair still stands on end somewhat because each strand of hair has a positive charge. The hairs will repel each other because like charges repel. Explain they have just witnessed static electricity.

[https://www.uen.org/lessonplan/view/2705](https://www.uen.org/lessonplan/view/2705)

4. **EXPLORE (YOU DO) 20 minutes**

Divide class into 10 groups of 3-4 students each.

Hand out data sheet and static testing kit.

Instruct the students to predict what will happen when they hold the balloon over the different items and write the prediction down on their data sheet.

Next, instruct the students to charge their inflated balloon by rubbing it on their hair or a sweater and observe what happens when they hold the balloon over the different items (tissue, paper, yarn, string, paper clip).

Record your observations on your data sheet.

**Adaptations/accommodations**

The demonstrations during the launch portion of this lesson are a great way to get the students who struggle and ELL students interested and engaged. The group experiment is also accessible to all the abilities of students in this class. I will make sure to give explicit and clear instructions to help Maria, Debbie and Andrea to understand what is expected. Putting them in groups with kids who will help them to understand what is happening will also help. I will also circulate the classroom during the experiment to make sure everyone able to understand the experiment and participate in it.
**Assessment**

For this first lesson I really just want to pique the students’ interest. I will do a formative assessment by walking around and monitoring the groups as they perform the experiment. I will be looking for groups who are following directions, taking notes and participating equally. I will ask them questions to assess their understanding and to see if they need help with the experiment. The data sheet will provide a summative assessment of what they learned in this first lesson. If they have written down predictions and observations for at least half of the different materials I will know that they have met the objective of “describing the behavior of static electricity as observed in nature and everyday occurrences.”
Lesson 2: How to Measure Static Electricity

Subject and grade Level
5th grade science

Approximate time
40 minutes

Rationale for methods
I have used a combination of methods in teaching the lessons in this unit. When I decided to
teach science for these lessons, I felt that an inquiry-based outline would be best, so I followed
this general inquiry-based outline: First I rely on explicit teaching while presenting the I DO
portion of the lesson. Even though this portion of the lesson is focused on instruction and
demonstration by the teacher, it is also my intention to LAUNCH the lesson by capturing the
students attention and to prepare them for more engagement as the lesson progresses. For the
second part of the lesson, the WE DO, I am gradually building their interest through
engagement strategies and through inquiry-based EXPLORATION. By the end of the lesson, I
allow the students to demonstrate what they have learned in the I DO portion of the lesson,
which is also the DISCUSS portion of the lesson. This lesson models the gradual release of
responsibility (I DO, WE DO, YOU DO) and inquiry based learning (LAUNCH, EXPLORE,
DISCUSS) that encourages the students to discover learning for themselves.

I have also tried to implement as many of the Big 8 engagement strategies as outlined in Class
Acts by Brinkman, Forlini and Williams in teaching this unit. This means that I am setting my
expectations at the beginning of the lesson, I am explicit with instructions, including setting time
limits to complete a task, I am using positive cueing to clarify my expectations, I am using
attention prompts with clear and precise language, I am moving purposefully around the room to
keep the students’ focus, I am giving the students a signal to indicate they understand and are
ready to move on, I am using my voice in an effective way and I am using questioning strategies
that require all students to respond.

Content standards
Standard 4: Students will understand features of static and current electricity.
Objective 1: Describe the behavior of static electricity as observed in nature and everyday
occurrences.
a. List several occurrences of static electricity that happen in everyday life.
b. Describe the relationship between static electricity and lightning.
c. Describe the behavior of objects charged with static electricity in attracting or repelling without
touching.
d. Compare the amount of static charge produced by rubbing various materials together (e.g.,
rubbing fur on a glass rod produces a greater charge than rubbing the fur with a metal rod, the
static charge produced when a balloon is rubbed on hair is greater than when a plastic bag is
rubbed on hair).
Investigate how various materials react differently to statically charged objects.

**Academic language/vocabulary objectives**
1. The language skills needed to engage with content in this 5th grade science unit are: experiment, hypothesis, observation, record data, analyze data, summarize data, conclusion.

2. The discipline-specific vocabulary the students will need to know are: static electricity vs current electricity, atom, electrons - flow and transfer, protons, negative charge, positive charge, attract, repel, triboelectric series, electroscope 
conductors - materials that conduct electrical current easily because of their free electrons (copper, aluminum, gold, silver) 
insulators - materials that oppose electrical current and make poor conductors (glass, air, plastic, rubber, wood)

**Required materials, resources, and technology**
Smartboard
Static electricity vocabulary powerpoint on smartboard
Model of atom on smartboard

**Technology Tool:** Balloon interactive on smartboard

Static Electricity Worksheet
(https://instantworksheets.net/free_download/U3RhdGljX0VsZWN0cmlijaXR5LmRvYywxNTE2Nzl5NDE2LDdkZDNjMTlkMjdmYmJkYWE2YTVjYzM1OGFhYjRj)

Electroscope Youtube video on smartboard (https://www.youtube.com/watch?v=39Cuy6qZOA8)
10 copies of Data Sheet
10 Electrocope kits
- Styrofoam cup
- Sharp pencil or skewer
- Plastic drinking straw
- Aluminum pie pan
- Tape
- Scissors
- Thread
- Aluminum foil
- Styrofoam plate
- Plastic bag
- 10 Wooden rulers, metric
- Different materials to test. They should be no larger than the plate, or be able to be folded to be this small, and be able to be laid flat.
  - Felt
  - Polyester
  - Nylon
  - Cotton
Plastic wrap
Tissue paper

Name ______________________

Static Electricity
Identify terms about static electricity.
Write the letter of the definition next to the correct term.

- atoms ________  A. the charge of an electron
- electrons ________  B. positively charged particles in the nucleus, center, of an atom
- negative ________  C. a charge that is neither positive or negative
- proton ________  D. the charge of a proton
- neutral ________  E. When two objects are rubbed together they can gain or ______ electrons.
- neutron ________  F. small particles that orbit the nucleus in an atom
- positive ________  G. these tiny particles make up matter
- lose ________  H. neutrally charged particles in the nucleus of an atom

Tell if the two objects repel or attract each other.
1. positive – negative  2. positive – positive
3. negative – negative  4. negative – positive

ELECTROSCOPE DATA SHEET

| NAME(S) IN GROUP ________________________________ |

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Distance Between Ball and Pan (cm)</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styrofoam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Felt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polyester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nylon</td>
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<td></td>
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<tr>
<td>Cotton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic Wrap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tissue Paper</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Instructional Procedures

1. LAUNCH (I DO) 15 minutes - Slideshow review and worksheet (formative assessment)
   a. Results from experiment: Last week we used a balloon to test the static attraction between the balloon and various objects. You each filled out a data sheet. Which objects had the strongest attraction? Which ones stuck to the balloon the best? (turn and tell your neighbor)
      i. Pink Tissue
      ii. Styrofoam pieces
      iii. Kleenex
   b. What’s the difference between these materials? Why do some stick to the balloon more than others?
   c. Handout worksheet - to be filled out during slideshow
   d. Show slideshow/model of atom/balloon interactive: Last week we talked about static electricity, we listed examples and the difference between static and current electricity. What is happening with this atom? The balloon picks up extra electrons from something it is rubbed against. My feet pick up electrons from carpet. My hair loses electrons to the ballon, so my hair is positively charged. The balloon is negatively charged. The balloon is attracted to the positive protons in the wall. Two negative balloons will repel each other… etc.
   e. HOW CAN STATIC ELECTRICITY BE MEASURED?

2. DISCUSS (WE DO) 10 minutes - Electrosopes: Zoom Electroscope Video: (https://www.youtube.com/watch?v=39Cuy6gZOa8) 4:20 minutes
   a. How can static electricity be measured? One way is to use an electroscope. An electroscope is a scientific instrument that detects if there is an electrical charge, and it can show how big the electrical charge is. We’re going to build a homemade electroscope to test several objects made out of different materials to see which ones produce, or conduct, the most static electricity. Then you will put your results together in a data sheet.

3. EXPLORE (YOU DO) 15 minutes
   a. Show my electroscope, give instructions before splitting into groups!
   b. Divide class into 10 groups of 3-4 students each (same groups as last week)
   c. Group decides on facilitator and scribe - person with next birthday
   d. Hand out electroscope kits and data sheets

4. SUMMARIZE - collect supplies and data sheets, bring group back together, discuss results.

Adaptation/accommodations
I have made a slideshow to display on the smartboard to help ELL and low students to be able to see and be better able to familiarize with the new words for this unit. I also have the interactive smartboard model of the atom that helps these students to visualize the concept that
is being taught. The ELL student will be in a group with students who can help give instructions on the group experiment. This hands on activity will help the low students as well.

**Assessment**

For this second lesson I found a static electricity quiz that I think is a good summative assessment. After reviewing what we learned in lesson 1, I will give the class time to complete this quiz before our electroscope experiment. I think this quiz will be a good indicator of which students are understanding static electricity and which are not. Below is the scoring rubric that I created for the quiz.

The electroscope data sheet will also provide an assessment of what the groups have learned so far in this unit. If they have written down predictions and observations for at least half of the different materials I will know that they have met the objective of “describing the behavior of objects charged with static electricity in attracting or repelling without touching… and comparing the amount of static charge produced by rubbing various materials together.”
Lesson 3: Stories of Lightning

Subject and grade Level
5th grade science and language arts

Approximate time
45 minutes

Rationale for methods
I have used a combination of methods in teaching the lessons in this unit. When I decided to teach science for these lessons, I felt that an inquiry-based outline would be best, so I followed this general inquiry-based outline: First I rely on explicit teaching while presenting the I DO portion of the lesson. Even though this portion of the lesson is focused on instruction and demonstration by the teacher, it is also my intention to LAUNCH the lesson by capturing the students' attention and to prepare them for more engagement as the lesson progresses. For the second part of the lesson, the WE DO, I am gradually building their interest through engagement strategies and through inquiry-based EXPLORATION. By the end of the lesson, I allow the students to demonstrate what they have learned in the I DO portion of the lesson, which is also the DISCUSS portion of the lesson. This lesson models the gradual release of responsibility (I DO, WE DO, YOU DO) and inquiry based learning (LAUNCH, EXPLORE, DISCUSS) that encourages the students to discover learning for themselves.

I have also tried to implement as many of the Big 8 engagement strategies as outlined in Class Acts by Brinkman, Forlini and Williams in teaching this unit. This means that I am setting my expectations at the beginning of the lesson, I am explicit with instructions, including setting time limits to complete a task, I am using positive cueing to clarify my expectations, I am using attention prompts with clear and precise language, I am moving purposefully around the room to keep the students' focus, I am giving the students a signal to indicate they understand and are ready to move on, I am using my voice in an effective way and I am using questioning strategies that require all students to respond.

Content standards
5th Grade Science
Standard 4: Students will understand features of static and current electricity.
Objective 1: Describe the behavior of static electricity as observed in nature and everyday occurrences.
  b. Describe the relationship between static electricity and lightning.

Content Integration
English Language Arts Grade 5
Writing Standard 3: Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

English Language Arts Grade 4
Reading: Literature Standard 9: Compare and contrast the treatment of similar themes and
topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.

**Academic language/vocabulary objectives**
1. The language skills needed to engage with content in this 5th grade science unit are: compare, contrast, graphic organizer, creative writing

2. The discipline-specific vocabulary the students will need to know are: natural phenomena, lightning, thunder, autobiographical narrative, folktale, legend, story, myth, god/goddess

**Required materials, resources, and technology**
Thunder Cake by Patricia Polacco
Lightning myths and stories from various websites (see lesson plan)
**Technology Tool:** What is Lightning? slideshow
Lightning myths worksheet (enough copies for every student in the class)
Instructional Procedures

1. LAUNCH (I DO) 3 minutes -
   For the last two weeks we’ve been talking about static electricity. One of the coolest parts of static electricity is what it teaches us about how lightning works. (Refer to doorknob example). I have a lot of fun things planned to learn the science behind lightning, but today we’re going to take a little detour and talk about non-scientific explanations for lightning. Throughout history people have had to try to understand and handle unexplained natural events and phenomenon like lightning and thunder, floods, earthquakes, tsunamis, hurricanes, tornadoes, even little things like echos. They didn’t always have the means to discover the science that was happening, so they created their own stories about these events to try to understand them and to feel better about the unknown. We’re going to look at a few examples of stories of how people have coped with and explained lightning and thunder. First, I will read you this book by one of my favorite authors, Patricia Polacco. It’s called Thunder Cake and is about how one little girl and her grandmother handle little Patricia’s fear of thunder and lightning (explain that most of Polacco’s books are autobiographical - a story written by the author about the author’s life).

2. DISCUSS (WE DO) 10 minutes - Read Thunder Cake by Patricia Polacco
   a. What did Patricia do to cope with her fear of thunder and lightning at the beginning of the story?
   b. What coping strategy did Babushka teach Patricia to help her to be brave?
      i. (counting between lightning and thunder to know how far away it is, making a cake to stay busy)

Read examples of myths and stories that involve lightning - 10 minutes


The Story of the Lightning and the Thunder
Nigerian Folktales

In the olden days the thunder and lightning lived on the earth amongst all the other people, but the king made them live at the far end of the town, as far as possible from other people's houses.

The thunder was an old mother sheep, and the lightning was her son, a ram. Whenever the ram got angry he used to go about and burn houses and knock down trees; he even did damage on the farms, and sometimes killed people. Whenever the lightning did these things, his mother used to call out to him in a very loud voice to stop and not to do any more damage; but the lightning did not care in the least for what his mother said, and when he was in a bad temper used to do a very large amount of damage. At last the people could not stand it any longer, and complained to the king.

So the king made a special order that the sheep (Thunder) and her son, the ram
(Lightning), should leave the town and live in the far bush. This did not do much good, as when the ram got angry he still burnt the forest, and the flames sometimes spread to the farms and consumed them.

So the people complained again, and the king banished both the lightning and the thunder from the earth and made them live in the sky, where they could not cause so much destruction. Ever since, when the lightning is angry, he commits damage as before, but you can hear his mother, the thunder, rebuking him and telling him to stop. Sometimes, however, when the mother has gone away some distance from her naughty son, you can still see that he is angry and is doing damage, but his mother's voice cannot be heard.

From http://lightningsafety.com/nlsi_info/myths.html

- The Moslems also attributed lightning and thunder to their god. The Koran says, "He it is who showeth you lightning and launches the thunderbolts."
- Scandinavian mythology alludes to Thor, the thunderer, who was the foe of all demons. Thor tossed lightning bolts at his enemies. Thor also gave us Thursday.
- In the pantheistic Hindu religion, Indra was the god of heaven, lightning, rain, storms and thunder. The Maruts used the thunderbolts as weapons.
- Umpundulo is the lightning bird-god of the Bantu tribesmen in Africa. Even today their medicine men go out in storms and bid the lightning to strike far away.
- The Navajo Indians hold that lightning has great power in their healing rituals. Sand paintings show the lightning bolt as a wink in the Thunderbird's eye. Lightning is associated with wind, rain and crop growth.
- As late as the early 1800s in Russia, when rain was wanted, three men climbed a tree. One would knock two firebrands together; the sparks imitating lightning. Another one would pour water over twigs, imitating rain. A third would bang on a kettle to attract the thunder. And throughout early Europe, church bell ringers would make as much noise as possible, hoping to scare away the storms from these holy dwellings which were struck frequently by lightning.
- Even Santa Klaus gets into the act with his reindeer Donner (thunder) and Blitzen (lightning).
- Early Greeks believed that lightning was a weapon of Zeus. Thunderbolts were invented by Athena, the goddess of wisdom. Since lightning was a manifestation of the gods, any spot struck by lightning was regarded as sacred. Greek and Roman temples often were erected at these sites, where the gods were worshipped in an attempt to appease them.
An Ancient Greek Myth for Kids
The Gift of Fire
Zeus and Prometheus

As the story goes .... From the very first, humans had trouble with the gods. Most gods thought of humans as toys. But some gods found themselves interested in the human race. Some gods even made friends with the humans. One of those gods was named Prometheus.

The first people created by the gods lived happily together. They thought the gods were wonderful. But their children were not as grateful or as content. The children argued among themselves, and sometimes even argued with the gods.

Zeus was very disappointed at mankind. He decided he was not going to give mankind a most important tool - fire! Without fire, humans were not going to last very long.

Prometheus felt sorry for his human friends. Fire was important for many things - like heat and cooking, and hundreds of others. Prometheus stole a lightning bolt from Zeus and gave it to mankind. That's when man discovered fire.

Zeus was furious. He ordered Prometheus chained to a rock as punishment for stealing his lightning bolt, and for going behind his back to help the humans. To make Prometheus even more miserable, Zeus sent storms to beat angry waves against Prometheus, helplessly chained to his rock. Zeus made the sun shine really brightly now and then to burn his skin. Zeus even sent an eagle to nibble at poor Prometheus' body. It was quite a punishment for a god who had only tried to help mankind. But he had defied Zeus, and that was what made Zeus so angry.

It was Hercules who finally released the helpless god from his chains. By the time Hercules saved him, nearly a thousand years had passed. That's probably not a lot of time if you happen to be immortal. But humans had changed a great deal over 1000 years. By then, Zeus found humans quite entertaining. Zeus no longer cared if anyone rescued Prometheus or not.

3. EXPLORE (YOU DO) 15 minutes- hand out Lightning Myth Graphic Organizer
   a. Now it's your turn to write your own lightning myth!
   b. Demonstrate filling out the graphic organizer using the Zeus story as an example
   c. Instruct students when they are done with their graphic organizer to write their myth on the opposite side
   d. Allow students to work independently til the end of class
   e. Collect papers
4. **NEXT TIME**- Today we discussed some folktales and myths about lightning, next time we will learn about the scientific explanation of lightning.

**Adaptations/accommodations**
The read aloud stories and the slides with images to go with the stories should make this lesson accessible for all. The graphic organizer is very simple and easy to understand. The writing exercise allows for students to make the story as complex or as simple as they desire. There will be a focus on descriptive details and clear sequence of the narrative. There will be time to extend this writing activity into next week’s science lesson if it is needed.

**Assessment**
This lesson is different from the first two because the work will be assessed from a creative approach instead of a scientific one. I will assess the graphic organizers and myths together based on the following criteria:

3 - original idea, myth explains a natural event, at least two paragraphs in the story, every section of the graphic organizer is filled out
2 - natural event is explained, most of the sections of G.O. are complete
1 - natural event is explained, at least 2 sections are filled out

I believe that the graphic organizer and the myth writing will give me a good idea of the degree that the students have met the objectives of “describing the behavior of static electricity as observed in nature and everyday occurrences” and “writing narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.”
Lesson 4: Science of Lightning

Subject and grade Level
5th grade science

Approximate time
40 minutes

Rationale for methods
I have used a combination of methods in teaching the lessons in this unit. When I decided to teach science for these lessons, I felt that an inquiry-based outline would be best, so I followed this general inquiry-based outline: First I rely on explicit teaching while presenting the I DO portion of the lesson. Even though this portion of the lesson is focused on instruction and demonstration by the teacher, it is also my intention to LAUNCH the lesson by capturing the students attention and to prepare them for more engagement as the lesson progresses. For the second part of the lesson, the WE DO, I am gradually building their interest through engagement strategies and through inquiry-based EXPLORATION. By the end of the lesson, I allow the students to demonstrate what they have learned in the I DO portion of the lesson, which is also the DISCUSS portion of the lesson. This lesson models the gradual release of responsibility (I DO, WE DO, YOU DO) and inquiry based learning (LAUNCH, EXPLORE, DISCUSS) that encourages the students to discover learning for themselves.

I have also tried to implement as many of the Big 8 engagement strategies as outlined in Class Acts by Brinkman, Forlini and Williams in teaching this unit. This means that I am setting my expectations at the beginning of the lesson, I am explicit with instructions, including setting time limits to complete a task, I am using positive cueing to clarify my expectations, I am using attention prompts with clear and precise language, I am moving purposefully around the room to keep the students' focus, I am giving the students a signal to indicate they understand and are ready to move on, I am using my voice in an effective way and I am using questioning strategies that require all students to respond.

Content standards
5th Grade Science
Standard 4: Students will understand features of static and current electricity.
Objective 1: Describe the behavior of static electricity as observed in nature and everyday occurrences.
b. Describe the relationship between static electricity and lightning.

Content Integration
5th Grade English Language Arts
Reading: Literature Standard 9
Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.
**Content Integration (Extension)**

**Visual Arts**

Strand: CREATE (5.V.CR.)

Students will generate artistic work by conceptualizing, organizing, and completing their artistic ideas. They will refine original work through persistence, reflection and evaluation (Standards 5.V.C.1–3).

Standard 5.V.C.1: Combine ideas to generate an innovative idea for art-making.

**Academic language/vocabulary objectives**

1. The language skills needed to engage with content in this 5th grade science unit are: genre, autobiographical, narrative, fiction, nonfiction, note-taking, note-making, reflection, analyze, create.

2. The discipline-specific *vocabulary* the students will need to know are: lightning, positive protons, negative electrons, charge, conductor, hemp cord, lightning rod, bifocals, ambient.

**Required materials, resources, and technology**

**Technology Tool:** [http://www-tc.pbs.org/benfranklin/shocking/how_shocking.swf](http://www-tc.pbs.org/benfranklin/shocking/how_shocking.swf)

Thunder Cake by Patricia Polacco

Lightning by Seymour Simon

Lightning Notes four square note-taking guide (36 copies)

**Technology Tool:** What is Lightning? Slideshow on SmartBoard

Scrapbook paper, contact paper, tissue paper, yam, glue for kite art (extension or next week)
Engage with personal story: Seventeen years ago I lived in Florida for 1 year. I never knew how serious lightning could be until I lived there. We lived on a really big cattle ranch close to Orlando (Disney World). My husband worked in the office doing the accounting and I stayed home with our little baby boy, but hundreds of other workers were cowboys. All the workers worked and lived on the ranch, so we got to know the cowboys and their families really well. The cowboys spent all day in big open ranges surrounded by cattle, trees, and a lot of water with nothing but their horse to carry them back to the protection of their trucks if a storm should come through. Florida just happens to be the lightning capital of the U.S… These people took lightning very seriously. When a storm was approaching they would head indoors! If they were in a pool, they would get out fast and go inside. They would all unplug their computers and appliances (why?), then they would sit by the window and watch (cause it was really cool to watch). But the cowboys often were not near any shelter. They would get down on the ground as low as possible, in a ditch if possible (now they say you should crouch in a ball with just your toes touching the ground - hard to do - because the electricity goes into the ground and can still hurt you). There was one cowboy there who had been struck by lightning more than once. I’ll tell you, living there made me afraid of a whole bunch of things I had never been afraid of before (cockroaches/palmetto bugs, snakes,
alligators, hurricanes, and lightning). I didn’t love those things, but I really did love to watch the lightning and gained a new respect for and curiosity about it. Those lightning shows were way more impressive than the electric light parade at Disney World’s Magic Kingdom.

Who has ever seen lightning before? How close? How did you feel? Afraid, curious? Did you wonder how it happened?

This is the lesson that we’ve been waiting for! Everything we have learned about electricity and static electricity kind of all comes together today. 1st week - balloon experiments; 2nd week - electroscope; 3rd week - stories of lightning, 4th week (today) - facts about lightning.

II. DISCUSS (WE DO) 15 minutes - Brief genre comparison and Slideshow/discussion
   A. Hand out Lightning Notes reflection page - take notes during slideshow/discussion
   B. Review last week: Thunder Cake (autobiographical narrative), lightning myths (which one was your favorite?), writing your own myths (those were great!)
      1. What are the differences between these books and stories?
      2. Genres: Last week we talked about lightning stories (autobiographical narrative: Thunder Cake, fiction: myths), today we will talk about lightning facts (nonfiction: Lightning book).
   C. Read and show a few pages from Lightning book (read more after slides).
      1. What is lightning?
      2. Counting to predict how close lightning is...
      3. What is lightning?
      4. Benjamin Franklin had the same question
      5. Who is Benjamin Franklin?
      6. He is most famous for - kite experiment and lightning rod
      7. Benjamin Franklin’s discoveries (pbs How Shocking? Interactive lesson)
      8. Static Electricity
      9. Remember the balloon and styrofoam (electroscope) experiments? Different materials...
      10. Static electricity generator, Leyden jar
      11. The kite experiment - Who thinks these materials will work? Thumbs up/down
      12. What did the kite look like?
      13. What materials did Franklin use?
      14. The kite was not struck by lightning
      15. The lightning rod - Who thinks these materials will work?
      16. More about lightning rods
      17. Did Benjamin Franklin discover electricity?
18. Review static electricity and lightning
19. Remember the electrons and protons
20. Clouds

E. Read parts of Lightning by Seymour Simon to teach more about lightning - (p.16, p. 26, p. 28, p. 30)

III. EXPLORE (YOU DO) 15 minutes - Four square notes and whole group share
   A. Take 5 minutes to finish your Lightning Notes page
   B. Assign partners - take 5 minutes to discuss with your neighbor
   C. Whole class share - take 5 minutes, choose poofy pops to randomly select one person to come up front with their partner and each tell us 1 cool thing they learned today.
   D. Collect completed Lightning Notes

IV. ART EXTENSION (NEXT TIME) - Kite Art

Adaptations/accommodations
I think that my personal story will engage students of all levels and it is my hope that the slides with images and graphics will make this lesson accessible for all. The notetaking guide is very simple and easy to understand and includes a section to draw a picture for those who struggle with writing. My plan is to hand out the notetaking guide before I begin the slideshow so that everyone has time to take notes as they listen. I will make sure to pause the slideshow and stop talking for brief periods to give time for students who have trouble listening and writing at the same time.

Assessment
I will collect and assess the Lightning Notes using the following rubric:
4 - 4 sections filled out with pertinent details
3 - 3 sections filled out with pertinent details
2 - 2 sections filled out with pertinent details
1 - 1 section filled out with pertinent details

This assessment will tell me if the students have met the objective of “describing the relationship between static electricity and lightning.”
3.  Focus Students:

**Description of student 1:** Mindy (pseudonym)

Mindy is an excellent student who rarely needs support. This class of 37 students has quite a few top students. Mindy is one of them. Her scores consistently place her in the top 10. Reading is one of her strengths. Her mid year reading DIBELS scores showed her composite score at 521 (benchmark 372). Her mid year math DIBELS scores are also impressive with a 144 composite (benchmark 92). This math assessment shows a significant improvement from the beginning year math DIBELS score of 47 (benchmark 58). On the most recent post assessment on fractions, Mindy scored a 2.5 (out of 3). Her mistakes were minor computational errors, so Mrs. Henrie feels confident that Mindy is ready to move on to the next unit. Mindy not only consistently gets high scores, but she also works hard and has a good attitude. She turns her homework and reading minutes in on time and helps others in the class. Mindy’s prior learning shows similar patterns of average to high scores. She has spent all of her grade school years here at Mountain View. Her personality in class is that she is always on task and focused but is also somewhat shy. She has several close friends in class, but she knows when to chat with them and when not to. She is always one of the first to respond to attention prompts and positive cueing. She lives in a stable home environment with both parents who are married. She is the oldest with 2 younger siblings in her family which probably explains her responsible and helpful nature.

I chose Mindy as one of my focus students because she even though she has a shy exterior, when looking at her work I can see that she gets it. My knowledge of Mindy’s personality, background and prior learning informed my approach to teaching her in that I knew if she was enjoying and feeling challenged by the lesson then the other high students would likely feel that way as well. Her attention and participation became my minimum expectation for engagement during my lessons. I knew that if she appeared to be bored and not engaged, then I definitely needed to change things.

**Description of student 2:** Wallace (pseudonym)

Wallace is a good student as well, but needs some support especially in math. His strength is that he is willing to work hard when learning something new and if he does need intervention he responds quickly. Wallace is an excellent reader. His mid year reading DIBELS scores showed his composite score at 424 (benchmark 372). Wallace’s math scores tell a different story. His beginning year math DIBELS scores were quite low: 19 (benchmark 58). But the mid year math DIBELS scores showed a significant improvement which is great news. His mid year composite was 69 (benchmark 93). Wallace gets extra help in small groups when he needs it. He struggled with double multiplication and division, but with intervention he was able to master these skills. On a post assessment for the fraction unit the class just completed his score was at a 1.5 (out of 3). His trouble seems to be with knowing when to change a process and transferring skills from one operation to another. This post assessment is a good indicator of where he needs help. Mrs. Henrie feels confident that he will master these skills with some interventions and with more practice at transferring these skills. He works hard and is respectful so this helps him to keep up with the increasing difficulty in math. Wallace’s prior learning shows similar patterns, with higher scores in language arts, and low to average scores in math.
Wallace’s personality in class is that he is sometimes a bit of a goofball. He is one who likes to make smart remarks to get others to laugh during instruction time. There are several students who exhibit this same behavior in speaking out of turn during class. Wallace’s remarks are never inappropriate or disrespectful, and he is simply responding to the fun classroom culture and following the example of others. I certainly would not consider him a problem student, especially when compared to others. He just needs redirection during these times when the talking out gets out of hand, but he is always quick to get back on task when reminded. Wallace comes from a stable home environment with married parents who take good care of him. He has 2 older siblings and 1 younger sibling and lives in Brigham City.

Wallace is an interesting student to observe because by appearances he seems to be a top student and has every reason to be coming from a stable home life. His great reading skills, his consistency with turning in homework and his willing attitude and attention to instruction make it easy to assume that he is understanding every lesson and if you didn’t look at his test scores a teacher could easily overlook his struggles in math. This is why I chose him as a focus student, because there are always a few like him in every class who are overlooked because they seem to be fine. My knowledge of Wallace’s personality, background and prior learning informed my approach to teaching this class in that I knew that if his assessments in this unit showed improvement, then others who quietly struggle might be reached as well. Wallace became my minimum target for assessment. When checking his work, I knew that if he was assessing well, then the rest of the class would be a little bit higher. This turned out to be the case.
4. Reflection and evaluation of lessons, including analysis of assessment data

Analyze teaching effectiveness:

Instructional Decisions

Even before my first day in this classroom, when I came to the school to meet Mrs. Henrie, we discussed some of what I would be doing during my student teaching. When I mentioned to her that I would need to teach a unit for my teacher work sample, right away she said that I should teach the science lessons while I am here. Her reason for this request is that science is the one subject that she is not in the middle of important transitions with curriculum and assessment. Her language arts and math programs have recently required a lot of attention and adjusting from her, so she didn’t feel she could hand either of those over to me for teaching a whole unit. However, science was a stand alone subject that Mrs. Henrie was happy to hand over to me. Mrs. Henrie and the other 5th grade teacher had decided that for this year they would team up to teach science and social studies to both classes. The way they have it organized is for Mrs. Henrie to teach science to her class on Tuesday and then the same lesson to Mrs. Rolls’ class on Thursday while Mrs. Rolls teaches social studies to her class on Tuesday and then the same lesson to Mrs. Henrie’s class on Thursday. Mrs. Henrie’s proposal was for me to teach science in her place to both classes during my student teaching assignment in her class. She suggested static electricity as the subject of my unit because that would follow naturally from the current electricity unity they were just finishing. This sounded like a good plan to me. I had some ideas about teaching static electricity and I knew that there would be a lot of hands on opportunities with this subject. I also liked the idea of teaching the same lesson twice as this would give me a chance to practice and improve and would give me more time to put this unit together one lesson at a time. I was also excited by the prospect of teaching a science unit because I really have a love for science and have seen how much fun it can be to teach, especially with older kids. Later, as I did some research on this school and saw that science was getting lower SAGE scores, I could see that there was an opportunity to try to help with this situation. I didn’t expect that these lessons alone would improve the science test scores, but my hope was to exert some positive influence on the students’ attitudes about science.

During my first week I observed Mrs. Henrie’s last lesson on current electricity. The students were split into groups and each was given a battery kit. The groups were instructed to attach the wires to the battery and then to the light bulb, then if they could get the light bulb to light up, they knew it worked. The light bulb would only light up if the wires were connected properly making a continuous closed circuit. They demonstrated understanding of open and closed circuits, negative and positive relationships, power sources and conductors. This lesson helped me to see what their background knowledge was and gave me a great springboard for my first lesson about static electricity.

The first lesson required a lot of planning because it was my first one. At first I didn’t think that I would have enough material to teach 3 different lessons on static electricity, but as I spent time
becoming familiar with the subject and planning an outline for the unit, I realized that I had more than enough material to fill not just 3, but 4 lessons as well as some extensions.

I decided to start with a brief getting to know you activity since this was my first time teaching these students. I would throw a ball to a student, give them a multiplication problem, say their name and then throw them a candy if they got the math fact right and if I got their name right. This activity turned out to be way more distracting and complicated than I had pictured. It also took too long. I eliminated this activity when I taught this same lesson to Mrs. Rolls class and that lesson went a lot better.

In my planning I also decided that I wanted to give a lot of demonstrations of static electricity. Some of these demonstrations went well, others didn’t. The candy wrappers from the name game didn’t end up showing as much static charge as I had hoped, so I didn’t use them the way I planned to. I ended up only using the hair and balloon for the beginning demonstration with Mrs. Rolls class, which was a big hit for both classes, but the hanging balloons didn’t show enough of the repulsion and attraction that I had hoped and I found that it was more effective to use that time to list examples of static electricity that the students could think of on the board.

Another instructional decision that I made for lessons 1 and 2 was that I wanted these lessons to be as hands on as possible, because science is suited to hands on lessons and because there were so many great experiment and demonstration ideas that I found in my research. However, in practice these group science experiments were hard to pull off with such large classes and with the limited amount of space to move around. It was also hard to make sure we had enough time at the end of the lesson for the experiments, my instruction always took longer than I planned. I am glad that the students were able to handle the materials and see the different static charges in them, but they didn’t have enough time to fill out the data sheets. Next time I will still have the students in groups for the experiments, but I will simplify the data sheets to make sure there is enough time to complete them and give more explicit instructions about how to fill them out and who in the group should be designated as scribe so the group experiment time will go more smoothly.

In my planning I decided that lesson 3 should take a different turn with some language arts content integration. I wanted the students to see that events in nature can be explored from many different angles. I was excited to try some creative writing exercises and was curious to see which kids would respond to the different approaches. In lessons 1 and 2 we had done observation, experimentation and analysis of static electricity. In lesson 3 I decided that we would explore stories and myths about lightning as a transition into the subject of lightning. They would also write their own myths about lightning. I decided to stretch this lesson 3 into 2 weeks to give them more time to write their myths. These two weeks of lesson 3 went much more smoothly than the first two lessons did, perhaps that was because I was getting better at teaching the subject, perhaps it was as a result of less transition and moving around the classroom.
I was most excited about lesson 4, as it was the culmination of the rest of the lessons for the unit. I had prepared a very thorough slide presentation that included pictures from an interactive lightning demonstration (http://www-tc.pbs.org/benfranklin/shocking/how_shocking.swf). I also had thought of a fun and interesting personal story to share to begin the lesson. My plan was for the students to fill out a notetaking guide during the slideshow and discussion. I would end by having partners discuss their notes and then present to the class what they learned. I felt like this was a really well planned lesson and it actually went really well, but I forgot to give instructions for the notetaking guide until halfway through my slides, so this made it harder for the students to finish. In retrospect I would make sure to instruct them on the notes but I would also shorten the slideshow so there would be more time for the actual teaching of lightning (those slides were at the end and I had to rush through them and felt that the students didn’t quite get it). The good news is I still have my second time to teach this lesson to Mrs. Rolls class and so I have the chance to fix the mistakes I made the first time.

To summarize, I feel that these lessons went well, but teaching this unit definitely revealed my weaknesses and I can see many areas in need of improvement. The two main areas that I need to improve the most are engagement and classroom management. I tend to rely too much on explicit instruction and lecturing, even when the students want and need more inquiry based learning. I want to learn to scan the room and ask more meaningful questions that reach the whole class, not just a few students. I want to practice the Big 8 engagement strategies to make sure all my students are interested and engaged, not just the same ten top students who always have their hands raised. I am definitely learning a lot about both management and engagement by watching Mrs. Henrie. She’s very good at both. It’s a great opportunity for me to learn from such a great teacher.

Analyze student learning:

Lesson 1 Focus Student Work Samples

Wallace’s Group

Mindy’s Group

For these group experiments I allowed the students to choose their own groups, so both Wallace and Mindy were in groups with their friends. Their data sheets were both filled out
completely while most other groups didn’t get through all of the materials or forgot to fill out their data sheet. I was impressed with Mindy’s group coming up with a scale to predict and measure the level of static charge for each material. I find it interesting that their predictions are quite close to what they observed. Both groups did very well with this first participation exercise.

Based on these student work samples, I would modify the first lesson by giving more explicit instructions and even modeling how to fill out the data sheet. I would also organize groups ahead of time to make the transition to groups smoother so they would have more time to complete the data sheet and to include more details.

**Lesson 2 Focus Student Work Samples**

**Wallace**

![Wallace's Static Electricity Sheet]

**Mindy**

![Mindy's Static Electricity Sheet]

Lesson 2 happened a week after the first lesson, so I reviewed the slides from the first lesson before handing out the quiz. Wallace didn’t do so well with the matching, but I was happy to see that he did understand the concept of opposites attracting and likes repelling. His score of 1.5 (out of 3) was right where I would expect him to be based on his previous science scores. Mindy did really well with a score of 2.5 (out of 3), only missing two that she got mixed up.
I was quite disappointed but not surprised to see that most of the groups didn’t complete their data sheets for this electroscope experiment. This experiment was a bit more complex and the group was very distracted and noisy while I was trying to give instructions for the electroscope. On top of that, the transition to groups didn’t go well and the electroscopes turned out to be very hard to show the results that they were instructed to measure. These data sheets above are representative of the rest of the class. As I walked around I tried to help get the electroscopes working for the groups that were struggling and I watched to make sure that everyone was participating and trying to help. We ran out of time, so I collected the data sheets and we put everything away. I decided to give everyone equal participation points for making the attempt.

Based on these student work samples, I would modify this lesson by trying to simplify the electroscope experiment. I might even just have one classroom electroscope and have volunteers come up and try different materials, making predictions and measurements and recording them as a class. This would probably be more effective than the failed attempt at each group trying to get their own electroscope to work.
Lesson 3 Focus Student Work Samples

Wallace

This is the rubric I wrote for the graphic organizer and myth writing:
3 - original idea, myth explains a natural event, at least two paragraphs in the story, every section of the graphic organizer is filled out
2 - natural event is explained, most of the sections of G.O. are complete
1 - natural event is explained, at least 2 sections are filled out

While Wallace’s graphic organizer is missing the details and original content I was hoping for, he was able to turn his ideas into a fun little story and he did attempt to explain lightning in his story. I gave him a score of 2.5.
Mindy’s graphic organizer is lacking details and her story, while humorous, seems like she didn’t put much effort into it. I gave her a 2 for this assignment. I found it interesting that this creative assignment brought out William’s strengths while Mindy’s strengths were more apparent with the quiz and the data sheets. This showed me how important it is to measure students progress with different types of assignments.

Based on these student work samples, I would modify this lesson by giving more explicit instructions and expectations for both the graphic organizer and the myth writing. I would also give more time for both.
Lesson 4 Student Work Samples

Mindy

For the fourth and final lesson I asked the students to fill out this notetaking guide. I forgot to instruct the students to start until I was halfway through my slides. As a result most of them did not have enough time to complete all four sections.

While Mindy did not fill out every section, that’s not really her fault, so I am just grading the sections that she did complete. Her note taking section is full of lots of bits of information and shows me that she was paying attention during the presentation. Her picture, while related to the subject matter, doesn’t reveal any deeper understanding. I gave her a combined score of 2.5.

Wallace was absent on the day of this lesson, so I picked out one of the better examples of a student who followed the instructions and seemed to understand the lesson. I especially liked this student’s ‘I wonder’ question “I wonder what would happen if you switched the silk for hemp string.” This tells me that the student was synthesizing information from all of the lessons and thinking like a scientist. I gave this student a 3.

Based on these student work samples and the way the lesson went, I would modify this lesson first of all by not forgetting to give instructions about the notetaking guide. I would also try to get more engagement and discussion during the lesson to reach a deeper level of understanding in the students. I would also make sure there is more time at the end of the lesson for partners to share what they learned and discussed with the class.