Title
Deaf Scientists in the Making: Developing a Bilingual Understanding of the Scientific Method

Author
Rizzo, Isabella Rose

Publication Date
2023

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA SAN DIEGO

Deaf Scientists in the Making: Developing a Bilingual Understanding of the Scientific Method

A Thesis submitted in partial satisfaction of the requirements
for the degree Master of Arts

in

Teaching and Learning: Bilingual Education (ASL - English)

by

Isabella Rose Rizzo

Committee in charge:

Professor Gabrielle Jones, Chair
Professor Chris Halter
Professor Christoforos Mamas

2023

The Thesis of Isabella Rose Rizzo is approved, and it is acceptable in quality and form for publication on microfilm and electronically.

University of California San Diego

2023

DEDICATION

For people who believe that with adaptability comes opportunity.

During this program there were a lot of times when it was necessary to adapt or modify to best fit the needs for success. Through it all even with the little mishaps or challenges it was still possible to find moments of opportunity to appreciate the chance to try at all. These past two years are a testament to my ability to adapt and with it I come out of this program ready for the opportunity to teach and support students with confidence in my abilities and knowing that I have what it takes to be what my students will need.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT OF THE THESIS

Deaf Scientists in the Making: Developing a Bilingual Understanding of the Scientific Method

by

Isabella Rose Rizzo

Master of Arts in Teaching and Learning: Bilingual Education (ASL - English)

University of California San Diego, 2023

Professor Gabrielle Jones, Chair

This bilingual ASL/English curriculum addresses the concepts of the Scientific Method in preparation for students to complete a Science Fair project. Eleven lessons are carried out with a multi-modal hands-on approach. The first seven lessons focus on the steps and execution of the

scientific method process. The last four lessons assist with developing the skills for presenting their findings and displaying their work in both ASL and English. The goals of the curriculum is to utilize academic English and American sign language, identify steps of the scientific method, and apply these steps to independent scientific discovery. This is implemented during a ten week placement at a Deaf residential school evaluating student's work through classroom observation, signed class discussions, written worksheets, and science fair projects in both languages.

I. INTRODUCTION

Science class is where the big questions get answered … or at least a place to understand the process of discovering those revelations that help to propel society forward. Throughout education, new curriculums are developed with theories to back the practices. With these changes and new research, schools have moved from a lecture style instruction to a more collaborative and hands-on approach for learning and teaching (Wang, 2011). Especially in science, there are so many different experiments and questions to be asked and answered. It is our job as teachers to provide an environment that encourages this learning experience. When it comes to science education and Deaf students, they deserve access to a curriculum that is Deaf-centric and meant for them to experience and engage fully with big questions in their native language working to get to those tough answers. Instead, teachers are constantly working to modify a curriculum with a hearing-centric approach to make it work for the needs of the students that they are currently teaching. This tactic can become overwhelming and seem like an impossible task if not provided enough time which in many cases there is an abundance of other situations that can take precedence.

During my first year of student teaching I was placed in a Transitional Kindergarten/Kindergarten classroom. I loved learning about different techniques and tools for each subject; however, science in the classroom was one that was not explored too often. The few times I did experience a science activity, there was not a lot of deep understanding into the reasons why for the scientific phenomenon. Instead, science was seen as a fun activity to explore and have a hands-on experience, following along to the guided steps in the procedure. While students were engaged in the experience, it is also important to allow for self-discovery, language development, and deeper meaning.

In the general education graduate classes for the multiple subject credential, a few did explain how to teach science. The lessons and resources provided had insight and helpful tactics but were not always Deaf friendly for my students. I learned about educational resources like Mystery Science which teaches content knowledge with support from a video for students to watch and activities for students to gain hands-on exposure to better grasp concepts. This resource was not always the most accessible learning tool for my Deaf students, although the program does provide captions for the videos. For example, my students at the time were in Kindergarten and unable to fully grasp the concepts due to their developing reading levels and language delays. Typically, it was necessary to frontload the material, provide more context to better understand the concepts, and allow for many different kinds of visual support such as images, flashcards, and anchor charts. This led to needing to extensively modify the curriculum outline to better support my students and guide a meaningful learning experience for them to explore and make connections with what they know. For example, the co-curricular unit that was the focus for the month was regarding food and nutrition, which is not an option at the Kindergarten level. Instead I utilized a mini-lesson that discussed chocolate and focused on the concept of food pairs. Reflecting upon these lessons and teaching moments, I hope to make modifications and take into consideration the standards in place for the grade level in order to develop an outline for a useful curriculum in support of students and their interests in regard to science.

This curriculum will have a Deaf-centric lens academically and culturally making it accessible to students through a bilingual approach. The curriculum will delve into the Scientific Method highlighting the California NGSS Disciplinary Core Ideas for third to fifth grade. It will incorporate a multimodal approach addressing science standards 3-5-ETS1-1, 3-5-ETS1-2, and

5-ETS1-3 in a way that is more accessible for Deaf students to fully understand and discuss the content of the lesson.

The curriculum is entitled: "Deaf Scientists in the Making: Developing a Bilingual Understanding of the Scientific Method" which has three goals for students to work on accomplishing.

1. Utilize American Sign Language and Academic English through class discussion and activities to record scientific discoveries in accordance with inquiries and occurrences related to the scientific method practices.

2. Identify and explain the steps of the scientific method such as developing a question, creating a hypothesis, making a plan, recording results, and concluding findings through a class model.

3. Apply scientific method practices to their own independent scientific inquiry by answering questions and following the scientific method steps.

This structure and these lessons will help learn the scientific method steps first as a class; then inspire students to explore, record their inquiries, and understand the importance of research to find answers to their own questions. It is important that students feel like the material is relatable and attainable to understand. With this structure, the students will not just be lectured to or shown videos to provide explanations, but rather gain first-hand experience making their own connections to the concepts.

II. JUSTIFICATION OF NEED

When it comes to science and Deaf education, my experience is limited. In the classroom I have used a lot of different tools to support learners; books, videos, hands-on learning, art, worksheets, and fine/gross motor activities, all of which have had success in supporting students' understanding. However, when it comes to science specifically, I have struggled to teach in a way that truly engages a student and leads to deeper understanding. During my prior placements, it seemed as though science was an afterthought; something for students to enjoy, but not necessarily work on developing a deeper understanding. This style can work well in some situations but should not be the only type of lesson taught for learning about science. This is what drives me to create and improve science experiences for my students because, personally, I find science to be interesting and raise so many questions that I want to explore and understand; and I want my students to have that same opportunity.

Science education in the classroom needs to shift to better fit the needs of the student population that is Deaf and Hard of Hearing. Through a survey sent to teachers that teach science to deaf students in both residential and mainstream programs Lang and Propp developed recommendations to support student success (Lang & Propp, 1982). These suggestions show the importance of language-controlled science lessons and incorporating more career-based education concepts with additional support from hands-on learning experiences (Lang & Propp, 1982). These approaches are incorporated within my proposed curriculum. Further integration of these ideas with a language rich environment and connections to the content will develop deeper understanding and personal inquiry into topics leading students to have a desire to learn and grow with these concepts.

Science should be taught with full access to our students. Due to the students' varied language development when entering school, the subjects have a tendency to be heavily focused on language access and skill development rather than learning about the scientific method and answering the *big* questions (Kurz, 2015). Instead, there needs to be a shift that "builds knowledge on top of teaching language, cognitive, and developmental skills" with added emphasis on learning through experiences (Kurz, 2015). More recently studies have shown that lectures and videos typically take up over half the instruction time, and activity-based learning is only 13% with reading and writing about science totaling 21% (Raven & Whitman, 2019). In addition, activity-based learning is commonly focused on an arts and crafts component that follows an outlined and structured format with little room for creativity (Raven & Whitman, 2019). These methods place limits on expectations of a deeper insight to a topic, with an overall acceptance of completion rather than student driven work. Instead, it is important to partake in classroom discussion to enhance language, talk about the concepts, and work to develop understanding through inquiry as a collaborative process.

It is also important to consider the methods in which we teach and the language we expose them to: using direct ASL communication, using an interpreter, using closed caption, images, etc. In a study of direct versus interpreted science lessons, it was discovered that students experiencing a direct science lesson in ASL have greater understanding of the material than those that use an interpreter (Kurz, 2015). It is important to recognize that the curriculum being used in the classroom may have a hearing-centric approach in that it focuses solely on English which may not be the most accessible language to Deaf students. Therefore by providing ASL exposure with accommodations or adjustments made for creating a better learning environment it allows students to maximize their expressive skills in their preferred language. To provide the best learning environment for Deaf students, there will need to be a development of understanding and success with the material which is attainable with using a variety of tools for a Deaf centric approach. These tools include visual aids, frontloading techniques, repetition, support in both languages, and an environment where students feel comfortable and willing to share their insights. This can look different for all students but providing a more visual, student based, and tailored learning experience will help drive the interest of students to understand the curriculum being taught.

There is a program that I have become familiar with, known as Mystery Science. The structure for this program is to use an English video with visual images to support understanding and an added support option for closed captioning is available. While this feature provides accessibility, it is still not fully accessible to all students. For example, depending on the student's grade and their language development, it might not be at the same level for the captioning to be supportive of the content learning. In addition, using videos as the main method to teach can create a more lecture-like style and a cookie cutter-based learning environment. There is an option for further engagement through activities however it can be difficult to make the connections due to the inability to access the content in the video. This program is a great option in theory, but for Deaf students specifically, it still needs accommodations to best fit their needs. These accommodations may look like a signed interpretation of the video; therefore providing full access. Another accommodation that can be made is to have mini-lessons beforehand to better introduce and provide context to the material that will be focused on learning more about during the class session.

With science, the opportunity to create hands-on active learning experiences without the steps and guidelines to follow for the directed instruction outcome leads to a more student-centered approach (McIntosh, 1994). This perspective helps pique their interest in the concepts that are being taught. By giving students the opportunity to experience and explore their understanding of the world around them, they too can be engaged and excited for the lesson. As the teacher, it is important to “promote curiosity through hands-on experiences, inventiveness through open-ended investigations, critical thinking through use of accepted standards, and persistence through pupil interests” (McIntosh, 1994). Crafting a bilingual science curriculum with this lens will lead to students understanding of scientific concepts while further developing their understanding in language development concepts.

III. DISCUSSION OF MULTILINGUAL APPROACH AND RATIONALE

Bilingual/multilingual education is crucial for Deaf students in understanding the world around them. Most students are born to hearing parents and therefore may not have a true grasp of language until their school years. The best way for language development to thrive is through a multilingual multicultural approach allowing access to languages and cultures, typically: English/American Sign Language and Deaf /Hearing. It is important to recognize that by "developing a threshold in one language [it] can aid [in] the attainment of proficiency in another language" in this case ASL and English (Humphries, 2013). In addition, it is accepting students at their present levels and working collaboratively among peers and educators to provide access to the curriculum being taught in the classroom and greater surrounding community.

By addressing the multilingual nature of the child's home and social environment we can "promote the benefits that can be gained by negotiating meaning and sharing knowledge" (Humphries, 2013). Incorporating their identities into their learning environment will support their own identity development and connections to their community. In addition, bring their funds of knowledge to the classroom which enhances an exchange of cultures/languages and identities (Volman & 't Gilde, 2020). Utilizing language and making connections with the world will lead to a more accessible and attainable learning environment and overall, "children [will remain] powerfully resilient and will attempt to communicate within even the most meager linguistic ecology" (Singleton & Meier, 2020). Therefore it is our jobs as educators to support their discovery and understanding. There are various considerations that lead me to adopt this approach in my future classroom when educating these students and that is due to the varying class structures I have seen throughout my experiences in education. I want to make sure that a student can connect with the material, express their ideas, and find support in peers, educators, and mentors in their community. Furthermore, taking the time to reflect on the research, pedagogy, and socio-cultural evidence that supports this educational approach and practice.

1. Research-Based Approach

There have been many different studies on the bilingual/multilingual approach to education for Deaf students. There is a study experienced at one school's program that addresses the longevity of the model and the effects on students' long term academic development. The results applying to reading levels highlights that 41% of the study group participants were average or more after at least 4 years in a bilingual model with ASL and English (Lang, 2013). In regard to mathematics and this model, 55% of the students with 4 years of exposure were also average or more after 4 years using the bilingual framework (Lang, 2013). For this approach it takes time, but the results are true and supportive of this bilingual approach and can be transferred to other school subjects such as science. It is important to have this practice in place to allow students an accessible approach in both signed and written language and provide support in developing both cultures and the norms that follow.

The teaching strategies utilized within the classroom are backed with research to support the students and their learning experiences. There are many different approaches to support a concurrent use of language in the classroom. This can look like purposeful concurrent use, preview-view-review, translation, and translanguaging. In addition, science education can be cross-curricular with other learning practices such as reading, writing, and signing. Lastly, the research-based practice of process-oriented learning is a student structured experience to guide the understanding of concepts.

Concurrent use of two languages is not simultaneous communication or sim-com instead it is intentional switches between the two languages providing support for students and their immediate understanding. Purposeful concurrent use is described as responsible code-switching; emphasizing concepts and targeting vocabulary to give an overview of a topic (Garate, 2012). There is use for both languages to give added support and lead to better understanding. With the technique Preview-View-Review teachers introduce in the dominant language, teach in the developing language, and go over the concepts to solidify the takeaways in the first language (Garate, 2012). These methods can be interchangeably used but should stay consistent throughout the individual lesson to provide clarity and practice with both languages. Utilizing the practice of translation is commonly seen with the practice of read-alouds with English text to ASL and helps provide both meaning and form (Garate, 2012). A concern that can happen with this approach is students' dependency on the teacher providing the translation and therefore losing the desire to develop these skills on their own. The last practice of concurrent use is known as translanguaging which allows for the presentation of a subject in one language and wanting the product presented in another language (Garate, 2012). This practice relies on students having a strong foundation in both languages and the ability to express these ideas.

Incorporating writing tasks into a science curriculum allows students the opportunity to create their understanding of new concepts and develop interests with scientific inquiry (Lang and Albertini, 2001). Utilizing this practice helps to gain relevant knowledge, reflect on what has been learned, and reconfigure the ideas and experiences. It is a way to create a more student-led learning environment that is both a hands-on and a minds-on approach. With hands-on learning students get to do and participate in an activity. Another perspective of this approach is that it can be seen as a more step-by-step approach. Therefore, it is crucial to work on combining the practice with a minds-on approach. With this kind of added approach there is another level of reflection with questions and working to actively problem solve the situation presenting itself (McIntosh, 1994). Combining practices and subjects such as science and writing provide more exposure and understanding for both subjects and furthers student development.

Another research-based practice is process-oriented teaching. This works alongside the student's frame of reference and the academic expectations (McIntosh, 1994). This approach is to provide a content-based learning environment while also developing the language skills in a way that furthers understanding in multiple subject areas. A big concern in a Deaf education classroom is the development of students' language skills due to the commonality of students experiencing very little language outside of the classroom (Andrews, 2017). Therefore, subject based curriculum can be second to the development of these skills. By utilizing this process-oriented approach with a scientific inquiry lens, it creates an environment to question and dig deeper looking for evidence to explain the scientific phenomenon (Raven & Whitman, 2019). Scientific inquiry is student led and supports their engagement and excitement towards understanding concepts that otherwise might seem repetitive and mundane.

Relating these research-based practices back to my approach for this science curriculum, it is important to provide visual structure and practice that can be consistent with deeper learning. Developing these units with a bilingual lens will create a more successful understanding of the material. Utilizing the practice of concurrent use through the teaching style of Preview-View-Review students will learn vocabulary in both languages and grasp concepts utilizing academic language in ASL and English. The ultimate goal will be to have students gain translanguaging experience of some kind; though it is more commonly utilized in middle and high school grade levels (Garate, 2012). Furthermore, utilizing writing during science allows for a more holistic approach to learning and developing deeper understandings of the content.

2. Pedagogical Approach

There are many different pedagogical approaches that are in practice to support a Deaf learner's understanding of the curriculum and world around them. These can include methods such as chaining, scientific inquiry, active learning, visual organizers, use of technology, and utilizing specialized content vocabulary. These have been used in classrooms for different areas of need, with my curriculum in mind my goal is to have these approaches guide my teaching style when working with students.

Chaining is a technique to support students in understanding new concepts or vocabulary. The process connects ASL signs, written word, or pictures, and fingerspelling; ultimately presenting the same concept or vocabulary in different ways (Humphries & MacDougall, 2000). The goal for this practice is to emphasize similarities and make connections between the different modes. This is good practice especially for science terminology which does not commonly have ASL signs for the vocabulary. By using this technique, it allows students to make connections and figure out how to academically share insights based on the topic in a way that works for the student. For students to properly experience chaining in the classroom the teacher needs to be a skilled communicator and have a solid understanding of the concepts being taught. Moving forward with the development of this curriculum there will be collaboration among teachers that have experience covering these topics. It is crucial to make sure that there is clear understanding to be able to utilize chaining when introducing new concepts in the classroom.

Scientific inquiry has changed the approach to teaching science. This method is using interrelated processes to pose questions and investigate scientific phenomena to gain understanding (Wang, 2011). This style of inquiry learning is taught on a spectrum; on one end it is completely student driven and the other is the traditional classroom experience. Filling in the methods between the extremes is a collaborative process between the teacher and students with more structure and specific pieces to fill in with inquiry (Wang, 2011). Students get the opportunity to have concrete science experiments and work to understand in a new way that encourages out of the box thinking. Inquiry science is looking for students to make connections and develop deeper understanding conceptually focusing on the importance of knowing the how of the world.

Active learning is also known as minds-on learning and works to cognitively engage students in their learning experience. With this practice Deaf students apply critical thinking and recall information using real-world applications and problems to solve (Easterbrooks & Stephenson, 2006). These methods have been studied and the results have led to students having improved scores with abstract categorization behavior and overall better test scores when experiencing this method over the traditional lecture method (Easterbrooks & Stephenson, 2006). By working to implement this practice into the building of my curriculum it will give students the opportunity to explore their own understanding and make connections between the content and their own experiences.

Students can make connections with support from a lot of different things, but visual components such as organizers help to see it in a way that can be more easily understood. Examples of these can be graphs, charts, or visual maps to display the content more clearly. Visual tools can help make connections and increase a student's use of vocabulary with writing

(Easterbrooks & Stephenson, 2006). These tools are helpful for Deaf learners because while students can have a solid foundation in signing; it is transient, sometimes difficult to follow along and take notes. Utilizing visual organizers presents ideas in a different way like paper or images working on connecting the signing with an idea or concept. I plan to utilize visual organizers like a K(now)W(onder)L(earn) chart to organize ideas before diving into a lesson. Another option for visual organizers is applying the scientific method to our learning experience and providing a guideline to follow while also providing students with autonomy in their learning. Finally, it is important to work alongside students to develop visuals that are understood by peers and teachers alike.

Using technology can be another approach to motivate students' learning and provide different kinds of experiences. These methods may look like captioned videos, signed videos, interactive websites, PowerPoint, etc. This technology can provide increased visual support further developing student comprehension (Easterbrooks & Stephenson, 2006). In addition, utilizing the practice of a "triad presentation allows students to view the information with a short text screen, corresponding animation explicating the text passage, and an ASL movie about the text" (Easterbrooks & Stephenson, 2006). With this practice it allows students to learn in a fully accessible environment and develop skills in both languages. It is important when developing these tools and resources to keep in mind the students' levels of understanding and adjust the presentation accordingly. For teaching this newly developed curriculum, I plan to implement a multimodal approach utilizing technology and other features to support students' learning and deeper understanding of the topic.

When learning about science there can be a variety of concepts and abstract vocabulary that is needed to be understood. A practice to better support this development of understanding is through development of specialized content vocabulary. It is important to not shy away from fingerspelling words and if needed over explaining a concept with visuals and vocabulary support. Allow for students to be included in the discussion and collaborate with peers and colleagues to find solutions to vocabulary that has no known signs, because it is a quite common situation when teaching science. Deciding and creating specialized vocabulary with input from a Deaf perspective is a crucial step as a hearing educator working with Deaf students. and presenting it consistently allows for students to increase their comprehension (Easterbrooks & Stephenson, 2006). It is the job of the educator to be a skilled communicator and role model for vocabulary. In addition, taking extra time to preload the information and develop vocabulary inspires students to retain interest in the concepts being discussed and helps to build confidence during those class discussions. Based on my experience with teaching vocabulary I have seen the benefits of vocabulary flashcards and plan to incorporate explicit science vocabulary teaching into the curriculum outline during each lesson. Furthermore, when fostering this language development with STEM terminology it is important to look through a Deaf lens, with an explicit focus to the concepts with an ASL approach rather than an English structure to explain what could become a confusing implication.

A viewpoint of dynamic bilingualism takes shape, developing different language practices to degrees depending on the practices (Garcia, 2014). With this view, language is intersectional working together to develop communication. It is important that when teaching, students have full access to the curriculum and therefore a dynamic approach that ebbs and flows with the classroom to create a system that works for the best learning experience. Students need to work with both languages and the respective tools such as imagery to support further understanding of scientific concepts and lead to deeper meaning with the content.

3. Socio-Cultural Approach

It is important that students understand and see themselves in the content that is being taught within the classroom and continue making connections to those outside in the community. Supporting a socio-cultural approach to bilingual education is providing tools and resources for students to find a sense of belonging and identity. Integrating students' cultural, personal, and prior knowledge into pedagogical practices and curriculum design support the classroom environment and students' willingness to participate (Skyer & Cochell, 2020). In order to promote this type of environment it is important to address biases and reflect on how a space is created to work together rather than against the parameters of the classroom structure.

In addition, self-esteem is important to students' understanding and development in a science classroom. There is an important part that role models play in students' learning experience. This could be in person or through stories and textbooks. Providing students with the opportunity to meet or see themselves through others like themselves helps to further understand concepts, build personal self-esteem, and encourage the possibility of a future science career (Lang, 2006). With this science curriculum on using the scientific method in exploring problems and finding solutions, it is important that these students learn about the efforts and strides made in part because of the Deaf scientists that made crucial discoveries. By collaborating with the Deaf community, we are giving the students people to look up to and connect with that can inspire them to become interested in the topics discussed in class and allow their own curiosity to propel them into their future career path.

Students learning in a bilingual bicultural framework can gain an understanding for both languages and develop skills in both English, ASL, and their other respective cultures. It is important that there is access to both, to support their development in school and around the community with both Deaf and hearing peers alike. Utilizing translanguaging skills initiates translanguaging to offer expressive development and independence with the material. In addition, allowing students the comfortability to share their writing and share their thoughts collaboratively will lead to a confidence in both the concepts and relationships being built within the classroom.

IV. REVIEW OF EXISTING CURRICULUM AND RESEARCH

While searching for existing research and curriculums related to this thesis topic, I started with the broad concepts relating to science Deaf education, hoping for some meaningful results. The overall results from the search were still too general to see correlation to the curriculum topic, focusing on simple recommendations such as visual aids and the use of sign language. I took some time to review the UCSD theses to see if there was a past curriculum implemented but came up with science curriculums relating to a different subtopic. These examples by Elena Mayer and Farrrah Kerynn Nolan had a variety of teaching strategies that can be applicable to their respective topics of the water cycle and earth science. I went back to the search engines- Google and JStor with a new mindset and adjusted the key words to terms such as scientific method, science process, unit curriculum, and elementary. As a result of these searches, I was able to find several different studies that had resulted in students' experiences with the scientific method. From these results I was able to craft my own curriculum by grasping what has previously been done successfully, where improvements can be made, and overall, how I can implement these methods to establish a supportive learning environment for students to thrive and learn.

In regard to existing science standards and the concepts related to the scientific method, the framework that teachers and curriculum developers refer back to is the Next Generation Science Standards (NGSS). These standards were adopted in 2013 and used in public education throughout the United States. This tool has eight areas of focus in scientific and engineering practices which includes: asking questions and defining problems, developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations and designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information (Bresser and Farguson, 2013). These standards provide each grade level with levels of support to guide the learning experience by applying it to the categories of science engineering practices, disciplinary core ideas, and crosscutting concepts. For engineering design there are three main aspects that are goals for students to demonstrate understanding:

3-5-ETS1-1. Define a simple design problem reflecting a need or want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet criteria and constraints of the problem.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

In addition to standards, NGSS also recommends utilizing the Engineering Design Process. The Engineering Design Process has similarities to the Scientific Method but has a slightly different approach. With this approach, start with a question or problem. The next step is to identify criterias and constraints. It is important to brainstorm ideas. Then select a design and develop a prototype model. Now the model is ready to evaluate and redesign once or as needed. When there is success, share findings with the community (Egenrieder, 2010). This model varies from the scientific method with different language and more of a science perspective. When finding a topic, it is important to allow students to take responsibility for their own curiosities and work. In order to best support this, as a teacher it is necessary to provide a few constraints to guide the learning (Egenrieder, 2010). Once provided guidelines give students a set amount of time to make their own decisions before providing more support. If students need more, provide a possible list of interesting topics for students to brainstorm and make their own. During this timeframe the teacher should shift into the role of a facilitator (Egenrieder, 2010). It is important to remain flexible and willing to work with the student on their journey of scientific inquiry. The autonomy provided to students during this time allows for identity development, establishing uniqueness, and connecting with the material (Egenrieder, 2010). As a teacher it is important to encourage these students to follow their instincts and make discoveries throughout the process, adapting and modifying as needed.

Another resource to apply to developing a curriculum for Deaf students is to take into consideration the American Sign Language Content Standards. These standards have been developed to guide the language acquisition and practice of ASL in the classroom to lead students to fluency and comprehension creating a more holistic learning environment. These standards are unique to the language and have five anchors to include viewing, published signing, discourse and presentation, language, and fingerspelling and finger-reading. The goal is to integrate these standards into the curriculum for students to feel comfortable sharing their understandings and discoveries related to the content. For connecting to the science curriculum these goals will apply:

1. Viewing Standards for Informational Text- Key Ideas and Details: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
2. Viewing Standards for Informational Text- Craft and Structure: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 4 topic or subject area.

This goal applies to understanding science terminology due to the lack of scientific signs related to the content. Many times, the content specific vocabulary is fingerspelled due to the lack of consensus about the subject matter. It is important that students understand the terminology to gain deeper learning and connect with their own experiences.

3. Standards for Published Signing- Research to Build and Present Knowledge: Conduct short research projects that build knowledge through investigation of different aspects of a topic.

4. Standards for Published Signing- Production and Distribution of Published Signing: Produce clear and coherent signing in which the development and organization are appropriate to task, purpose, and audience.

This point will be applied to students' understanding of Deaf people and their role in understanding the advances made in science. It is important that students learn about different role models and within the curriculum they will be provided the opportunity to present on their chosen person to share with the rest of the class.

5. Discourse and Presentation- Comprehension and Collaboration: Engage effectively in a range of collaborative discussions (one-on-one, in groups, teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

6. Discourse and Presentation- Presentation and Knowledge of Ideas: Add video recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.

When it comes to science, there are many different points of view and perspectives shared among peers. It is important for students to feel comfortable to share their ideas and work in collaboration to create full class understanding about these abstract scientific concepts.

7. Fingerspelling and Finger-reading- Key Ideas: Demonstrate understanding of initialized and lexicalized forms of fingerspelled words - use fingerspelling to highlight a word in presentation or discourse for emphasis.

Students will be introduced to new vocabulary in a variety of ways; in support with resources such as ASLCORE from Atomic hands that uses different tools such as images, signs, fingerspelling, and work on understanding the acronyms for these different terms. It is important that the students have clear instruction and can both understand and replicate this terminology for full understanding of the content being taught. Allowing for ample instruction and connection to the material will allow students to have a better practice with the terms and concepts that they are working on grasping. Overall, these standards in accordance with practicing ASL will develop stronger skills and support critical thinking practices with the content-based material that is being taught. Utilizing this set of ASL standards will create a more cohesive bilingual approach to the structure of how I plan my curriculum to fit the needs of the students' learning experiences.

Mystery Science is a curriculum resource that was developed in 2014 by co-founders Doug Peltz and Keith Schacht. Doug Peltz has experience working previously as a science teacher in both a middle and elementary school setting. Keith Schacht has previous experience with developing companies and has insight for teaching technology. Their approach for this resource is to orient children to the world and explain concepts in layers that allow for students to develop critical thinking and problem-solving skills. This program creates content in a more manageable approach with easy prep and classroom management tools for the teacher to utilize in an accessible built-in way. This is shown through the different units available ranging from kindergarten to fifth grade. Within the unit is a series of lessons providing a video step by step explanation to show to students. There are lists for what is needed to do the activity along with another video explanation. These units include an overview with standards, planning guide, materials needed, assessments, and opportunities for further instruction with more reading, activities, or different kinds of assessments. There are also some lessons that are not a complete unit but rather an opportunity to learn about a specific topic or start the learning experience. This website is a resource hub with different tools; but with a hearing-centric focus there are adjustments and accommodations that can be implemented to better support Deaf and Hard of Hearing students.

Specifically, within the Mystery Science curriculum there is one lesson working to answer the overarching question: how do scientists know so much? This one lesson aligns with the NGSS standards and has a variety of modifications for the needs of students in elementary ranging from K-2 and 3-5. There is an exploration, hands-on activity, and a wrap up. It is presented as a video with imagery and video clips with closed captions as an option. Then there are a few questions to consider and share as a class or individually. Next it leads into an activity that relates to the lesson. In addition, the program also includes opportunities and examples of how to extend the lesson with other activities, assessments, and videos to support understanding. This can be supplemental and make the concept more understandable and taught over the course of several days, creating a deeper understanding. The website provides tools for the teacher to prep and have ready for students. Applying this program in Deaf education calls for some accommodations and adaptations to better suit the needs of the students because our learners may need more than closed captioning to meet their needs. As I develop a more Deaf-centric curriculum I plan to utilize some aspects of Mystery Science. It is crucial to incorporate hands-on learning and the fundamental importance of fostering student curiosity related to science concepts. In order to achieve this it will mean incorporating the practice of a triad approach to give students access to the information in three different ways: signed ASL, written English, and diagrams or other imagery. In addition, fostering curiosity should come from the students and their peers within the classroom; working on finding a question among peers will lead to more desire of finding deeper understanding because it is coming from their friends and classmates.

A Deaf centric curriculum that was used as a general approach to science was the scientific approach to problem solving. The importance of questioning the world around us and figuring out what, where, why, and how of things (Owsley, 1962). This method uses a three-step teaching pattern with the goal of exploration, fact-finding, and assimilation for understanding. The main goal is to present students with a problem in a familiar setting through related experiences that they may have with the concept. The next step is to work to find the answers through observation and experimentation either individually or collaboratively. Once this is completed it leads to discussion and further thinking of the concept (Owsley, 1962). This outline is for the general approach to teaching science in the Deaf classroom and can be applied to any scientific learning experience. Overall, it is working to broaden the student's understanding of the world around them. It is crucial to consider these tools when developing the overall learning experience of Deaf students. With the development of my curriculum, it is important to give them a situation with a problem-solving approach to work through and experience in order to introduce an idea and help them to look for deeper understanding and develop questions to lead to further discovery.

There was a design from the Oregon Center for Applied Science (ORCAS) science programs for DHH students for a multimedia science program in a middle school and high school setting. The results were published in 2003. This program was guided with the principles of organizing concepts with a “big ideas” approach. It was focusing on organizing information into larger understandable content and using the knowledge uncovered to solve problems and develop new understandings of concepts (Lang & Steely 2003). The program was composed of sequenced lessons, considerate text, graphic organizers, animations, and questioning. This was presented as a triad with a short text screen, corresponding animation supporting the text, and an ASL version of the written text (Lang & Steely, 2003). Students were shown each part with the ability to see the content again as needed, completing the program individually and at their own pace. This program had several topics that covered multiple different types of sciences . Each lesson was 20 minutes with independent work lasting about 10-15 mins. This style of learning resulted in an improved understanding of the concepts being taught compared to the traditional lecture teaching. This curriculum supports the importance of a multi-modal approach allowing for students to grasp concepts using different techniques such as the computer, languages used, and the importance of animation or different imagery. Overall, this ORCAS program is insight into an online instruction method that wielded successful learning results. This insight will benefit the development of my curriculum with the plans to create a triad approach; however, I believe it important to create a more holistic classroom teaching environment and involve the practice of hands-on learning for students to make connections to the concepts with everyday experiences. In addition to these hands-on learning experiences it is important to build that independence and student accountability for their own work.

An approach to teaching the Scientific Method highlights the importance of utilizing this framework to teach skills that can be applied in many different learning environments. The method should be used as a guideline such as an outline is used to write an essay. This tool allows for younger students to learn the “basic principles of science… [and see] the value of the scientific planning process and experience itself” (Watson & James, 2004). It is also important to adjust with the new ideas and modify the scientific method to better support critical thinking practices. With exposure to this tool students can develop their logical thinking skills and by the time they are in upper elementary grades have the foundation and curiosity to find answers using this model (Watson & James, 2004). Utilizing a universal tool such as the scientific method allows for deeper understanding and a more enriched learning environment due to the strong familiarity and experiences previously had in the classroom.

Overall, as seen in these past curriculum outlines there are many different approaches to teaching science in Deaf education that specifically cover the concepts of solar systems. Utilizing the previous programs, I hope to expand and take some of these practices and implement them to better support student learning. For my curriculum entitled “Scientists in the Making: Developing a Bilingual Understanding of the Scientific Method” I intend to take my familiarity with past curriculums such as the Mystery Science curriculum, and modify while expanding on key concepts to create a more well-rounded curriculum such as teaching about different Deaf people and their connection to the field of study. There is also a benefit to teach with a more multimodal approach as expressed in the ORCAS program using the triad method. By merging the two concepts it can create a more appropriate learning environment for students to make connections and their own discoveries about the content leading to deeper critical thinking and interest in the topics. In addition, as mentioned by McIntosh, it is important that students can have hands on and minds on experience with the material to truly understand the scientific concepts and to be able to envision the relationships between complex ideas. Utilizing the approach of problem solving and developing these experiments can support students' learning practices and make connections to abstract processes. In addition, it is important that students have role models and feel that they have a well-rounded understanding, with activities like the sound lab workshop it can create a variety of different learning experiences that further drive curiosity and scientific inquiry.

V. KEY LEARNING THEORIES

There are many different approaches to classroom teaching. Something to consider is that "by the time students complete high school, the student has spent 11,000 hours in the classroom and approximately 65,000 hours outside it" (Neathery, 1998). It is important that we provide students with the tools in the classroom to be able to apply it to the world around them to be able to understand their surroundings better. While developing this curriculum it was important to me that it has a student-centered focus and meets their needs with strategies that have been proven to work for them. The key learning theories that are highlighted within this curriculum include Experiential Learning Theory, Constructivism Learning Theory, and the Multimodal Learning Theory. These theories emphasize student understanding and allow the teacher to be a guide in the discussions taking place rather than a lecturer providing factual information to be memorized.

Experiential learning theory was developed by John Dewey as a new approach to learning different from the traditional presentation and memorization practices. The theory is based on the view that "everything occurs within a social environment" and therefore develops through interaction and constructs knowledge (Grady, 2003). It starts with an action and basic information, leading into deeper understanding through activity, and resulting in reflection (Coil, 2005). Through social learning and building of relationships the educating process takes shape evolving with the environment. With this theory, students' experiences are largely considered and guide the learning process. This approach gives the teacher a role as a facilitator guiding through knowledge of both content and the intended participants (Grady, 2003). In regard to science specifically, Dewey advocates for scientific information to be taught with connection to everyday occurrences to support students' understanding of the world at large. This theory is present in practices like problem-based learning (PBL) that provides students with problems as a way to introduce a topic and figure out complex problems before having that defined knowledge base (Drake & Long, 2009). This type of theory put into practice addresses concepts with engagement, inquiry/investigation, problem resolution, and debriefing. The approach is successful when building off of students' interests and their self-discovery of the concepts, when there is intrinsic motivation, it is more receptive to a better understanding (Drake & Long, 2009). The overarching goals of this theory can relate to real life experiences with critical thinking, problem solving skills, asking good questions, finding information, and working collaboratively (Drake & Long, 2009). Utilizing this approach within my curriculum will provide students to learn more about the topic of discussion in a way that they find interesting. Students should be able to have a space to reflect on their own experiences and how that connects to the content and with this theory there is time outlined to make those connections and further the conversation. I hope to tie in Deaf culture and role models into the curriculum and I think with experiential learning there is opportunity for the students to find a topic that interests them and work on informing their classmates about the interest in a way that best fits their learning style.

Multimodal learning theory is developed by Gunther Kress. This theory explains the importance of students being presented with different modes to represent content knowledge both verbal and non-verbal (Moreno & Mayer, 2007). Students have different learning styles to best fit their needs and it is important as a teacher to provide the information as accessible as possible. In addition to being accessible the content should also be interactive and engage with the student to support their learning and overall understanding with a full sensory and expressive experience (Kim, 2015). When developing a multimodal approach, it is important to address the teaching practices with a knowledge construction view and provide the tools for the student to build a mental representation based on prior understanding of the concepts (Moreno & Mayer, 2007). When teaching with this approach it is crucial to not overload the memory and instead utilize a combination of essential and generative processing to create meaningful learning outcomes. This means with cognitive processes work to take in new information with working memory and structurally organize with prior knowledge representations. Through this multimodal modeling approach students are able to understand reasoning with multiple approaches. Applying this concept to science the theory provides students an “active role in constructing and manipulating models and considering alternatives” (Kim, 2015). With different tools such as 2D and 3D models students can gain hands-on experiences to figure out abstract concepts. This approach allows students to understand the meaning making process and develop further their ability to learn and explain phenomena in different ways. With these discoveries students can apply the methods to practicing their critical thinking and inquiry skills while enhancing motivation and interest in conceptual learning (Kim, 2015). Overall, this theory addresses the integration of individuals and their environment for learning concepts using different types of tools. This theory and practice will fit in with the development of my curriculum by supporting the needs of students with different learning styles. There will be incorporation of hands-on, minds-on activities with different materials that provide opportunity for inquiry, discovery, and reflection. Lessons will be using computer presentations with multiple supports such as text, ASL videos, and images. Overall, the curriculum will use multiple approaches for lessons to be able to support students' understanding of the concepts.

Constructivism learning theory was developed by Jean Piaget. This theory is an explanation about learning and a set of teaching practices focusing on meaning making and knowledge construction (Yilmaz, 2008). This style is not passive but rather an active approach to interpret ideas. Students while learning something new draw on their prior knowledge to and experience disequilibrium, working to answer questions and ideas to create a sense of equilibrium through inquiry-based learning practices (Yilmaz, 2008). With this approach learning is active and adaptive everchanging to adjust to the information uncovered. It has a student focused idea recognizing the tools of social interaction to develop understanding for all students through collaboration. There are a few guiding principles to support students learning with a constructivist lens. "Learning is not the result of development; learning is development" allowing students the space to ask their own questions and be inspired to find the answers both collaboratively and individually (Yilmaz, 2008). This approach gives students their power and practice to think critically and become comfortable with not knowing the answers. It opens learning to an inquiry style of discovery which will lead to a more independent learner. This theory is present in collaborative practices such as cooperative learning, project or problem-based learning, and discovery-oriented approaches (Applefield, 2000). This theory applies to how the curriculum will incorporate a more holistic approach to the teachings. Students will be provided a question related to the topic being discussed and answer it as we work through the lesson. It is important that students are engaged and excited about learning while being provided the space to share insights or ideas. With the practice of inquiry, it will encourage students to analyze and develop new processes for addressing their own learning.

VI. DESCRIPTION OF CURRICULUM

This curriculum- "Scientists in the Making: Developing a Bilingual Understanding of the Scientific Method" works in support of the Amplify Science Curriculum currently being used in the placement classroom. At the beginning of the year students experienced a lab safety unit to establish expectations for activity based instruction. This curriculum utilizes that frontloading experience to better enable student participation with this series of lessons. This science curriculum is developed over the course of two units, totaling eleven lessons. The lessons will allow students the opportunity to apply the scientific method and critical thinking practices as a class, small group, and at the individual level.

Taking a closer look at how the curriculum breaks down, students will be pre-assessed with a worksheet to answer questions related to their own enjoyment with science, the scientific method, and how scientists use it. The overarching approach is a problem-based learning experience for students to discover and guide the learning methods. For each lesson about a step of the method the structure starts with a quick review of what has been covered, introducing a new step in the method, practice identifying the criteria of the method, and application to their own project. First, we need to highlight a component of the scientific method with a brief student-led discussion, show a presentation to follow-up and provide further clarification for better student engagement with the material. Overall, it is important to create a solid science foundation then work on applying the new skill in several different settings with peers.

To start Unit 1, we introduce an overarching concept of the scientific method working with students to gain experience and identify the preparation steps of the scientific method. Throughout Unit 1, we are working to build up student's knowledge and experience that will continue to be built upon throughout the curriculum. Unit 1 covers each individual step within the scientific method- asking a question, creating a hypothesis, writing a procedure, gathering materials, experiments, collecting data, summary, and reevaluation. With each step discussed at length it is then ready for unit 2 to structure the execution of information for others to see and experience.

Table 1: Unit 1 Overview

Lesson Title	Essential Question	Understanding	Content Objective
Lesson 1: What is the Scientific Method?	What is the scientific method?	Science is present in everything we do.	Students will brainstorm the work of a scientist and identify the components of the scientific method based on prior knowledge and visual support during class discussion and self reflection practices.
Lesson 2: STEAM Activity- Let's Try it Out!	Is the scientific method linear?	Searching for answers in the world around us.	Students will follow the scientific method process using STEAM tools and pre-prepared materials pointing out each aspect of the scientific method.
Lesson 3: Question- Is it Testable?	What makes a good question?	The scientific method guides the learning experience.	Students will identify the criteria needed to create a

Table 1: Unit 1 Overview Continued

			question for the scientific method. Students will differentiate between good and bad types of questions.
Lesson 4: Hypothesis Let's Make a Prediction!	What makes a scientific hypothesis?	Searching for answers in the world around us.	Students will identify the criteria needed to create a hypothesis for the scientific method. Students will differentiate between good and bad types of hypotheses and explain their reasoning.
Lesson 5: Procedure and Materials- Clear Instructions are Important!	Is the scientific method linear? How do you plan an experiment?	The scientific method guides the learning experiences.	Students will identify the criteria needed to create a materials list and procedures for the scientific method. Students will discuss the difference between instructions and word choice.
Lesson 6: Experiment and Data Collection- Let's Put it Into Action!	How do you plan an experiment? What/How do you measure results?	Searching for answers in the world around us.	Students will identify the purpose of an experiment and the importance of data collection. Students will participate in a more

Table 1: Unit 1 Overview Continued

			fully developed scientific experiment and collect data.
Lesson 7: Summarize and Reevaluate- Share it!	What is the scientific method?	Science is present in everything we do.	Students will identify the purpose of summarizing findings and re evaluating their work. Students will continue to use the previous science experiment sample to practice each step of the process

During Unit 2, students will learn about the steps to take in order to carry out the sharing of findings- creating a display board, signing their explanation about the project, showing samples of their experience among peers, teachers, and the growing school community. In addition, students will work on their presentation skills, both with visual representation and language expression. In order to wrap up Unit 2 students will have an opportunity to present their findings with a science fair for their school and community to learn about their curiosities.

Overall this curriculum works to develop science specific skills in alliance with life skills that inspire students to think critically and pursue their interests. This curriculum has several goals that will be adopted and reviewed throughout the course of the lessons.

Table 2: Unit 2 Overview

Lesson Title	Essential Question	Understanding	Content Objective
Lesson 8: Display Board Making- Show it Off!	What is the scientific method? Is the scientific method linear?	The scientific method guides the learning experience.	Students will create their own display boards for their science fair projects. Students will follow the guidelines and instructions for set up.
Lesson 9: Science Fair Presentation Videos- Access for All!	Is the scientific method linear?	The scientific method guides the learning experience.	Students will practice their presentation for the science fair. Students will record their explanation of their project and create a QR code.
Lesson 10: Science Fair Day- Sharing with our School!	Is the scientific method linear?	Searching for answers in the world around us.	Students will critique a peer's work using a rubric. Students will share their insights of scientific discovery to the school community.
Lesson 11: Post-Assessment - Retention is Key!	What is a scientific experiment?	Science is present in everything we do.	Students will reflect on their experience with the unit and write/sign about the concepts discussed throughout it.

VII. EVALUATION PLAN

Throughout the curriculum, students will work on accomplishing proficiency related to academic language, science, and critical thinking. The goals for the curriculum are listed below:

1. Utilize American Sign Language and Academic English through class discussion and activities to record scientific discoveries in accordance with inquiries and occurrences related to the scientific method practices.

2. Identify the steps of the scientific method such as developing a question, creating a hypothesis, making a plan, recording results, and concluding findings.

3. Apply scientific method practices and students will learn to answer their own independent scientific inquiry.

1. Anecdotes and Teacher Observations

In order to track students' ASL academic language development students will participate in several activities with discussions. Students will be evaluated based on observations from class participation. This will be recorded using a class list checklist and recapping how many times students participated and contributed on topic to the whole group discussion. The guideline for this technique is to make note of the commentary and participation from student involvement. Students should have the opportunity to share, ask questions, and find deeper understanding within the classroom environment. It is helpful to make note of the progress to address the direction of learning for present levels and next steps.

Students	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10	Lesson 11
Student 1											
Student 2											
Student 3											
Student 4											
Student 5											
Student 6											
Student 7											
Student 8											
Student 9											
Student 10											
Student 11											
Student 12											
Student 13											
Student 14											
Student 15											
Student 16											
Student 17											
Student 18											

Figure 1: Class Participation Teacher Records

Table 3: Signed Rubric for Understanding

Criteria	Understanding (3)	Partial Understanding (2)	In Need of Support (1)
Content and Accuracy	Use of science signs and fingerspelling to explain concepts.	Use of fingerspelling to explain concepts.	Signed response is off topic.
Signing Space	Clean background and ample visual view of signing.	Clean background with partial visual view of signing.	Distracting background and no visible signing.
Levels of Support	Signing with clarity and no support.	Signing with clarity and support.	Signing unclear and with support.

2. Classroom Worksheets and Handouts

Students will also be assessed for their final project presentation with a pre-recorded video and on the day of the science fair. In order to track written English, academic language development students have several worksheets to participate in and track the progress of language use. The curriculum will have varied levels of support. Sentence frames, key words, and visuals will aid in showing where we have started to where students are able to retain with deeper understanding. Overall students will be checked for completion and graded on a 3 - 2 - 1 scale ranging full completion, partial completion, and missing. In addition the work will be checked for understanding, partial understanding, and in need of support based on the content and answers provided. The goal is for students to record notes during the lesson activity and make connections with the content. It is important to work on their penmanship and understand the importance of sharing ideas clearly. It is crucial to provide students with tools to show their work.

Table 4: Rubric for Worksheet Completion

Points	Criteria
3	Worksheet is completely filled in
2	Worksheet is partially filled in
1	Worksheet is not filled in

Table 5: Written Text Rubric for Understanding

Criteria	Understanding (3)	Partial Understanding (2)	In Need of Support (1)
Content and Accuracy	Written response includes use of science concepts and vocabulary	Written responses allude to science concepts and vocabulary	Written response is off topic
Clarity and Neatness	Handwriting is readable	Handwriting is readable with some separation.	Unable to understand the thinking process
Levels of Support	Writing with clarity and no support.	Writing with clarity and support.	Writing is unclear and with support.

3. Pre and Post Assessments

The pre and post assessments allow for students to share their insights and level of retention with both the science and critical thinking skills by taking the lessons and applying them to real life experiences. The pre-assessment will be during Lesson 1. The post-assessment is Lesson 11. Students will have the option to use ASL or written English in order to complete the task. During these evaluations, students will partake in a brief discussion in American Sign Language to provide some context. Students will answer the three questions with clarifying support in written English. Once completed the two questionnaires will be compared to see the present levels prior to curriculum and the level of understanding after extensive experience with the subject matter. The amount of vocabulary and key words used will be a measuring tool for success. Overall, if students are showing a greater level of understanding and deeper meaning in regards to the scientific method then we have successfully fostered scientific inquiry and met the goals of the curriculum.

Table 6: Pre & Post Assessments Rubric

Criteria	Understanding (3)	Partial Understanding (2)	In Need of Support (1)
First Question: Do you enjoy learning about science? Why or why not?	Written response includes yes or no response with a reason.	Written response includes yes or no response.	Written response is missing or off topic.
Second Question: What is the scientific method and its steps?	Written response includes all eight steps.	Written response includes at least four steps.	Written response is missing or off topic.
Third Question: How does this method help scientists?	Written response includes an example of why the method is important.	Written response includes an example of how the student uses the scientific method with their science fair project.	Written response is missing or off topic.

VIII. IMPLEMENTATION REPORT

1. General School Information

My student teaching placement was at the California School for the Deaf in Riverside for ten weeks. The school is a residential program that is tuition free state public school that was founded in 1953. It serves over 400 students ranging from infants to 22 years olds. On campus students are engaged in an environment that allows for both ASL and English to be used in the classroom to support the learning process. There are additional services available for meeting students' needs such as vocal speech, audiology, counseling, and other special needs. Due to the large range of students, there are six principals on campus- early childhood, elementary/middle highschool, and career technology education, physical education/athletics, and alternate curriculum education.

The school's mission is to keep students engaged in a positive environment where both languages are valued, cultures are embraced, and learning with confidence is possible through academics with extra-curricular opportunities. The schools' core values include support, value, grow, foster, and respect. It is important to support children in becoming balanced bilingual individuals with language, cognitive, and social/emotional development. There is value in utilizing data to guide improvement both individually with students and the school community as a whole. The school works to help educators grow professionally and work to implement the standards-based practices by providing collaboration through resources and training. In addition, working to foster an equitable learning environment that is physically and emotionally safe for all participants on campus. The last core value is to respect the importance of families as a vital part of the students' learning experience and working together to put the student and their needs as the priority.

In addition to core values, California School for the Deaf, Riverside has schoolwide learner outcomes that they work to uphold throughout the students' time on campus. These outcomes address communication, collaboration, literacy, critical thinking, community, and work ethic. Students will work to communicate through both ASL and English their ideas, options, and other information. Students will become participants in their learning and collaborate with peers and teachers. Students will engage in multiple literacies in order to understand and share their connecting ideas. Students will utilize tools to solve complex problems with critical thinking practices. Students will present themselves by demonstrating courage, respect, and excellence within their community both on and off campus. Students will establish a work ethic by taking responsibility for their own learning with self-awareness and action.

2. Classroom Set-Up

This curriculum took place in a fourth grade science classroom at a Deaf school where both ASL/English were highly valued within the classroom. The students had a rotating class schedule with three team teachers. My classroom and cooperating teacher were in charge of teaching the science content for both fourth and fifth grade levels. When it comes to content learning such as math, science, and bilingual language arts students are typically split into AB with eleven students and C with seven students. For the other subject areas such as drama and social studies students are split into two groups ranging between all three levels with nine students each- named Grey and Red. On Fridays, students learn in this grouping. Due to it being the end of the year the schedule seemed to be changing more than any other time of the year with different end of year events and testing. A typical day followed a schedule from 8 am-3:09 pm which included homeroom, 5AB Science, PE, Snack, 4C Science, 4th Drama/Social Studies, Lunch, Silent Reading, 4AB Science, Recess, 5C Science, and 4th Grade

Intervention/Homework Time. The science class usually ran to be about 45 minutes for each lesson.

Table 7: Class Schedule (Monday to Thursday)

8-8:10	Homeroom
8:10-8:55	5AB Science
9-9:50	PE/ Prep Time
9:50-10	Snack
10-10:44	4C Science
10:45-11:25	4th Drama/Social Studies
11:25-12:20	Lunch
12:20-12:50	Silent Reading
12:50-1:30	4AB Science
1:30-1:50	Recess
1:50-2:35	5C Science
2:35-3:09	4th Intervention/Homework Time

Table 8: Class Schedule (Friday)

8-8:10	Homeroom
8:10-9:05	PE/Prep Time
9:09- 10:14	4th Grade Group Lesson
10:18-11:23	Grey/Red Groups Lesson
11:28-12:03	Lunch
12:07-1:17	4th Intervention/Homework Time

Before starting and throughout the curriculum students and their families received communication through take home letters to prepare for the new curriculum and end of unit science fair. If a student was absent when these letters were sent home they were emailed to the adults and sent home again when students came to campus. In each of these letters I included contact information for myself and the other team teachers in fourth grade to allow for open lines of communication regarding any questions or concerns during the curriculum. I sent home a letter on April 11th detailing an overview of the curriculum with goals, standards and a look at what's to come in the upcoming weeks. On May 1st I reminded parents about the science fair and provided a visual sample to refer to with more details about the expectations that they will need to provide. On May 5th I sent another reminder with a completed class copy of a display board from our experiment that week. I laid out the expectations that during the week off for student's to please complete their experiment to be ready for Monday and Tuesday in class where they will be given time to set up their board. On May 10th I sent a letter via email to the students' adults reminding them to complete the experiment. There were no students at school this week due to IEP week, where the teachers hold IEP and end of the year meetings. This was the perfect time to check in with families and allow them the opportunity to get some homework done in the mix of the vacation week. Overall, the communication between all all the parties involved was supportive in the encompassing educational experience for the student.

3. Demographics

In the fourth grade there are eighteen students that are split between three teachers. There are more boys than girls, making for a more active class. My homeroom included five students (Students 2, 4, 9, 17, and 18) at the A or above average grouping. The other two teachers have six or seven students splitting up the B (Students 1, 10, 11, 13, 15, 16) or average and C (Students 3, 5, 6, 7, 8, 12, 14) or below average student

Table 9: Brief Descriptions of Each Student

Student	Student Description
Student 1	Quiet, needs a lot of prompting to get started on their work. They need some support with reading and writing.
Student 2	Uses hearing aids. They can read and write- will ask clarifying questions if needed.
Student 3	Mindful of the school schedule and times. They struggle with reading and writing- need a lot of support.
Student 4	Distracted easily, needs prompting to stay on task. They can read and write- will ask clarifying questions if needed.
Student 5	Has mild Cerebral Palsy and is always joking around. They struggle with reading and writing- need a lot of support.
Student 6	Loves Mario Bros, is eager to share ideas. They struggle with reading and writing- need a lot of support.
Student 7	Loves talking and sitting with their friends during class. They struggle with reading and writing- need a lot of support.
Student 8	Always smiling/giggling with friends and is very cheerful. They struggle with reading and writing- need a lot of support.
Student 9	A strong-willed individual, always wanting to know the why behind the instructions or decision. They can read and write- will ask clarifying questions if needed.
Student 10	Eager to participate and show off what they have learned. They need some support with reading and writing.
Student 11	Everyone wants to be their friend, loves ducks, when in front of the class takes on a teacher-like persona. They need some support with reading and writing.
Student 12	Shy, takes time to open up with others, loves to share her sweet treats from home with friends. Uses hearing aids. They struggle with reading and writing- need a lot of support.
Student 13	Likes to help others and is friends with everyone. They need some

Table 9 Continued

	support with reading and writing.
Student 14	Has ADHD and likes to volunteer when answering questions, very active. They struggle with reading and writing- need a lot of support.
Student 15	Curious and always asking questions to understand something better. They need some support with reading and writing.
Student 16	Has a one to one aide in the classroom, likes to sit near the front of the classroom. They need some support with reading and writing.
Student 17	A leader among peers and well-spoken. They can read and write- will ask clarifying questions if needed.
Student 18	Enjoys reading and sharing ideas in detail though typically off topic. They can read and write- will ask clarifying questions if needed.

4. Day to Day Reflections of Curriculum

Tuesday April 18, 2023 Unit 1- Lesson 1: What is the Scientific Method?

Objective: Students will brainstorm the work of a scientist and identify the components of the scientific method based on prior knowledge and visual support.

<u>4C-</u> I started the lesson by opening up the Google Slides Presentation to guide the discussion. The first slide asked students: what is a scientist? I allowed students a minute to think, then went around the room allowing each student to share. They shared in ASL and I wrote their answers in English on the board to refer to throughout the discussion. Student #5 signs BOAT, I asked for them to share more and with prompting explained that you can learn how something works. Student #14 shared about surgery, writing, and research being a part of a scientist's role. Student #8 commented that scientists learn different things. Student #7 chimed in that scientists use microscopes for things like bugs and medicine. Student #3 didn't have any idea and was unwilling to share when I gave more support with prompts. I asked student #3 does a scientist work hard, but they continue to reply with DON'T KNOW. I accepted the answer and emphasized that as we continue our discussion we will learn a little bit more about scientists and

their role. Student #12 commented how scientists need to read.

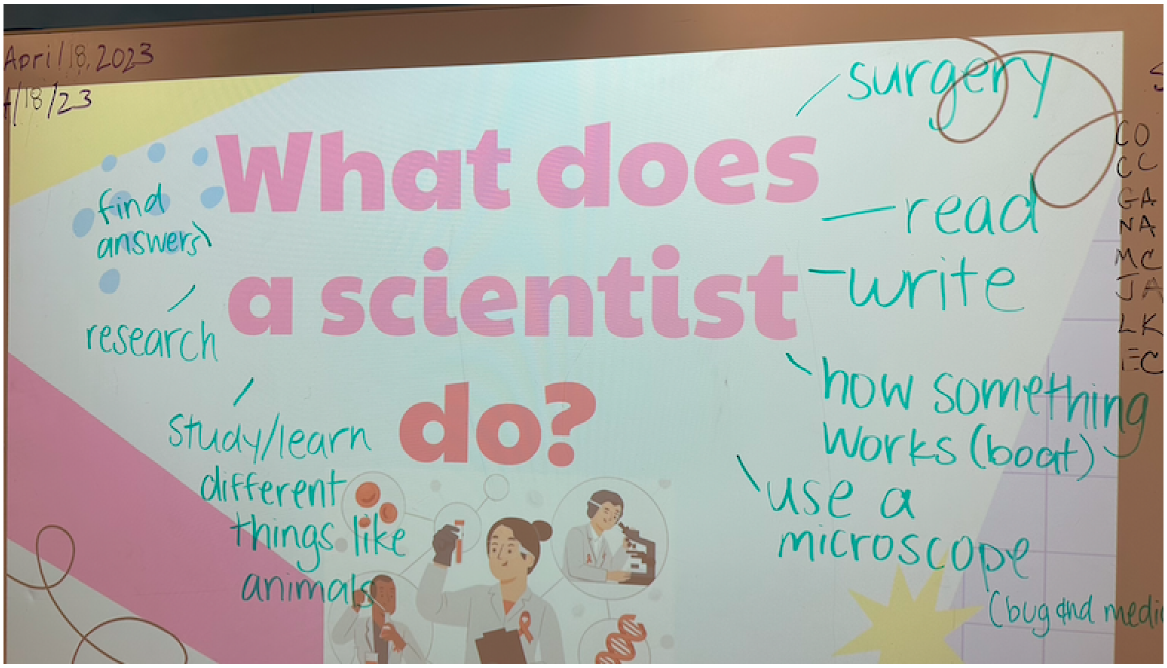


Figure 2: Visual Display of 4C Student Responses

I passed out the pre-assessment worksheets and had students write their name and date on the paper. Once all the students were ready, I signed the first question and allowed time to think about and answer it on their worksheet. The notes from our discussion about scientists were still on the board for them to refer to and write their response. I checked in with students one on one and realized that some were struggling with the spelling of words but were able to communicate their ideas in ASL. I decided to create a simple sentence frame on the board: Yes, because ____. No, because ____. Once the basic outline was available I worked one on one to help students write about their enjoyment of science. Students signed the response and I translated it into a written English sentence because they had the understanding but were still working on developing their English vocabulary and spelling. When the students finished their response to the first question they turned the paper in at the front of the classroom so that we could continue with the discussion and pre-assessment the following day.

4AB- I set up the Google Slides presentation and was ready for the introductory discussion with students. Because this class is a bigger size I asked the students a question then allowed them the opportunity to share, keeping in mind who is sharing and the contributions being made to the discussion. We start with the question: what does a scientist do? In ASL I open up the floor for discussion and record their responses on the board to refer to throughout the lesson. Student #15 signs that scientists learn the answers to different things. Student #17 emphasizes that as scientists the world and the environment around us are studied. Then student #9 adds that we can learn about people, animals, and the natural world by being scientists. Student #10 shares ideas like research and experiments are things that a scientist does. I asked the rest of the class for recommendations or any more ideas, however they all agreed with the statements that previously shared.

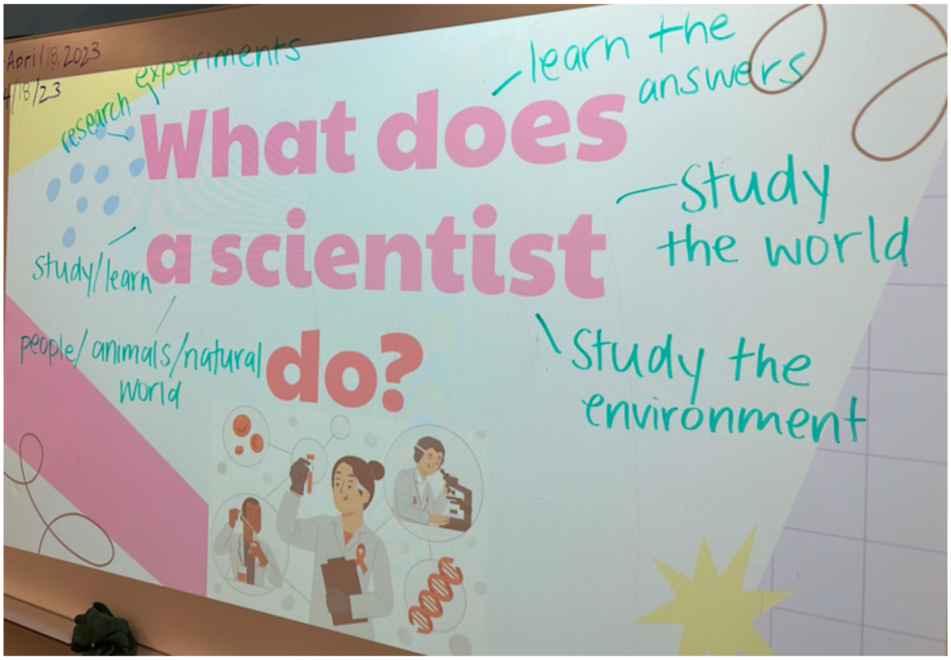


Figure 3: Visual Display of 4AB Student Responses

The next question posed to the class was: who is a scientist? Student #13 raised their hands and shared that Mr. Tarpey is a scientist because he teaches science. Student #16 chimed in that teachers are scientists. Then student #18 explained that people are scientists because they can do their own experiments. I opened up the floor for more answers but students felt that they had answered and agreed with the responses already shared. We moved on to the next question for students to think about; What does a scientist look like? This prompt steered the conversation to students sharing the importance of lab safety. Student #17 excitedly shared the need to follow rules when in science class and specifically a lab. Then Student #13 added that it is necessary to wear goggles and closed toed shoes. Student #2 chimed in that when you are trying to smell something it is important to waft the smell towards the nose for safety purposes. Student #15 also reworded the same concepts.

Once we finished answering the questions in a discussion format I passed out the pre-assessment forms for students to fill in their answers. I checked in on each student one on one providing support as needed. Most students were able to share their ideas in sign language but struggled to spell out their ideas in written English. I provided a simple sentence frame and referred back to the visual notes on the board to help students develop their sentences. If they had different ideas than what was discussed on the board I provided support translating their signs to written English.

Wednesday April 19, 2023 Unit 1- Lesson 1: What is the Scientific Method?

Objective: Students will brainstorm the work of a scientist and identify the components of the scientific method based on prior knowledge and visual support.

4C- I started the lesson with a quick recap of the discussion we had the day before about what a scientist is and does. I shared an Atomic Hands video to explain what the scientific method is in ASL. I paused the video a few different times to reiterate and check for student understanding. I asked questions such as what is the scientific method? What are the steps? Why might this process be important? The students were able to point out how the scientific method addresses experiments and related it back to their responses from the day before. The students became a little restless with the conversation but with brief responses from the students, I decided to move on with the rest of the lesson. After our brief class discussion students filled in their pre-assessment form with support as needed for their writing, they communicated their ideas in sign and I helped to translate it to written English. This support looked like sentence frames for students to utilize. These included: Yes, I like science because _____. No, I do not like science because ____. Due to the pre-assessment being in written English, if students struggled with spelling they would sign the response to the question and I would write it down for them to copy in their own handwriting.

If I could teach this lesson again I think I would want to provide an opportunity for students to self-record their responses to the pre-assessment in sign language. Then I could still go around one on one and help with the written English part but it would keep the kids engaged and working on something still related to the content. In addition, I think adding some type of movement like sorting what is a part of the scientific method and what is a trait of a scientist would be helpful with keeping the students interested throughout the class period. I asked my CT for advice on how to up the engagement levels with students but it was addressed as being handled well and to keep moving forward.

<u>4AB-</u> The lesson started with a quick recap of the discussion from yesterday that focused on their own experience with science and they reiterated the shared ideas about what scientists do and look like. Students also share what they learned from the video by Atomic Hands. Student #10 related the scientific method procedure to the steps that scientists also have to follow in the lab

and the importance for upholding that standard. Student #15 was able to highlight and explain the first few steps of the scientific method. Student #17 was called on and filled in the missing steps to the process. I then passed out the individual flipchart handout for students to utilize throughout the unit on scientific method. I explained the expectations and purpose for the flipchart- it will include all eight steps and we will record the concepts as we learn about it step by step. Students were tasked with writing their name on the back, folding along the lines and cutting on the dotted lines. Once this is completed students return their flipchart to be passed out at the beginning of class to fill in with the definition of each new step in the process.

Reflecting on the lesson, it is important to help students make connections to the material but also to provide the clarity for how it works. Some of the students got fixated on the ideas of lab safety which was not meant to be the focus and instead we took the time to reevaluate and understand the true learning opportunity goal for the day. If I could reteach the lesson I would do a little bit more of a review of the flipchart introducing the pictures and seeing if students are able to infer what the written English words say and why that picture might symbolize it on the flipchart. With this class their reading levels are all different so to make it more accessible there is an image for support. By providing this quick discussion or insight it can help students feel more connected and intrigued as we continue with the curriculum.

Thursday April 20, 2023 Unit 1- Lesson 2: STEAM Activity- Let's Try it Out!

Objective: Students will follow the scientific method process using STEAM tools and pre-prepared materials pointing out each aspect of the scientific method.

<u>4C-</u> The lesson was geared towards a hands-on learning experience with the scientific method where students were able to complete each step of the process. During this lesson I opened it up

by having a quick recap using the visual organizer that shows the eight steps of the scientific method- question, hypothesis, procedure, materials, experiment, data collection, summary, and reevaluation. The purpose is to remind students of what each step is and how we can practice following through with it while doing an experiment.

Figure 4: Scientific Method Visual Organizer

In addition, on the Google Slides I showed students visual examples of other elementary aged projects and posters of the scientific method and allowed them to share their insights into what they were seeing. Some students were able to point out the question being asked, others developed their own questions related to it. For example with the soccer ball sample, Student #14 thought that the question could be comparing which soccer ball was heavier. I highlighted those ideas and pointed out which specific part of the scientific method that they were recognizing. I briefly shared my own experience and pictures from when I was in fifth grade doing my own science project sharing my excitement and hoping to get them excited for their own scientific questions. Student #6 and #7 asked questions about my own project such as how did you build your project and did anyone help you? These personal moments are important in building relationships between the teacher and students in order to build and establish a level of trust when discussing my personal project as a fifth grader.

Having the kids see multiple examples on the Google Slides Presentation of other students' final projects helped to get them excited about their learning experience and a little bit concerned about how to do it themselves. Student #12 asked how much time they would have to get their project finished before they hosted their own science fair. Student #6 asked how or what they would have to do for their project and how to pick a topic. I helped ease their concerns by reminding them that we have to practice, try it out, and ask for help from teachers in order to better learn the process.

I then introduced our hands-on class activity for the day which was to follow the scientific process using pre-prepared materials pointing out each aspect of the scientific method. It is their turn to become scientists and experiment. I passed out the scientific method recording worksheet paper for students to fill in as we work through the class hands-on activity. I think if I could teach this again I would explain the expectations for the day, what the worksheet says, etc. before handing it out for students to work on. Allowed students time for writing their name and date. Once all students were finished we continued with getting the paper folding activity started. I introduced the task by proposing the science question: How many times can you fold a piece of paper? In order to help students stay on task, there was a visual timer in the corner of the slide for them to see how long they have to copy the question onto the paper. This helped to focus their attention and continue with the learning.

We then discussed the hypothesis, first using ASL. Due to the scientific vocabulary I also provided additional synonyms such as guess and prediction. This continued throughout the curriculum; anytime I used the word hypothesis I followed up with the ASL signs for GUESS and PREDICT.

I explained the English sentence frame- I think the paper can be folded ____ times. Students started to copy down the hypothesis leaving a blank space to fill in the number. I checked in with each individual to make sure they picked a number, if confused I showed them visually what we are guessing. I grabbed a piece of paper and started to fold. I then asked how many times do you think I can fold until I can't anymore? Students then picked a number and added it to their recording sheet. Both my UCSD Professor and Cooperating Teacher suggested it would have been a great visual aid to write everyone's guess on the board with their initials to refer to throughout the lesson. Then once we know the actual number of folds it takes, there can be a clear comparison between peers and the guesses versus actual results.

Due to time constraints, I adapted and made it not required for students to write in full sentences. In order to fix this issue moving forward I will continue the use of a visual timer. I hope this will allow students to fill in the information as fully as possible. I then explained the procedure and modeled the expectations, showing how to tally as you fold. For this moving forward, I think I want to allow students a chance to manipulate the materials and then start fresh with a new paper to properly keep tally. Allow students to explore, experiment, compare, and share with each other the findings. During the summary, I needed to be a little more clear with the sentence frames. Students were expected to fill it in and with more one on one support completed the summary.

Overall the students were exposed to every step of the process but did not write on their own due to time constraints. Moving forward I want to give students these tools and opportunities to share their findings and make sure we are referring back to the hypothesis in the summary. Students were exposed to each step in the scientific method process and are approaching the lesson objective. Students will continue to be immersed in a hands-on approach with the opportunity for deeper understanding of the verbs associated with each step. For the next lesson we will use the same concept of paper folding but with a different approach or material to see how the scientific method can help in different ways.

4AB- No class today.

Monday April 24, 2023 Unit 1- Lesson 2: STEAM Activity- Let's Try it Out!

Objective: Students will follow the scientific method process using STEAM tools and pre-prepared materials pointing out each aspect of the scientific method.

4C- Before class started, I incorporated the feedback received by writing a chart of students' initials with guesses/actual numbers from last week with an additional column for new data. I reminded students of last week's lesson and how we will continue with the scientific method application.

In the previous lesson, the students guessed how many folds using a piece of copy paper. I passed out a new recording sheet for students to fill in as they apply the scientific method process to their learning. I start the Google Slides and have students copy the question: how many times can you fold a piece of paper? We address the chart with the guesses previously made for a regular piece of copy paper. Now it's time to make guesses and create a hypothesis on the number of folds with different paper- small post-it notes. I made notes of the guesses on the board and had them fill in their record sheet under hypothesis. In order to keep students on task and focused students had a visual timer on the slide. This was successful in keeping the students on task. This visual learning strategy ended up spurring some competition between peers to finish first. Students #7 and #14 were racing to finish with student #14 flaunting success making claims signing “ME FIRST, CHAMP!” Student #7 furiously continued to write, stopping to sign “NO NO NO ME WIN!” Students #3, 5, 6 are very time oriented and chimed in, “HURRY HURRY” pointing to the timer. With some reminders and redirecting, I realized the importance for providing students with the reason why we need the timer. It is there not to compete with each other but instead to help stay focused on the task and finish it. It is important to set up these guidelines ahead of time for a smoother transition.

The students continued to copy down the information including question, hypothesis, materials, procedure, data collection, summary. While students are copying the information onto their recording sheet it is important to make sure that they are fully understanding rather than just a robot regurgitating the material. I had the students copy first in English then have a conversation in ASL about what it is they are writing down. With this group their reading skills are low so it is beneficial to check for understanding and allow them to express their ideas in sign language.

Students then had the opportunity to do the experiment themselves with a timer to keep the class on task. Once the timer finished I took the time to show my own results and tally process. Once I finished I recorded it on the board then went around the room asking for each student to share the result. Students came up with a variety of numbers. I wrote down their findings on the board for recording purposes. We made comparisons to see who was closest to their guess and who was the farthest. Some students wanted to change their guess to match their results. I emphasized that it's not a matter of being right or wrong, the guess is a hypothesis and we do the experiment to see how it compares to the results. It can be cool to see how our guesses and ideas match up to the actual work being tested. Students started to copy the sentence frames for summary but the class time ran out.

4AB- I started the class by sharing my own experience in elementary school working on a science fair project and using the scientific method. Using Google slides, I showed other examples of student work at the elementary level with the display boards and outline for students to start thinking about their own project. Students answered questions about what they saw in those examples and a few students explained in detail their perspective on the situation. Student #10 commented that the science fair project seems like a lot of work. Student #2 shared their concern for being able to do it all by themselves. I reminded students that the project is not for a long time and there will be plenty of support from peers, teachers, and family to make sure students can do their project.

Once we saw what is possible with this process, we proceeded to create a class model by applying the method to our own paper folding experiment project. I introduced the task by showing the students a piece of paper and asking them to think of a possible question we could work to answer. Student #15 mentioned possibly testing the weight of the paper. This was a good idea but today we would be focusing on a different task. I passed out the recording sheet for students to fill in as we continue through the steps of the scientific method. Students wrote down the question: How many times can you fold a piece of paper? On the slide there was a timer to keep on task. Once finished students shared how we might find the answer to the proposed question. Students then figured out their guess for the amount of folds and filled in the hypothesis section of the recording sheet. When the prep steps were completed, I passed out a piece of copy paper to each student to start the experiment and data collection by creating their folding technique and tally system for recording the number of folds. The whole class was allowed time to do the folding individually. I reviewed with students one on one during this time to make sure they were appropriately tallying and getting accurate numbers. Students were then guided through a discussion to fill in the rest of the summary section.

Tuesday April 25, 2023 Unit 1- Lesson 3: Question- Is it Testable?

Objective: Students will identify the criteria needed to create a question for the scientific method. Students will differentiate between good and bad types of questions.

<u>4C-</u> Students finished the summary section for the paper folding activity from the day before. I set up sentence frames to guide the summary development- I folded the paper into ______. It took __ folds before I could not do it anymore. My hypothesis was _____. I assisted a few students that have a difficulty with writing, I wrote the sentence frames and students filled in where it was needed. In order to support understanding of the material I worked with Student #3 to redo the tally and fold experiment to count accordingly and as a result got twenty seven folds out of a small post-it note.

Once we finished this paper folding activity I transitioned to starting the next lesson. I opened the new Google Slides Presentation and we started discussing the first step of the scientific method- the question. I passed out the flipchart and had students fill in the definition for the question tab. Students were able to see the timer in the corner to help stay on task. Once finished we took time to discuss the slide and provide clarification for what makes a good question for the scientific method. I signed the information on the slide and then asked for more insight from the students based on the paper folding activity. Student #14 pointed out the ways in which our paper folding activity had a good question- it used the word how. Student #8 explained that we were able to experiment with the paper folding activity. Before class ended the students turned in the flipcharts so that we can continue to record the definitions with each new step of the scientific method.

4AB- I prepped the board to have the powerpoint about Scientific Questions ready for students when they entered the classroom. We reviewed what makes up scientific questions including variables, both independent and dependent. Used an example with flowerpots to get the point across and show how variables affect the question being asked. Student #10 pointed out how the water drops vary in size and compare to the results of plant growth. Student #11 was intrigued by the picture and how the results differed.

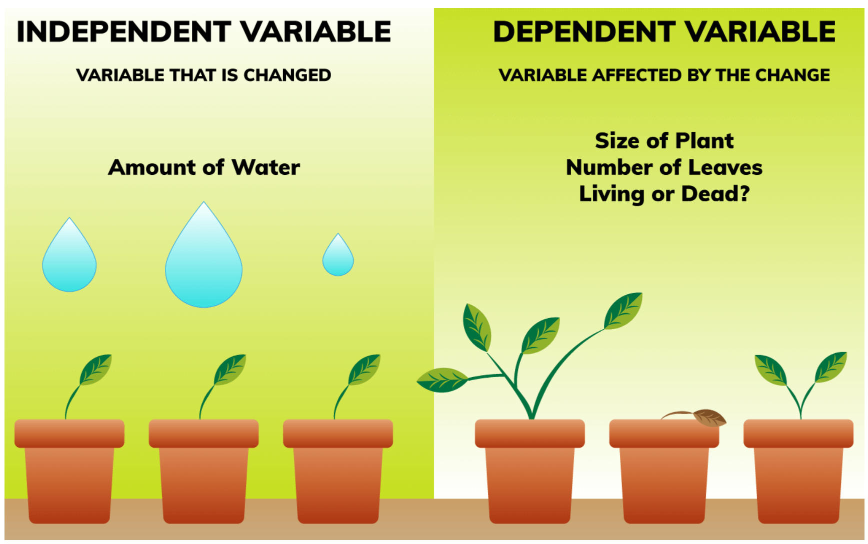


Figure 5: Flowerpot Example

During this time, a student was messing around with a rubik's cube in or under the desk. I gave a warning for the student to stop messing and please keep the hands on the top of the desk, when this was unsuccessful I removed the cube from the student with a little protest from them. I reasoned with them explaining that we are about to have an activity but we need to have good listening to be able to experience it. Students were eager to see what the activity was and so in order to keep them engaged I quickly explained the movement activity. The students were given a question as a prompt and had to decide if it was a scientific question or not. The first question was who invented electricity, Student #18 raised their hand eager to share the answer; however that was not the purpose of the activity. I was starting to lose their attention a little bit, making it hard to catch on and causing lots of confusion for what they were supposed to be trying to do. It took a few minutes to get their eyes on me but once I did I explained again the goal of the activity is to see the question and decide if it is a scientific question. If yes, go to one side of the room, if no, go to the other side and I will call on students to explain their reasoning. Students started to catch on after I reviewed again the key language we discussed in the previous slides. The activity included a lot of movement, there was learning and connections to the material being made. When called upon, Student #17 was able to provide a clear explanation for why or why not the question was considered scientific, usually referring to the language or if it was testable. Student #10 was eager to also share insight into the perspective of a scientific question but needed more support and clarification for the distinction. Other students such as Student #4 and #11 were not completely engaged unless called upon and needed extra prompting more like a one on one situation to better understand the material. If I could teach it again, I would make sure expectations were clear and able to be referenced on the board again and again rather than only on that first slide.

Wednesday April 26, 2023 Unit 1- Lesson 3: Question- Is it Testable?

Objective: Students will identify the criteria needed to create a question for the scientific method. Students will differentiate between good and bad types of questions.

<u>4C-</u> The slides were prepped and ready to continue discussing the first step of the scientific method- a scientific question. We discussed the different kinds of variables- independent and dependent using the flowerpot visual example. Student #6 and #14 came up to the board

referring to the visual to explain their thinking with how the water correlates to the plant growth. They also explained their reasoning for other factors that affect the growth such as sunlight and how often the watering happens. We then started the activity, I made sure to set up clear expectations and instructions. I explained that students are to decide if the question is scientific or not- picking a side of the room to move to if Yes or No. I reiterated the word choice that shows if it is a good scientific question (What or How) or a bad question (Who).

We then decided to start the official work for the science fair. Based on a previous discussion my CT recommended to allow the students to work in pairs, then on the day decided it might be best to draw their names out of a bag to pair up. The students reacted poorly because of how it worked out and the CT stepped in to try to remedy it allowing the students to move around which resulted in more confusion and disappointment. I took over and made the ultimate decision to have students work individually which I had felt from the beginning would be best to see how their understanding develops over time. This was not easily accepted and while students were given time to peruse the books for ideas most decided to protest and pout due to not getting their way. We only had about five minutes left in class so I gave them time to process the updated situation with the science fair and used the books to try and peak their interest. After the lesson I asked my CT for advice on how to handle a situation like that in the future and there was not much insight just to allow students to have their feelings. Moving forward I want to make sure my expectation for myself and students is clear and causes no further confusion or problems.

4AB- We started the class by reviewing the steps of the scientific method. I asked the students to explain what a scientific question is and why it is important. We continued with the activity with the last few examples for students to pick if it was a good science question or not. With the students' explanation of their reasoning there was emphasis on the grammar and phrasing of the question. Once students understood and we completed the question examples they sat back down and we moved on to having students figure out their own project.

Some students already had insight from the morning class about the science fair. I provided clarity and further explanation about the reasoning for individual projects. It is important for students to show what they know, allow their own creativity, and because the project will need to be done at home it allows for more flexibility with getting it done. Students were still upset and disappointed with the change to the science fair being an individual project, especially because a few of them had already been discussing the possibility of teaming up before I established the parameters for the project. With the last five minutes of class they were able to start brainstorming but most of the kids just stubbornly sat and complained. If I could teach the lesson again, I would have been more clear from the beginning the importance that this is an individual project. I originally consulted with my CT and on that recommendation gave the students too many options. If I could teach again I would make a decision and stick to it keeping it fair across all classes to cause no further confusion.

Friday April 28, 2023 Unit 1- Lesson 4: Hypothesis- Let's Make a Prediction!

Objective: Students will identify the criteria needed to create a hypothesis for the scientific method. Students will differentiate between good and bad types of hypotheses and explain their reasoning.

*The students were taught in different groups than typical so all levels (ABC) were present over the course of two class times.

Grey/Red: We started off class using the scientific method poster and pointing out which part we have already gotten a deeper understanding of - asking a question. Next up is - create a hypothesis. I asked students if they knew what a hypothesis was and they said a part of the scientific method. I then explained that it has a few other names such as a prediction or a guess, throughout the lesson when I mentioned hypothesis I continued to also show the other two synonyms. I showed students the definition and allowed them three minutes to copy the definition into their flip chart under the hypothesis tab. I had to repeat myself a few times reminding students to copy down all of it, not just the first line. Once time was up and all the students were ready I asked for a volunteer to explain what they wrote. I supported students with certain words and signs; then took the time to provide deeper meaning and connection. After I showed the sample structure of If ____ then ____ and I think ___ because ____. This sentence structure can be used to guide the learning process. Showing the example with the plants students were eager to share their understanding of the picture. The students would come up and explain how the correlating amount of water impacted the growth of the plant. I posed the question: how does the amount of water affect the plant's growth? Due to the image being shown students stuck to explaining clearly what the visual was showing.

After the students volunteered I shared my own hypothesis: that if a plant has more water it will grow taller because plants need water and having a lot can help the development. I highlighted the criteria that makes it a good hypothesis such as if/then and the added explanation support. We then discussed different verbs that can be used to describe the opinion with students signing the words on the powerpoint: think, predict, believe, guess. Then students were asked to share why a hypothesis is important to which they shared it is part of the scientific method. I also highlighted that it is a starting idea for the experiment and is the idea of explaining what might happen and why. It was time for practice and students played a game similar to the structure of the question activity from a few days before. They are given a statement and have to decide if the statement is a hypothesis; if yes they stand on my right, if no then they go to the left. Students were signed the explanation and then had to pick a side if necessary and needed to speed up the process had a timer to get the students to focus on the task amidst the sometimes craziness of a movement activity. Once students picked a side they were eager to share their ideas.

This discussion helped to drive the points to deeper understanding of the criteria that makes a hypothesis. We returned to our seats and I explained the next part; now it is time to make your own hypothesis with the science question we developed the day before. I passed out the question papers and the hypothesis paper for them to fill in. During this time I was able to work with the students one on one to support their ideas and if necessary they signed their hypothesis and I translated it into english for them to copy. At the end of the class, students returned all three papers to me and with that I dismissed them individually. Overall students were able to meet the objectives and define the criteria of a hypothesis, explain the reasoning, and create their own hypothesis showcasing their understanding.

If I could do this lesson again, I would possibly allow students to submit a signed version of the assignment so more students could stay on task longer due to the wide range of students' linguistic abilities. I noticed that more students needed support for the writing process. These challenges were related to vocabulary and having the language in ASL but struggling to be able to translate it into written English. Based on previous classroom observations, students seem expectant of getting the help on their terms instead of having to attempt first before receiving support. In order to help with their growth and understanding, I want to continue to allow students extra time for trial and error and then work one on one to make sure there is clarity and progress with completing the tasks.

In the next steps, I will continue to start the class with a brief review of previous steps in the scientific method process looking for students to explain a part of the step. This allows for a quick refresh before diving deeper into another component. I also think it will be helpful to have another complete class group experiment that takes one or two days and allows for students to learn from each other and showcase their understanding among peers of the scientific method as a whole. Students assessed their understanding during the group discussion and took the opportunity to feed off of each other's ideas and concepts being shared.

Monday May 1, 2023 Unit 1- Lesson 5: Procedure & Materials- Clear Instructions are Important!

Objective: Students will identify the criteria needed to create a materials list and procedures for the scientific method. Students will discuss the difference between instructions and word choice.

4C- Before class started I set up the Google Slides for procedure and materials. I passed out the student's flipcharts and had students copy down the definition for the "procedure" tab. We discussed the meaning of the procedure and had visual support to provide better clarity. There was a little misbehavior but with warnings students were able to become focused and on task. After seeing the visual example with pictures on the slides presentation we worked to create a procedure for the flowerpot question on the whiteboard. It took a few guiding supports to make sure that there is clarity. On the whiteboard with the slides presentation I filled in according to student responses; Step 1: Get a flower pot. Step 2: Get a seed to plant. Step 3: Get an average water amount. Step 4: Go outside to set up. Step 5: Put seed in flower pot. Step 6: Add water to seed and pot. Step 7: Wait and see. Step 8: Check on plant growth everyday.

Due to the behaviors in class we checked for comprehension by having a student re-explain to the class the flowerpot procedure and another student explain what procedure is in general. Word choice is also discussed with students including first, then, next, and last. Once the procedure was finished we moved on to the material step. Students copied the definition onto their flip chart with a timer set as a reminder to stay on task. Now that the students created a procedure we shifted to focusing on what is needed to do the flowerpot experiment. We had a discussion regarding materials and students copied down the definition in their flipchart. Referring back to the flowerpot scenario, students worked together to make a list. Once finished we recapped about both steps and then turned in the flipchart at the end of class.

4AB- Before class started I set up the slides for procedure and materials. We started with defining "procedure" and students had to copy the definition into their flipchart. Students had a timer to keep them on task, they were a little rambunctious but with some reminders were able to get it done. I assisted a student that has additional needs with writing and he had to fill in the key words. After copying it down we had a group discussion about what the procedure means. Students #9, #15, and #17 were actively engaged in the discussion and provided further explanation based on previous examples we have used. I gave an example with a cartoon about making a peanut butter and jelly sandwich. The cartoon procedure was unclear and a little silly. Some students found it funny, others stayed disengaged. In order to get more students involved in the discussion I used the flowerpot example to provide familiarity and clarity to the students. We reviewed the question of: how does the amount of water affect the plant growth? Then on the slide for procedure it was numbered and the students worked together to set up a clear procedure.

Step 1: Get flower pot, seed, and water. Step 2: Put seed in flower pot. Step 3: Pour a little water into the pot. Step 4: Place outside and check it everyday.

When writing the procedure students should use word choice such as numbers, first, then, next, and last. Throughout the lesson, students were continuously asking for the opportunity to go to the bathroom and for water. This was causing some confusion and disruptions throughout the lesson. I established clear expectations and rules for moving forward- tomorrow there is no water or bathroom in class because of all the disruptions. I reminded students that they have an opportunity before class starts and after class there is a break too. We then moved on to discussing the next step with materials. Students copied the "materials" definition into their flipchart with the support of a timer. Due to lack of time there was no time to review the definition further so once it was written down students turned in their papers.

Tuesday May 2, 2023 Unit 1- Lesson 6: Experiment and Data Collection- Let's Put it in Action! (C)

Objective: Students will identify the purpose of an experiment and the importance of data collection. Students will participate in a more fully developed scientific experiment and collect data.

<u>4C-</u> I set up the slides for the discussion of experiment and data collection. I provided examples with the flowerpot sample and then we went back to the paper folding activity for a hands-on learning experience that is tangible and results can be seen the same day. Before we got too detailed I made sure to pass out the flipcharts for students to fill in and discuss the concepts of "experiment" and "data collection". Once finished students passed the flipchart back in for later use. Students for the experiment and data collection are now able to work with the goal of

comparing different types of materials for paper folding. I explained the different paper materials available and students had to pick two options to test with. Student #6 was amazed at all the options and asked if they were limited to only picking two types of paper materials. I explained that due to the amount of resources available we can only provide two options for each student. Student #14 was eager to make a claim to their two materials hoping no one else would take the same materials. On their recording sheet they wrote down their materials picked and their hypothesis stating which material would have more folds than the other. Student #5 asked for support due to the struggles with writing, I wrote the sentence frame and had them fill in with their selections. I make a note of each student's materials and make sure that no two pairs are the same. There was some protest but with an explanation for the reason the student was more than willing to comply and eager to get started.

Table 10: 4C Paper Folding Materials Experiment

Name:	Trial 1:	Trial 2:
Student #3	Streamer Paper	Parchment Paper
Student #5	Streamer Paper	Cardstock Paper
Teacher	Paper Towel	Notebook Paper
Student #6	Floral Wrapping Paper	Cardstock Paper
Student #7	Streamer Paper	Colorful Tissue Paper
Student #8	Streamer Paper	Parchment Paper
Student #12		
Student #14	Streamer Paper	Paw Patrol Wrapping Paper

Due to time constraints the actual experiment was pushed to the next day but they are now ready to experiment and test. I was able to keep students engaged with the excitement for the task and the abundance of options to pick from. If I could teach this lesson again I would give students the opportunity to sign their work and film it rather than having a written response only. For this to be successful I would need to set up clear expectations for students to follow and be able to complete independently. During my time in this classroom I was worried that I would run out of time for my content in the curriculum trying to set up these practices.

Tuesday May 2, 2023 Lesson: Behavior Check (AB)

Objective: Students will be introduced to a new behavior management system that we will continue to use throughout the rest of the school year.

Started class with the behavior plan model that has been set up for students to work on being able to get through a complete lesson without as many distractions. I reviewed the expectations for students and explained the reason for these efforts. My CT had recommended I use star stickers to reward good behavior. I was worried about the amount of time it would take to give out the rewards in place of content learning. Instead I opted for the use of the computer program/ app known as Class Dojo. With a simple switch of the tab I can go from the slides to the Class Dojo site or app and select multiple students and this gets the students attention without constantly having to call out the good behavior specifically. The good behavior that would be getting recognition included; chair legs staying on the floor, hands to self, raising a hand before speaking, turning in papers to the teacher at the end of class, having iPad face down on desk, participating in discussion, being prepared for class, and paying attention to the teacher when speaking.

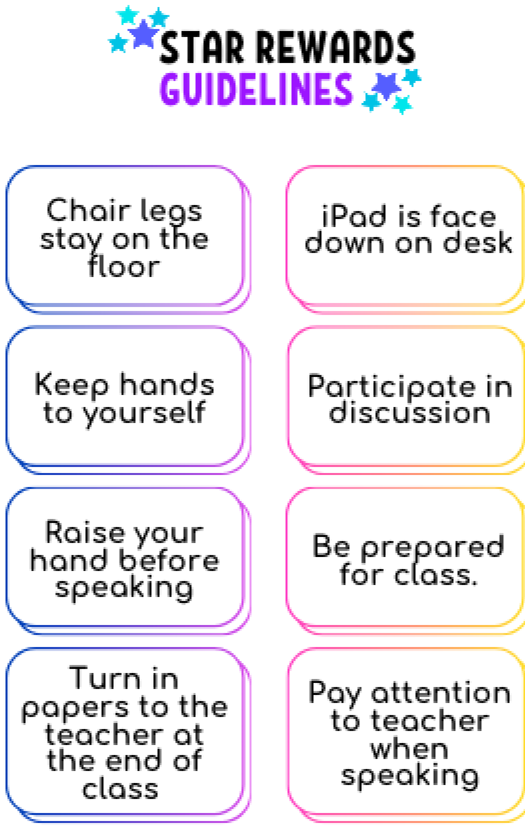


Figure 6: Star Rewards Guidelines Poster

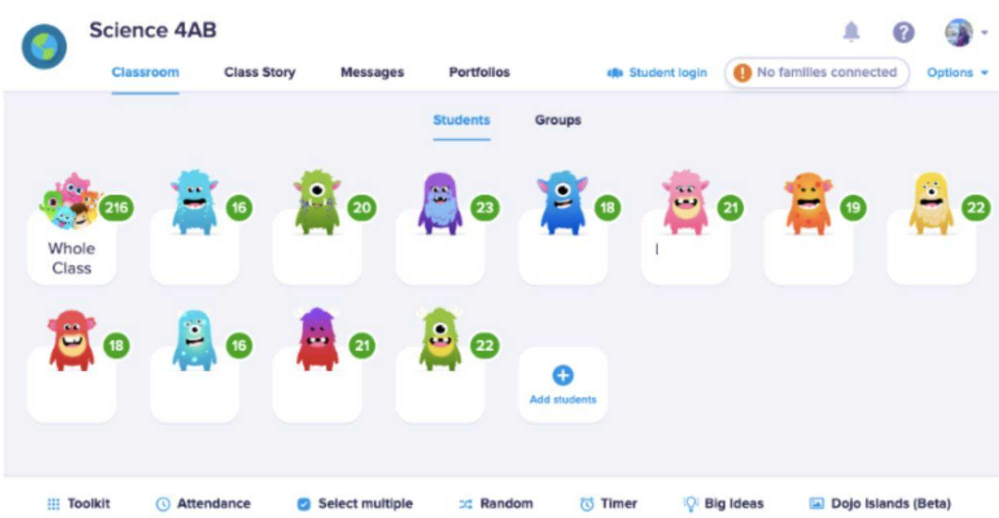


Figure 7: Class Dojo System Class View

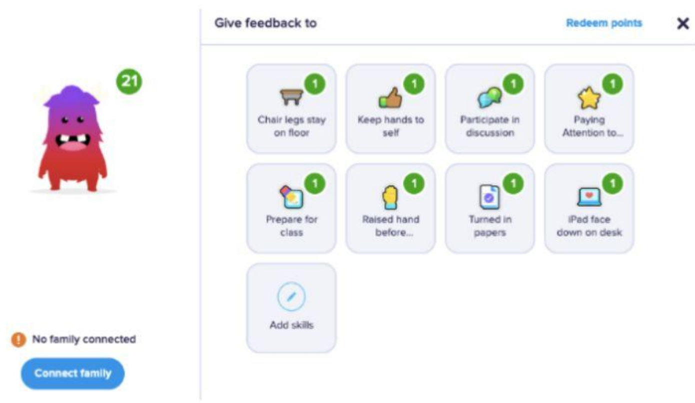


Figure 8: Class Dojo Award Points View

I also had a rewards sheet that students could see weekly to see how close they were to getting a surprise. This behavior tool was to be used only during science class by me to create a little bit better engagement and attention while I was teaching. As I explained if a student was misbehaving I gave points to everyone on task and this helped to get the attention of the students to stay focused and help each other to do better. There was a slight concern for students' hyperactivity in focusing on others rather than content but with clarification students were able to fix the behavior and learn in a growth mindset environment. By the end of our discussion I could already see strides of improvement and excitement for learning and working together.

Wednesday May 3, 2023 Unit 1- Lesson 6: Experiment and Data Collection- Let's Put it in Action!

Objective: Students will identify the purpose of an experiment and the importance of data collection. Students will participate in a more fully developed scientific experiment and collect data.

4C- Students were each passed out their recording worksheet and materials for the activity. We did a review of the question being posed: does the material affect the amount of times a paper can be folded. We also reviewed and made note of their hypothesis/guess. We reviewed how to keep a tally for how many folds we can make, writing down the material time and marking a tally for each fold right after it is made so that it is more accurate for recording data. With support from the aide, CT, and myself students were able to get to work folding their paper materials. Students folded and I checked in with students one on one and if they had additional support checked to see if they also needed any clarification. I worked with student #3 and had to provide some clarity about what counted as a fold because at one point they were just folding the same fold over and over again to try and get a higher count. I used my own sample material to show how I fold and then repeated back the actions that they were taking and they realized that what I was doing was incorrect, as a result we reworked the material and accurately folded it. With two materials students #14 and #7 wanted to try multiple times before recording a final answer while others like students #6 and #3 were meticulous and slow with their method only doing it once. Students had until the end of class to finish folding their two kinds of materials and if they had extra time and a classmate was willing they could trade and try to fold a peer's materials. If I could reteach this lesson I might pair up the students so that everyone has a built-in buddy to help hold them accountable and everyone at a more equal pace for completing the activity.

<u>4AB-</u> I started the class emphasizing the point system and this was a way to get the students to pay attention. By awarding points for good behavior it got the students to all help each other out in an attempt to earn the stars. Students #10 and #4 were helpful in getting students to fix their behaviors while also not being a distraction to all of their peers. Once attention and focus was on the learning we got to work on understanding the definition of experiment and data collection. Students had a timer and the task of copying the definition for the term "experiment" into their

flipchart. It followed with a discussion of what it is, the importance of it, and how it applies to the scientific method. Students then had to copy the definition for the term “data collection”. With the students then sharing their ideas about it and how it might look when working through the scientific method. Students were then asked to pick two paper materials and I made a note on the board of the two choices. It was important that no two students picked the same set of paper materials and while that received some backlash from students everyone ended up with one of their choices and were excited to see how it works out.

Table 11: 4AB Paper Folding Materials Experiment

Name	Trial 1	Trial 2
Student #2	Plaid Wrapping Paper	Streamer Paper
Student #4	Tissue	Shiny Gift Tissue Paper
Student #9	Colorful Tissue Paper	Paw Patrol Wrapping Paper
Student #10	Streamer Paper	Shiny Gift Tissue Paper
Student #11	Parchment Paper	Paper Envelope
Student #12	Streamer Paper	Paw Patrol Wrapping Paper
Student #13	Streamer Paper	Floral Wrapping Paper
Student #15	Paw Patrol Wrapping Paper	Parchment Paper
Student #16	Paper Bag	Shiny Gift Tissue Paper
Student #17	Paw Patrol Wrapping Paper	Paper Towel
Student #18	Colorful Gift Tissue Paper	Streamer Paper

While I made my way to all of the students and their materials the previous students were tasked with writing up their hypothesis and materials list for their choices. Each student stayed on task and was able to earn stars for a future surprise.

Thursday May 4, 2023 Unit 1- Lesson 7: Summarize & Reevaluate- Show it Off! (C)

Objective: Students will identify the purpose of summarizing findings and reevaluating their work. Students will continue to use the previous science experiment sample to practice each step of the process.

We wrapped up the paper folding activity from the day before. I started with passing out the flipchart and allowing students to copy the definition “summarize findings”. There was a timer to keep students on task, once finished students were told to put their hands on their head as ‘cubs.’ Students shared what it means to summarize and why it is important. Student #6 shared that you have to explain the experiment. I then had students write up their summary based on paper folding activity. Again, once students are finished they have to become ‘cubs’ to show it. The students use a C handshape and put it on top of their head to form ears- this is an attention tool that is used throughout the school community. Next, the students copied down the definition for “reevaluate” onto the flipchart. Once finished we discussed what it means and why it is important. Student #12 shared that we need to try again and again to get better. During this time Student #7 was struggling to stay focused and instead interrupted other students by touching their papers and desks. To solve this issue I moved the student to a desk on the other side of the room. This was met with some resistance but overall fixed the behavior. Students were provided with a sentence frame and worked to fill in the answer. I went around one on one with the students to check for understanding. At the end of class students turned in both the recording sheet and flipchart.

Thursday May 4, 2023 Unit 1- Lesson 6: Experiment and Data Collection- Let's Put it in Action! (AB)

Objective: Students will identify the purpose of an experiment and the importance of data collection. Students will participate in a more fully developed scientific experiment and collect data.

We were continuing with Lesson 6, starting the activity and experiment to see how small we could fold different kinds of paper. Students were engaged and excited to find out their results. I started the class with a quick review of the terminology "experiment" and "data collection". We had a few students from speech join class late so I worked to catch everyone up before moving on to the testing portion. Students shared their understanding of the terms- experiment and data collection. Student #11 emphasized that experiment means action. Then the trials began, each student started with their first sample and folded until they couldn't. They were making a tally for each fold to help hold themselves accountable. I checked in on the students occasionally and worked together to find their final answer. Once each student was finished with their first trial I utilized ClassDojo to give points and get students attention to be listening. Once I awarded stars and clarified expectations I passed out the papers for the next one. Students continued again to gather insight and understanding. It took several prompts for a few students that are easily distracted to get them to stay on task. Students continued to test and record their data. With about 5 minutes left in the class period, instead of trying to wrangle the students back to their seats and attempt to move on to the next part, I gave them the opportunity to try other students' samples and see if it was more or less than what they tested.

If I could teach the lesson again I think I would have the students work in pairs to have one person fold and the other tally. This would have helped build on the skill of teamwork and made the results more reliable and supported the students in their process a little more. The students were able to finish the experiment and data collection for the day. The next steps will be to have the students learn about summary and reevaluation with opportunities in both languages- filling in their flipchart, having a discussion, and writing up their ideas from this experiment. Providing them the opportunity to discuss and utilize different sentence structures in both languages can make it easier to understand and later apply it to their own project. Students were able to meet the objective for the day and explain the meaning for the two process parts- experiment and data collection all while applying and putting it into practice.

Friday May 5, 2023 Unit 1- Lesson 7: Summarize & Reevaluate- Show it Off! (AB)

Objective: Students will identify the purpose of summarizing findings and reevaluating their work. Students will continue to use the previous science experiment sample to practice each step of the process.

We continued with the paper folding activity from the previous day. Today focused on the summary and reevaluation part of the experiment. Students used their flipchart to fill in the definitions for “summary” and “reevaluation”. Students briefly reviewed the experiment and data collection task from the day before making sure they knew what their total was for the number of folds. If they were unsure they double checked with my record from the activity. It was now time to copy a new definition for the word “summary.” Students reiterated the definition on the board with three volunteers- one person signed for each line in ASL. Using the prompts filled in the summary section on the recording sheet with information about the activity. After sharing and checking for understanding students moved to the last step of the scientific method. For reevaluation students copied the definition and then reiterated its meaning for peers to better understand in sign and not only the English text. Students shared their findings in ASL during the class discussion and we compared who had the largest number. All students turned in their work at the end of class. If I could teach this class again I would want to make the list of folds for each student on a poster board that can be moved around the classroom rather than straight on the whiteboard. I think this would have provided a bit more community engagement and manipulation of the materials between all of the students and teachers.

Friday May 5, 2023 Lesson: Work Day (C)

Objective: Students have time to catch up on their work for the end of the unit project- the science fair.

Students were reminded that they are going to prepare their own science fair project. Students had the opportunity to see an example of a display board in person that would be similar to the science fair expectations. With a tri-fold poster set up at the front of class, students were able to see the results of their paper folding experiment as a class and how it is summarized on a poster. The students took turns coming to the board and finding the different steps for the method when given the sign in ASL. If support was needed we referred to the graphic organizer that lists out the different steps vertically to help students find and point out specific terminology. Student #14 has ADHD and was very engaged with the learning and wanted to repeatedly answer all aspects of the requests. I was grateful for the eagerness but wanted to allow for all students to participate and reiterated the expectations and goals. This was met with some resistance but with clarification and support from peers it allowed for all students to participate and the willingness rubbed off on the peers. Students were able to discuss the poster and were excited to see the work visually. Once we finished reviewing, I allowed students the opportunity to work independently to finalize their topic with a question. I met with the students one on one to make sure that they were off to a good start before going home for the week-long vacation where they were expected to work on and complete the experiment itself.

*Students had a week off from school for IEP week from May 8th-12th.
Due to the end of the year schedule the class sessions switched to two groups that mixed all three levels of students ABC and were placed into groups labeled Grey and Red.

Monday May 15, 2023 Unit 2- Lesson 8: Display Board Making- Show it Off!

Objective: Students will create their own display boards for their science fair projects. Students will follow the guidelines and instructions for set up.

<u>Grey:</u> I set up the display board from the paper folding activity to act as a reference for students. I emphasized the importance of following a model so that when the judges are looking at the student's boards it is clear to see the information and understand their process of using the scientific method. Students were to come to class with a tri-fold board and their experiment finished so that they could have enough time to be creative in their board making. Instead we only had two students arrive with boards. In anticipation of this and coming back from a long week off I prepped some labels that had each step of the scientific method. The students were tasked with cutting out these labels and then picking a colored paper to use as a border to add color to their display boards. This was able to keep students engaged and working towards their project even if not all the materials were available. If I could teach this again, I would like to provide parents with the opportunity to send monetary donations and I would get all of the

boards so that all students would be prepared and we could continue with the process with plenty of time to prepare and perfect before science fair day.

Red: I set up an example tri-fold board for students to reference as we continue working on their science fair projects. I emphasized with students that while I want them to be creative in decorating and setting up their board, the labels highlighting each step should follow the model to support the community members in understanding the thinking process. While the hopes were for this lesson to take two days it looks as though more time is needed. Only 1 student brought a board to be able to paste materials and start their board. All students started with labels and a variety of colors available for their background. If the students finished then they were tasked with typing up their work for the display board. This was also a difficult task to complete as most of them were not yet finished or even started their project. I reminded them that they have their question and hypothesis already established, therefore do that part only. This still proved difficult as some took those papers home and left them there. I allowed access to my iPad to airdrop their information to then type on their iPads with a keyboard. This also provides good typing practice and can keep them engaged during a work period. If I could teach this lesson again, I would provide a few more resources to utilize on the boards such as stickers, stamps, etc to help promote creativity to student work.

Tuesday May 16, 2023 Unit 2- Lesson 8: Display Board Making- Show it Off!

Objective: Students will create their own display boards for their science fair projects. Students will follow the guidelines and instructions for set up.

Grey- I passed out the materials from the day before and reviewed the expectations for the day. Students are to work on their display board for the science fair project. Students should cut out the labels for each part of the scientific method, glue those onto their board, along with the explanations for each part relating to their own experiment. Some students were absent from the day before and starting from the beginning. Some students were finishing up the prep with the labels. While others had the labels glued and were working on typing up their details from the experiment and pasting the corresponding information to the board. If students were finished or did not have the necessary supplies such as a display board, they were provided with the opportunity of typing practice. The lesson was a quick overview and explanation before it became a work day and opportunity to work more individualized with each student. I had the opportunity to do a one on one check in and then support a student with the making of their experiment. With Student #3, they did not want to pick a topic for their project but with time and support were able to find something that they wanted to do rather than something that could have possibly been forced upon them. It was important to me as we were picking topics that students find the joy and excitement in their topic because it would be a time-consuming project that should be fun to experiment and more eager in finding out the results. I helped him create a windmill so that he can test the occurrences with varying levels of wind. If I could go back and reteach this lesson, I think I would want to maybe set up an opportunity for parents to send in donations for the display boards and then have myself provide them that way each student can have immediate access during the allotted time in class. While students were able to stay on task and complete parts related to the project, due to the lack of materials it prolonged the process. This lesson took several days and while I originally allotted two days for the completion of the boards, it seems that more time will be needed. After the lesson today only one student is completely finished with their set up. Next steps are to work with the team of teachers to support and allow for more work time within these next couple of days. I also plan to reach out to parents to corroborate the information being shared in class about the status of the student's project and completion of the experiment. Students have been reminded and talked to one on one creating an open line of communication to discuss their progress on the project. I plan to remind students that the goal of the task is for the opportunity to compete and win awards at the science fair next Thursday, so it is important to work hard and finish things with plenty of time for the final step of the presentation.

Red- I placed the sample board out for students to reference then explained that today would be a work day for the display boards. A few more students remembered their display board but did not have their experiment completed. Some students were still working on cutting the labels, others started pasting their work on the board, while others worked on typing up their work. If students had no more work to prepare I had them work on their typing skills. During this period I checked in with each student about the project progress. Students #9, 18, and 14 wanted permission to paint their white board with color to make it more creative. I did not have any paint on hand but after discussing with my CT we were able to ask one of the team teachers for the supplies. I set up some ground rules about the opportunity to paint. The students would only have until the end of this class period to finish painting otherwise they would have to make do with what they were able to finish. Also students are to respect the tools being used and understand the proper behaviors that need to be in place when working outside. I would also be providing time checks for students to be aware of how much time is left. The three students agreed and a few other students looked on in curiosity. I then made an announcement to the class that the students are allowed to paint their board today only because we really should be making progress in completing these boards so we can continue to prepare for science fair day. Student #14 began painting and soon became board but did not want to mess up the overall look of the display board. They asked for help and I showed them the technique that llarger brush strokes will make it go faster. It still took several promptings and some hands on help to get the job done. Student #9 was the opposite, taking their time to make it perfect, they had a vision in mind but the time was quickly ticking away. I gave the reminder at ten minutes left in class and they seemed to not mind. I was explicit with the direction, reminding them they only have ten minutes to finish and right not only have an eighth of the board covered. When the class period ended students grouped their work together and headed for recess. I had to have the painting students stay back to finish painting or clean up their space outside. While they did not want to clean up, they finished and were able to enjoy the rest of their recess period.

Wednesday May 17, 2023 Unit 2- Lesson 8: Display Board Making- Show it Off!

Objective: Students will create their own display boards for their science fair projects. Students will follow the guidelines and instructions for setting up.

<u>Grey-</u> Students were bringing in their tri-fold boards and remembering their recording sheets from the experiment at home. Students glued down their labels onto the board following the model I provided or asking to see their peers work as an example. If students had their recording sheet they could use their iPad and a keyboard to type up their information. If they finished typing they would airdrop or email it to the classroom computer so it could be printed and cut out for the display board. Students also had their parents send proof of the experiment with pictures and videos that needed to be printed for their poster. If students were still missing their board or had no experiment they worked on an online typing program. The class session was a relaxed work day with small conversations and sharing of their ideas with the experiments they completed.

Red- Students got straight to work developing their best work for the science fair. They referred to the model I created and passed out the labels with colored paper, materials from home, and their explanations for each step. Student #9 took a lot of reminders to keep them on task, they enjoyed chatting it up socially with their peers unrelated to the science material we had been discussing in the last few weeks. I checked in with students one on one and Student #1 expressed the lack of materials due to a parent not being able to spend money on it. I thanked them for sharing and got to making a plan for them to be able to get it done. I am going to get the materials for their project and we can experiment, glue, and set up the board the following day.

Thursday May 18, 2023 Unit 2- Lesson 8: Display Board Making- Show it Off!

Objective: Students will create their own display boards for their science fair projects. Students will follow the guidelines and instructions for setting up.

Grey- Students have had the week to get their board squared away. If students are still missing parts of their project, I am working with them to have them sign the explanation to me and I am typing up the information. I want to make sure that all students are able to participate in this time so I am supporting that goal. Students that were completely finished with their project were able to work on the typing program, cool math games, or EPIC. Allowing these students to have iPad time motivated other students to finish up their own projects.

Red- Students #11, 12, 7, 1, and 6 all had to do their experiment in class. We had called their families earlier in the day for an update from parents to corroborate the information from the students. These parents opted for us to do it at school because the science fair was fast approaching. During lunch we made a quick run to the store to get their supplies. Student #11 wanted to test eggs in water in hopes that it would hatch. So I grabbed my laptop and transcribed his experiment as he signed the explanations for each part of the process. I took photos of his activity on my phone and then we shared the materials with the printer and he was ready to set up the board. Once he was finished I worked with Student #12 who also wanted student #13 to help her complete the activity. I transcribed the conversation we had about each step of the method. It was then experiment time and Student #12 and #13 took turns testing food coloring and the amount of time it takes to go through shaving cream before hitting the water. I printed out the materials and pictures and Student #12 got to working on organizing their display board. Student #7 had an experiment with magnetic slime. This made for a little bit of a messy work space so we focused on the experiment and then once we cleaned up transcribed the text by typing their responses to each section of the method. Once finished and printed they worked on their tri-fold board setting it up for presentation time. Student #6 tested eggs in vinegar and food coloring, we set it up and then had to wait a few days to finish the data collection. Student #6 experimented to see how many rubber bands to explode different fruits. This activity led to a lot of engagement with peers. I allowed for other students to join and support the process if their own posters were finished. I wanted students to be engaged in the learning process and as a result these students will cherish the memory and video of an exploding watermelon in science class.

If I could teach this lesson again, I would love more time to allow for student decided class run experiments. Seeing the excitement and motivation to learn the science behind the activity was inspiring. Also I would have loved to check in with these families a little sooner to make for a smoother transition and delegation for the work it took to complete the experiments. Overall I think the students made some memories and were able to have a deeper connection with the scientific discovery.

Monday May 22, 2023 Unit 2- Lesson 9: Presenting the Science

Objective: Students will practice their presentation for the science fair. Students will record their explanation of their project and create a QR code

Grey- This lesson spanned over the course of a week. I checked in with the students as we got ready for science class. I discussed one on one the goal of the day- finishing the display board, practicing their signed presentation for the Science fair, and to a few who were still working on recording data from the experiment itself- finishing that part. The original goal was for everyone to be working on the presentation practice, however not everyone was ready for this next step. By the end of the day three students were able to finish filming their ASL presentation and ready to make the QR code. We set up a table outside the classroom, for them to display the board and any other visuals they might have available. During this filming we did a quick review over the scientific method and numbered the order for each part. I allowed the students to try to make sense of it and then if necessary clarified. There was also opportunity for some individual flair- for example discussing the pictures more in depth at different times. The students that were able to film did so with little to no fixes to their signing level. They were able to practice prior to filming and it only took two tries for each and typically needed the redo due to the wind or other outside factors. While trying to film the Student #2 we ran out of time due to the class ending and needing more signing support. Student #2 was fingerspelling a lot and working with more of an English structure rather than ASL, resulting in signing every single word. This became very time consuming and tedious. I was able to work a little more with him to correct it a little more, but still had a lot of fingerspelling. I asked my CT if tomorrow he could help provide some more clarity because I knew I would have a lot more students that needed signing support moving forward.

In order to get through more students I could possibly create more of a system for filming and have students become in charge of their own set up and expectations. Due to the time constraint and upcoming deadline it seemed easier to be responsible for it. Next time, I would love to set up these expectations at the beginning of the year and then I would confidently be able to pass this off to the student and their responsibility knowing that I would receive quality work with the submission. Students were able to assess their own video and approve before I uploaded and created the QR code.

Red- Some students are still working on their project set up, doing their experiment, or are ready for the next step- filming. Students that are ready to film I did a quick explanation and gave time to practice. I worked with students on a one to one level to build the student's confidence with their experiment.

Tuesday May 23, 2023 Unit 2- Lesson 9: Presenting the Science

Objective: Students will practice their presentation for the science fair. Students will record their explanation of their project and create a QR code

I took the students one by one throughout the day to film their science fair project. The students had to highlight all eight parts of the scientific method in regards to their project. We filmed along the wall and my CT helped with the filming and signing process. We reviewed it once with each student as a practice before filming it.

Wednesday May 24, 2023 Unit 2- Lesson 9: Presenting the Science

Objective: Students will practice their presentation for the science fair. Students will record their explanation of their project and create a QR code

I took the students one by one throughout the day to film their science fair project. The students had to highlight all eight parts of the scientific method in regards to their project. We filmed along the wall and my CT helped with the filming and signing process. We reviewed it once with each student as a practice before filming it.

Thursday May 25, 2023 Unit 2- Lesson 10: Science Fair Day

Objective: Students will critique a peer's work using a rubric. Students will share their insights of scientific discovery to the school community.

ABC- Students were shown a rubric on the overhead projector. We reviewed the criteria and what each value means. Students are paired with someone that has already been decided and will have their project critiqued. Student #2 volunteered to sign and explain the first row of the rubric. Student #10 signed and explained the second row of the rubric. Student #18 explained the third row of the rubric. Student #9 explained the fourth row of the rubric. Once it was all explained and no questions were asked for clarification we gathered our tri-folds and headed to the Social Hall to set up for the science fair.

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name______________________________ Score:________

Figure 9: Student Rubric for Science Fair

We finished setting out the boards on the tables. It was time for students to complete their rubric while we waited for the school community to show up. They took turns watching each other present their project. Students then had to grade if each step of the scientific method was present. After they finished grading they turned the papers in then found their seat with their own tri-fold. The doors to the science fair opened and students were able to share their projects with the school community. The judges visited their booths and they had the opportunity to expand their knowledge and share what they learned throughout the process. After two hours, it was time to end the science fair. We thanked all that joined and applauded the students' hard work. Each student was responsible for bringing their tri-fold board and materials back to the classroom. Winner will be announced during the end of year awards ceremony for elementary students.

Tuesday May 30, 2023 Unit 2- Lesson 11: Post Assessment

Objective: Students will write or sign their final assessment to three questions.

ABC- The science lesson was the first task of the day. Each group (A,B, and C) stayed in their homeroom and I bounced between each class to support as needed. I started with the 4A group, jumped to 4B, then worked with 4C. I continued to rotate among the rooms to support as needed. Both the teachers of 4A and 4B have sat in on multiple lessons and had context and familiarity with the material. The 4C teacher had no observation time in the classroom but some understanding of the overall method. I passed out the papers with the three questions for the students to complete. I then wanted to give a little more context for the final assessment. We reviewed what we have been learning about and doing with the scientific method and science fair. Students wrote their name and the date on their paper and then we took the time to review the worksheet. I signed the first question: Do you enjoy learning about science; why or why not? The students understood with a little more elaboration referring back to their own projects and lessons from throughout the year. Then after sharing the second question, there was a little confusion: What is the scientific method and its steps? A student was not catching on to the signing of the word process, it took a few times to explain in different ways and some peers also shared their understanding and after writing it on the board clarification was provided. I also utilized their science fair display boards to point out the goal of the task to number the steps and fill in the correct order. With the 4A group I hoped for them to be able to also explain a little more detail about each step. For 4B and 4C I modeled the expectation for this questions with 1.____ 2.____ 3._____ all the way to 8.____ and the students could use the visual board to place it in order. This was an adjustment that was necessary when seeing that students were unsure but when discussing were able to put the ideas together. Also by providing the visual it supported their writing abilities.

A few students did get caught up sharing about their experience more so than the general overview of the scientific method but with one to one clarification were able to modify and create answers with an understanding of the question being asked. Some students needed more writing support and so I allowed for them to sign their response one on one and I wrote it out on a whiteboard for them to be able to copy in written English. Students were able to give responses in both sign and written English but the submitted work was all in written English. Once students were finished they were given free time to talk with friends, use iPads, whatever the teachers in homeroom deemed appropriate while their peers finished up. For next time, I would like to have a quick guided discussion before passing out the papers and giving them the opportunity to be distracted without any understanding of the task. In addition, the set up for the assessment was last minute and a little bit of bouncing around. I would have liked a more focused opportunity to work with all the students or review clearly the expectations with the other teachers before splitting the groups and having to be everywhere at once. Also how the assessment was presented was three questions with paragraph lines for students to write, I think for the second question it could have been structured differently with numbered fill in the blanks and a few paragraph lines for any added information.

Overall all students were able to complete the learning objective and answer all three questions with information related to the concept of scientific method. I think next steps could be to review with a hands-on game that allows for students to work collaboratively and learn from each other the material with a further understanding if there is time in the schedule. Students were able to participate in a class discussion and share their ideas and understandings. Working and learning from others can provide deeper connections to the materials that might otherwise be missed.

IX. EVALUATION RESULTS

The results of the curriculum were largely recorded using classroom observations, scientific method activities, rubrics, and the culminating science fair project. Looking back on the data, students were able to gain a better understanding of what the scientific method is and how to use it for deeper learning. The goals of the curriculum were to:

1. Utilize American Sign Language and Academic English through class discussion and activities to record scientific discoveries in accordance with inquiries and occurrences related to the scientific method practices.

2. Identify the steps of the scientific method such as developing a question, creating a hypothesis, making a plan, recording results, and concluding findings.

3. Apply scientific method practices and students will learn to answer their own independent scientific inquiry.

For students to succeed with the utilization of ASL and Academic English there were plenty of opportunities throughout the curriculum. Students filled out their scientific method steps on a flipchart (see Figure #5 Completed Flipchart Scores), recorded notes and details while completing the steps of the scientific method with the folding paper activities and their own experiments. Students also participated in class discussion in ASL with the teacher and fellow peers. Students also pre-recorded their project report for the science fair allowing them to showcase both their typed English and ASL signed responses to each aspect of the scientific method process (see in Appendix B: Student Work).

In order to evaluate students' understanding of identification of the scientific method students took part in multiple opportunities for learning. They participated in paper folding experiments needing to identify the next step in the process. While the students copied the English definitions onto their flipchart, this does not guarantee that they understood what they copied, however with the explanations afterwards, I did not collect their responses to determine who accurately explained each step. This would have been strengthened had I videotaped them before and after explaining the steps and what it meant. The students were able to complete note taking/recording practices to better identify components of a step in the process through hands-on movement activities. There were also several group discussions with visual support and practice both as an individual and as a group to identify those steps. Lastly, their final project for the science fair needed to include all eight steps and the formatting as closely as possible to provide ample aid in remembering the content.

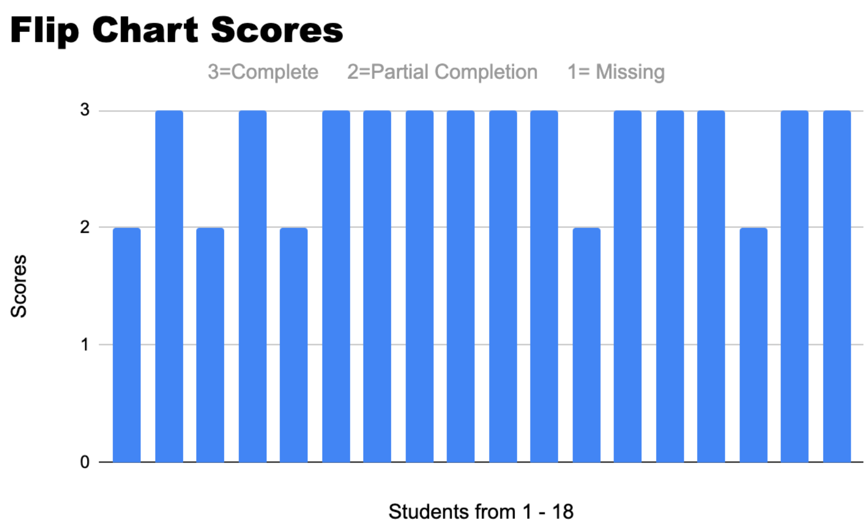


Figure 10: Flip Chart Completion Scores for all 8 Scientific Method Steps

The last goal of application is with support from a student's own curiosity. It is important to foster that development and allow for questions to be asked with a willingness to find those answers even if not entirely straightforward with the answer. Students were able to practice with in class activities and apply that to their own self discovery. While some students were able to do the experiment at home others needed to find time during the school day to work with peers to make their discoveries.

While the initial idea was to have a daily written or signed journal due to time constraints that made it difficult to complete, I believe through the supportive discussions in class there was still a deeper understanding of the material.

Looking at the data, I had eighteen students on the roster and was able to keep them engaged and excited to share their own work at the science fair. As a result all eighteen students were able to share their insights of scientific discoveries both in person and online with the larger community on campus. To help evaluate the discoveries made through the science fair projects there were seven judges that were able to share their perspective and insight using a provided rubric to grade the components and content of the display board.

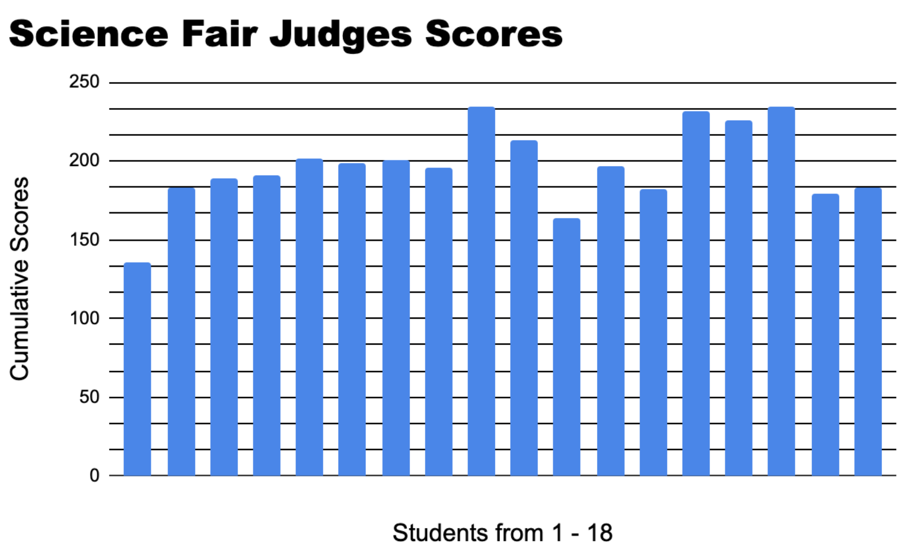


Figure 11: Science Fair Judges Scores

According to the pre- and post- assessments - three questions to answer using written English- all students were able to walk away with a new experience and enjoyment for learning about science. In the pre-assessment students were unsure of what the scientific method was most fixating on addressing what a scientist does in the lab as their process or method for good lab behavior. When comparing the students' responses in the pre- and post-assessment there are several areas of growth to be recognized. Students 3 and 11 for question number one about the enjoyment of science have a more positive attitude and now look forward to the time. In regards to question number 2 students shifted from having no understanding or sharing only about a scientist's role to describing and explaining the different parts of the scientific method. I also noticed in the responses a few students got caught up sharing about their own experiments rather than highlighting the general terminology. When asked for clarification in ASL they were able to explain the different steps. For question number 3 students highlighted the importance of how the method helps with a few students making connections to their own projects- Student 12, 15, and 16.

Table 10: Student Pre & Post Assessment Responses

Student Evaluation	Pre-Assessment Answers	Post-Assessment Answers
Student #	Questions: 1. Do you enjoy learning about science? Why or why not? 2. What is the scientific method and its steps? 3. How does this method help scientists?	Questions: 1. Do you enjoy learning about science? Why or why not? 2. What is the scientific method and its steps? 3. How does this method help scientists?
#1 Was able to list all eight steps of the scientific method with steps 1, 2, 3 ,4, 6, and 8 in the correct order.	**1.** Yes, dissect animals learn about genetics (DNA) **2.** N/A **3.** I don’t know important to read and understand.	**1**. Yes **2.** 1. Question 2. Hypothesis 3. Procedure 4. Materials 5. Summary 6. Data Collection 7. Experiment 8. Reevaluate

		3. If follow method, will learn better.
#2 Was able to identify and explain two steps of the scientific method with steps 1 and 2 in the correct order.	**1.** Yes because it makes me fun and I it's make me learn about animals. **2.** If you not follow the rules you will get hit or getting hurt **3.** If you help people they will understand more	**1.** Yes because have fun with science **2.** Question mean when people if talking about question hypothesis means what win the best **3.** Its help to follow for science
#3 Was able to identify one step of the scientific method.	**1.** No, because science is not my thing and its complicated a lot of reading and writing. **2.** Learn to understand gather information **3.** Don't know	**1.** Yes, because make things. **2.** Make and experiment **3.** Helps which and how the winds worked.
#4 Was able to list two steps of the scientific method and in the correct order.	**1.** Yes I like it and I like to see animals **2.** If not follow rules it will happen. **3.** Help to understand more	**1.** Because I didn't try eggs in glass. **2.** Which is that best 1.Question 2. Hypothesis **3.** Science
#5 Was absent and unable to make it up.	**1.** Yes, because I like to use science coat, experiment, and research on living/non-living **2.** Learn to understand gather information **3.** Don't know	**1.** **2.** **3.**
#6 Was able to list all eight steps of the scientific method with steps 1 and 2 in the correct order. Steps 3 and 4 were mixed up with each other but still shows progress.	**1.** Yes, like science because I can learn and understand many things **2.** Learn to understand gather information different experiments **3.** Learn to better understand	**1.** Yes because fun and I got to learn. **2.** Rubberbands helped tighten the melon and it exploded; 1. Question 2. Hypothesis 3. Materials 4. Procedure 5. Summary 6. Reevaluate 7. Data collection 8. Experiment **3.** Can learn from it
#7 Was able to list all eight steps of the scientific method with steps 1, 2, and 8 in the correct	**1.** I like using a microscope to see parts of human body and mix things. **2.** Learn to understand gather	**1.** Yes because I like to learn about body. I like to dissect rat and see inside the body **2.** 1. Question 2. Hypothesis

Table 10 Continued

order.	information different experiments **3.** Learn to better understand.	3. Materials 4. Data Collection 5. Summary 6. Experiment 7. Procedure 8. Reevaluate **3.** Important to follow and understand
#8 Was able to list all eight steps of the scientific method with steps 1 and 2 in the correct order.	**1.** Yes, because I learn from scientific and learn how make and fun enjoy. **2.** Learn to understand gather information different experiments **3.** Help to teach and learn. Learn to better understand	**1.** Yes why fun I make things slime **2.** 1. Question 2. Hypothesis 3. Data Collection 4. Summary 5. Procedure 6. Materials 7. Reevaluate 8. Experiment **3.** Learn to experiment
#9 Was able to explain the purpose for scientific method as a whole.	**1.** Yes, I really enjoy learning about science! Because we gets to learn about animal's eyes, their vision and black out. And I get to imagine about science! **2.** First step is safety, because if no safety, everyone can be killed, or injury. Second step is follow rules. **3.** Because plans make their experiment no blow up of go BOOM!	**1.** Yes, I really enjoy learning about science because we get to learn about very cool stuff. **2.** Method means the way of steps of describing to surgery an rat. **3.** Method makes their experiment of their very important project to success not fail, or make an unclear explode.
#10 Was able to list seven steps of the scientific method with step 4 in the correct order.	**1.** Yes why enjoy I learned how body works. **2.** If not follow rules it will happen. **3.** Helps to understand more.	**1.** Yes because fun and to learn. **2.** I have experiment question hypothesis materials procedure reevaluate data **3.** Helps to learn experiment understand summary
#11 Was able to list eight steps of the scientific method with step 8 in the correct order.	**1.** Dissect animals rules good **2.** **3.**	**1.** I so-so science because I into science **2.** 1. Hypothesis 2. Question 3. Materials 4. Data Collection 5. Summary 6. Experiment 7. Procedure 8. Reevaluate **3.** Help us learn

Table 10 Continued

#12 Was able to list seven steps of the scientific method with steps 1 and 2. Steps 3 and 4 were mixed up with each other but still shows progress. The last three steps are in the right consecutive order but because a step is missing all together is seen as showing progress.	**1.** Yes, because I learn from experiments and enjoy **2.** Learn to understand. Different experiments. Gather information. **3.** Learn to better understand. Help to teach and learn.	**1.** Yes because fun **2.** Question, hypothesis, materials, procedures, data collection, summary, reevaluate. **3.** Helped which colors spread faster
#13 Was able to list seven steps of the scientific method with steps 1, 2, 3, and 4 in the correct order.	**1.** Yes, I love science and enjoy and help learn. Because make me smart and we talk about animal. **2.** How make learn to school. **3.** How the make light for help can see of light we can't see.	**1.** Yes because is fun **2.** 1. Question 2. Hypothesis 3. Procedure 4. Materials 5. Summary 6. Reevaluate 7. Experiment **3.** I need scientific method to explain what I leave.
#14 Was able to list seven steps of the scientific method with steps 1 and 2 in the correct order. Steps 3 and 4 were mixed up with each other but still shows progress. The last three steps are in the right consecutive order but because a step is missing all together is seen as showing progress.	**1.** Yes I like reading, writing, and using a microscope and understand the inside of animal. **2.** Learn to understand and gather information different experiments understand. **3.** Help to teach and learn to between understand.	**1.** Yes it is cool. I love to learn different things. **2.** Question, Hypothesis, Materials, Procedure, Data Collection, Summary, Reevaluate. **3.** To help us learn more.
#15 Shared insight from their science fair project, clarified the goal of the post assessment but did not want to change their answer.	**1.** Im learn about planet earth nasa test rocket plant do have air? **2.** Smell, hear, taste, touch, see, help people know how eat sleep **3.** Taste, hear, touch, see, smell, help to science	**1.** Why because test people which drink energy popular learn something different. **2.** Im think prime because prime low sugar more people like **3.** Curious because Im very curious ask people taste drink then people which you like

Table 10 Continued

#16 Was able to list one step of the scientific method.	**1.** Yes I want be genius than albert **2.** If not follow rule then will get hurt and broken thing can cause fire **3.** Learn and be genius to be scientists and look where animal live.	**1.** Yes because I like project **2.** I did make and experiment. **3.** Helped to have a better thing like straws and wheels
#17 Was able to list and explain the eight steps of the scientific method with steps 1, 2, 7, and 8 in the correct order.	**1.** Yes why cuz I love to researching about planet and animals to make me smart and get ready on my map test. **2.** Science plan is to have all five taste, touch, hear, smell, and see all get science formation to know better in all the world. **3.**Taste, hear, touch, smell, and see help scientists to know the world better.	**1.** Yes, because Andrew T is a great teacher teaching me everything about science. **2.** Question mean want to know something. Hypothesis mean guess. Materials mean thing needed. Data collection mean measure how many cup. Procedure mean process. Experiment mean try it. Summary mean short explain. Reevaluate mean next time will do different. **3.** Yes because science really need those to understand and student hard with those method and method lead to teamwork.
#18 Shared insight from their science fair project, clarified the goal of the post assessment but did not want to change their answer.	**1.** I enjoy learn make the science fair and the world of star. I love make a glow-in-the-dark and mixed. Science make me all smart and idea like in the movie! I work very hard in the science! I am idea scientist. **2.** Idea and world. I guess the science are fun and best. Science plan is rules: gloves, smell, and safe. How make learn in the science class. **3.** Scientists help for their inspiring and science fair for their idea.	**1.** I love learning enjoy about my science fair, lava lamp and made a science easy by lava lamp. **2.** I guess. My lava lamp is super easy. I love it. I love make a lava lamp make see or can't see and bright or dark. **3.** Because Isabella help my science fair about questions. My teacher science, Andrew help me, too. He help me about picture of science. Ask my title science and practice my science.

In addition, over time students were picking up on the vocabulary being used and no longer needed the additional visual support from the graphic organizer to make the connection between sign language and English. Students were able to have a connection to the material and understanding for the terminology. For the scoring for the pre and post assessment some students were given a .5 point when they did include some vocabulary but did not meet the standards according to the rubric. Overall, each student was able to include at least one of the steps for the scientific method.

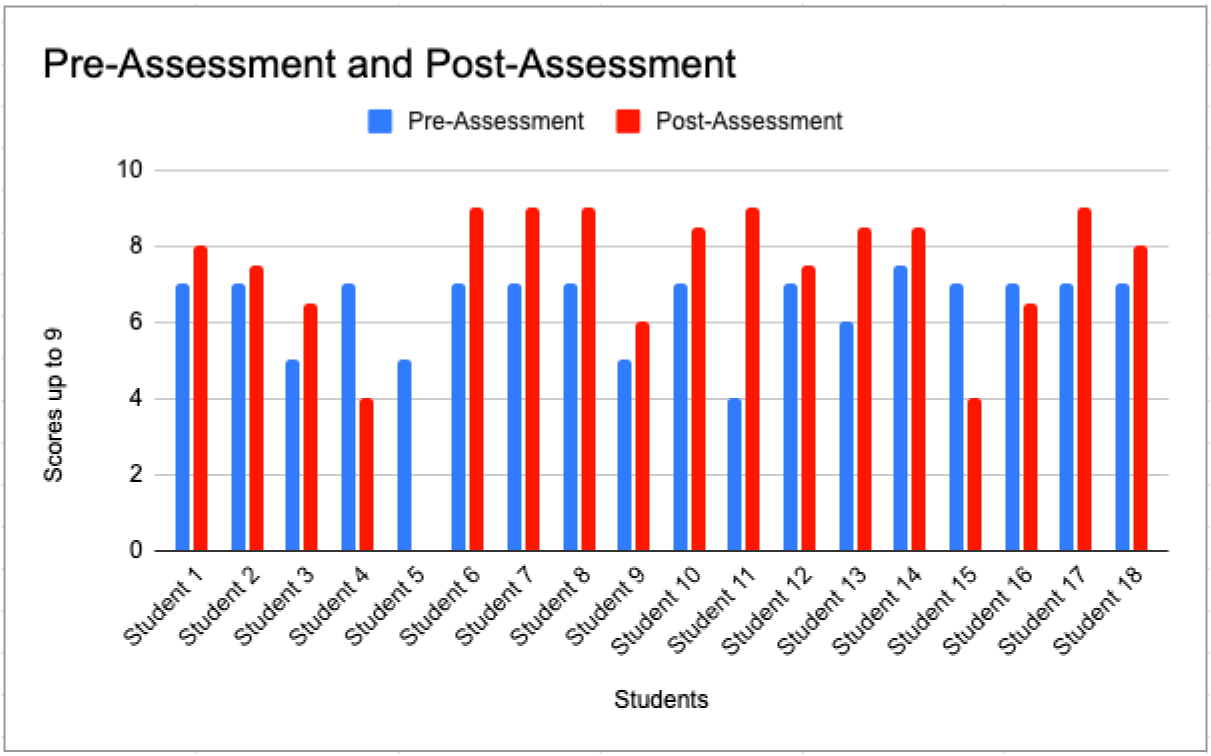


Figure 12: Pre-Assessment & Post Assessment Scores

After reviewing all of the work submitted by students, a lot of growth happened. With each lesson and activity progress was made and a deeper understanding of the material was achieved. Students became excited to share their ideas and the progress of their experiments, even working together to finish those that had to be done at school. Through this curriculum students gained valuable skills such as critical thinking, team work, and curiosity to find the answers and gain experience. Overall the three goals this curriculum set out to accomplish were met with satisfaction.

X. CONCLUSION

This experience to plan, create, and execute a curriculum in alliance with the necessary parameters is helpful in the development of an educator. It is so important to remember that learning needs to be beneficial and have a purpose other than fun or surface level information. This curriculum saw a lot of edits and adaptations to best fit the needs of the students and meet them where they are in the school year. Overall this curriculum allowed students to see their learning through a scientific lens. An opportunity for deeper understanding and to think like a scientist. Some of my greatest school memories are from those in science class and it was a full circle experience to be able to bring that to my students. While there was a lot of on the job planning and modifying I am proud of the work produced and can confidently say that my students learned and will remember the experiments attempted in this fourth grade classroom.

The curriculum titled: Scientists in the Making: Developing a Bilingual Understanding of the Scientific Method had three goals for students to work on accomplishing.

1. Utilize American Sign Language and Academic English through class discussion and activities to record scientific discoveries in accordance with inquiries and occurrences related to the scientific method practices.

    Based on the student work and evidence provided the class as a whole have met this goal.

2. Identify the steps of the scientific method such as developing a question, creating a hypothesis, making a plan, recording results, and concluding findings.

Based on the pre-recorded science fair videos, the class as a whole have met this goal.

3. Apply scientific method practices and students will learn to answer their own independent scientific inquiry.

Based on the word and ideas explored in preparation for the science fair both in class and with the outside community the class has met the goal.

Knowing what I know now, if I could reteach it and do something differently I think it would be to make sure I keep clear expectations throughout, establish a behavior management plan/tool early and consistently, and work to allow more time for in class experiments. During the last two weeks of the unit while scrambling to finish the science fair projects it was such a fun time to be in the classroom. Organized chaos I liked to call it, students were engaged and excited to be doing or sharing their experiment with peers. I would have loved to enjoy it more as a class rather than small groups and needing to jump around to keep everyone on task. For that dream to become a reality I would need more time and due to the end of the year events and schedule changes at this time it wasn't possible. However, I am so proud of the work I was able to accomplish and the growth my students made for the learning experience and the attitude towards it.

REFERENCES

Andrews, Jean. (2017). Teaching Science to Deaf Students: Language and Literacy Considerations. 10.13140/RG.2.2.33553.33128.

Applefield, James. M., Huber, R., & Moallem, M. (2000). Constructivism in Theory and Practice: Toward a Better Understanding. *The High School Journal*, *84*(2), 35–53. http://www.jstor.org/stable/40364404

California School for the Deaf, Riverside. (n.d.). *Mission and Values*. Mission and Values - CSD Riverside. https://www.csdr-cde.ca.gov/welcome/#mission

Coil, S. (2005). "Teaching science to deaf students: resources for teachers in kindergarten to fifth grade" Thesis. Rochester Institute of Technology. https://scholarworks.rit.edu/theses/4022

Drake, K. N., & Long, D. (2009). Rebecca's in the Dark: A Comparative Study of Problem-Based Learning and Direct Instruction/Experiential Learning in Two 4th-Grade Classrooms. *Journal of Elementary Science Education*, *21*(1), 1–16. http://www.jstor.org/stable/43155840

Egenrieder, J. A. (Jim). (2010). Facilitating Student Autonomy in Project-Based Learning to Foster Interest and Resilience in STEM Education and STEM Careers. *Journal of the Washington Academy of Sciences*, *96*(4), 35–45. http://www.jstor.org/stable/24536352

Garcia, O., Cole, D., Solomon, A., & Skuttnab-Kangas, T. (2014). Deaf gains in the study of bilingualism and bilingual education. In H.-D. L. Bauman & J. J. Murray (Eds.), Deaf Gain: Raising the Stakes for Human Diversity (pp. 95–111). University of Minnesota Press. http://www.jstor.org/stable/10.5749/j.ctt9qh3m7.11

Humphries, Tom & Macdougall, Francine. (2000). "Chaining" and other links: Making connections between American Sign Language and English in Two Types of School Settings. Visual Anthropology Review. 15. 84-94. 10.1525/var.2000.15.2.84.

Humphries, T. (2013). Schooling in American Sign Language: A paradigm shift from a deficit model to a bilingual model in deaf education. Berkeley Review of Education. Berkeley: University of California, Berkeley.

Kim, M. S. (2015). Empowering Prospective Teachers to Become Active Sense-Makers: Multimodal Modeling of the Seasons. *Journal of Science Education and Technology*, *24*(5), 610–627. http://www.jstor.org/stable/43867605

Kurz, K., Schick, B., & Hauser, P. (2015). Deaf children's science content learning in direct instruction versus interpreted instruction. *Journal of Science Education for Students with Disabilities*, *18*(1), 23–37. https://doi.org/10.14448/jsesd.07.0003

Lang, H. G. (2006). Teaching Science. In D. F. MOORES & D. S. MARTIN (Eds.), *Deaf Learners: Developments in Curriculum and Instruction* (pp. 57–66). Gallaudet University Press. https://doi.org/10.2307/j.ctv2rh292r.9

Lang, H. G., & Albertini, J. A. (2001). Construction of Meaning in the Authentic Science Writing of Deaf Students. *Journal of Deaf Studies and Deaf Education*, *6*(4), 258–284. http://www.jstor.org/stable/42658592

Lang, H. G., & Propp, G. (1982). Science Education for Hearing-Impaired Students: State-of-the-Art. *American Annals of the Deaf*, *127*(7), 860–869. http://www.jstor.org/stable/44389458

Lang, H. G., & Steely, D. (2003). Web-based science instruction for deaf students: What research says to the teacher. *Instructional Science*, *31*(4/5), 277–298. http://www.jstor.org/stable/41953621

Lange, C. M., Lane-Outlaw, S., Lange, W. E., & Sherwood, D. L. (2013). American sign language/English bilingual model: A longitudinal study of academic growth. *Journal of Deaf Studies and Deaf Education*, *18*(4), 532–544. https://doi.org/10.1093/deafed/ent027

McIntosh, R. A., Sulzen, L., Reeder, K., & Kidd, D. H. (1994). Making Science Accessible to Deaf Students: The Need for Science Literacy and Conceptual Teaching. *American Annals of the Deaf*, *139*(5), 480–484. http://www.jstor.org/stable/44390138

Moreno, R., & Mayer, R. (2007). Interactive Multimodal Learning Environments: Special Issue on Interactive Learning Environments: Contemporary Issues and Trends. *Educational Psychology Review*, *19*(3), 309–326. http://www.jstor.org/stable/23363954

Mystery Science. (n.d.). Retrieved October 10, 2022, from https://mysteryscience.com/astronomy/stars-the-solar-system

Neathery, M. F. (1998). INFORMAL LEARNING IN EXPERIENTIAL SETTINGS. *Journal of Elementary Science Education*, *10*(2), 36–49. http://www.jstor.org/stable/43155677

Next Generation Science Standards. (n.d.). *5.Space Systems: Stars and the solar system*. 5.Space Systems: Stars and the Solar System | Next Generation Science Standards. Retrieved October 9, 2022, from https://www.nextgenscience.org/topic-arrangement/5space-systems-stars-and-solar-system

Owsley, P. J. (1962). Teaching Science to Deaf Children. *American Annals of the Deaf*, *107*(3), 339–342. http://www.jstor.org/stable/44394212

Raven, S., Whitman, G.M. Science in Silence: How Educators of the Deaf and Hard-of-Hearing Teach Science. Res Sci Educ 49, 1001–1012 (2019). https://doi.org/10.1007/s11165-019-9847-7

Singleton, J. L., & Meier, R. P. (2021). Sign Language Acquisition in Context. In *Discussing Bilingualism in Deaf Children* (pp. 17–34). essay, Routledge.

Skyer & Cochell (2020). Aesthetics, Culture, Power Critical Deaf Pedagogy and ASL video publications as resistance to audism in Deaf education and research

Volman, M., & ’t Gilde, J. (2020). The effects of using students’ funds of knowledge on educational outcomes in the social and personal domain. *Learning, Culture and Social Interaction*, *28*, 100472. https://doi.org/10.1016/j.lcsi.2020.100472

Wang, Y. (2011). Inquiry-Based Science Instruction and Performance Literacy for Students Who Are Deaf or Hard of Hearing. *American Annals of the Deaf*, *156*(3), 239–254. http://www.jstor.org/stable/26235154

Watson, S. B., & James, L. (2004). The scientific method: Is it still useful? *Science Scope*, *28*(3), 37–39. http://www.jstor.org/stable/43183630

Yilmaz, K. (2008). Constructivism: Its Theoretical Underpinnings, Variations, and Implications for Classroom Instruction. *Educational Horizons*, *86*(3), 161–172. http://www.jstor.org/stable/42923724

APPENDIX A: CURRICULUM LESSON PLANS & MATERIALS

Resources Included:

- Lesson Plans
- Materials (Slides, Worksheets, Additional Books)
- Parent Communication
- Rubrics

Curriculum Overview

Unit 1:
Lesson 1: What is the Scientific Method?
Lesson 2: STEAM Activity- Let's Try it Out!
Lesson 3: Question- Is it Testable?
Lesson 4: Hypothesis- Let's Make a Prediction!
Lesson 5: Procedure and Materials- Clear Instructions are Important!
Lesson 6: Experiment and Data Collection- Let's Put it Into Action!
Lesson 7: Summarize and Reevaluate- Share it!
Unit 2:
Lesson 8: Display Board Making- Show it Off!
Lesson 9: Science Fair Presentation Videos- Access for All!
Lesson 10: Science Fair Day- Sharing with our School!
Lesson 11: Post-Assessment- Retention is Key!

Lesson 1: What is the Scientific Method? Day 1

Standard

- *Science Engineering Standards:* 3-5-ETS1-1 Define a simple design problem reflecting a need or a want that include specific criteria for success & constraints on materials, time, & cost.
- *Science Engineering Practices:* Asking Questions & Defining Problems; Planning & Carrying Out Investigations; Analyzing & Interpreting Data; Using Mathematics & Computational Thinking; Constructing Explanations & Designing Solutions; Engaging in Argument from Evidence; Obtaining, Evaluation, & Communicating Information
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- *ASL Viewing - Integration of Knowledge & Ideas:* Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in signs.
- *English Integration of Knowledge & Ideas:* R.I.4.7 Interpret information presented visually, orally, or quantitatively and explaining how the information contributes to an understanding of the text in which it appears.
- *Math:* MP.1 Make sense of problems and persevere in solving them

Content Objective

- Students will brainstorm the work of a scientist and identify the components of the scientific method based on prior knowledge and visual supports.

Language Objective

- ASL: Students will use listing strategies to show the process of the scientific method.
- English: Students will answer prompted questions on a provided worksheet/journal.

Formative Assessment

- Students will answer guiding questions that include:
  - What does a scientist look like?
  - What is the scientific method?
  - What are the steps included in the process?
- Students complete the pre-assessment worksheet about their understanding of the scientific method
  - Do you enjoy learning about science? Why or why not?
  - What is the scientific method & its steps?
  - How does this help scientists?

Summative Assessment

- Students will complete a pre-assessment worksheet.

Materials/Preparation

- Google Slides Powerpoint: What is the Scientific Method?
- Vocabulary Cards
  - Question
  - Hypothesis
  - Procedure
  - Experiment
  - Data
  - Evidence
  - Summarize
  - Reflect
- Sentence Frames
- Pre-Assessment Worksheet
  - 19 copies
- Scientific Method General Poster
  - Visual Organizer with steps for scientific method
- Expo Marker

The Lesson

Introduction

1. Set up the board
   a. Open Google Slides
      i. Link: What is the Scientific Method?
2. Hook Question: Ask students during group discussion with slideshow for visual support:
   a. What does a scientist do?
      i. Write their responses around the board and take a picture before moving on to the next question.
   b. Who is a scientist?
      i. Write their responses around the board and take a picture before moving on to the next question.
   c. What does a scientist look like?
      i. Write their responses around the board and take a picture before moving on to the next question.
      ii. Show slide with word & then a picture if needed
         1. Want students to answer unbiased so picture aids should be stick figures or tools that they use

        2. If needed start with picture to guide discussion & have students explain what they notice then make connection to the word/sign
    a. Give students time to now answer the first question in the pre-assessment
    d. What is the scientific method?
        i. Show slide with word & picture
            1. If needed start with picture & have students explain what they notice then make connection to the word/sign

<u>Procedure</u>

3. Let's take a closer look at the different parts of the scientific method
    a. Show the ASL video explaining the scientific method
        i. Give students time to now answer the two questions in the pre-assessment

<u>Closure</u>

4. Today we learned about scientists; what they do, who they are, and what they look like.
5. We also touched on the idea of the scientific method with a video as we continue this unit we will work on applying, practicing, and better understanding this process.

Modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids
- ❖ Brainstorming

Lesson 1: What is the Scientific Method? Day 2

Standard

- *Science Engineering Standards:* 3-5-ETS1-1 Define a simple design problem reflecting a need or a want that include specific criteria for success & constraints on materials, time, & cost.
- *Science Engineering Practices:* Asking Questions & Defining Problems; Planning & Carrying Out Investigations; Analyzing & Interpreting Data; Using Mathematics & Computational Thinking; Constructing Explanations & Designing Solutions; Engaging in Argument from Evidence; Obtaining, Evaluation, & Communicating Information
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- *ASL Viewing - Integration of Knowledge & Ideas:* Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in signs.
- *English Integration of Knowledge & Ideas:* R.I.4.7 Interpret information presented visually, orally, or quantitatively and explaining how the information contributes to an understanding of the text in which it appears.
- *Math:* MP.1 Make sense of problems and persevere in solving them

Content Objective

- Students will brainstorm the work of a scientist and identify the components of the scientific method based on prior knowledge and examples during class discussion and self reflection practices.

Language Objective

- ASL: Students will use listing strategies to show the process of the scientific method.
- English: Students will answer prompted questions on a provided worksheet/journal.

Formative Assessment

- Students will answer guiding questions that include:
    - What is the scientific method?
    - What are the steps included in the process?

Summative Assessment

- Students will create/fill in their own scientific method worksheet to refer to throughout the unit.
- Students complete an end of class slip addressing the lesson and any questions that they still have about the lesson.

Materials/Preparation

- Document Camera
- Google Slides Powerpoint: What is the Scientific Method?
- Vocabulary Cards
  - Question
  - Hypothesis
  - Procedure
  - Experiment
  - Data
  - Evidence
  - Summarize
  - Reflect
- Sentence Frames
- Science Thinking Journal & Prompts
  - Who uses the scientific method & why?
  - What questions do you hope to answer throughout this unit?
- Pre-Assessment Worksheet
  - 19 copies
- Scientific Method General Poster
  - Visual Organizer with steps for scientific method
- Scientific Method Flip Chart
  - 19 copies double sided for students to fill in
- Expo Marker

The Lesson

Introduction

1. Set up the board
   a. Open Google Slides
      i. Link: What is the Scientific Method?
2. Hook Question: Ask students during group discussion with slideshow for visual support:
   a. What is the scientific method?
      i. Show slide with word & picture
         1. If needed start with picture & have students explain what they notice then make connection to the word/sign

Procedure

3. Give students time to finish answering the questions in the pre-assessment
4. Let's take a closer look at the different parts of the scientific method
   a. Ask: Why is the scientific method important?

b. Show the visual organizer to refer back to and see the method as a whole while touching on each part.
    i. The visual organizer includes:
        1. 

    ii. This will be posted in the classroom to refer back to throughout the unit.
c. Pass out a worksheet for students to fill in
    i. Students need to fold the paper in thirds
    ii. Students place name on the plain white side (back)
    iii. Students cut along the dotted lines
d. Throughout this science unit we will be labeling & applying the scientific method processes and becoming scientists.

Closure

e. Today we finished our pre-assessment and got a little bit of a better understanding of the scientific method and created a note taking chart that we will continue to use.
f. Throughout this science unit we will be labeling & applying the scientific method processes and becoming scientists.

Modifications

- ❖ Frontloading & brainstorming information
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids

Lesson 2: STEAM Activity- Let's Try it Out!

Standard

- *Science:* 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- *Science Engineering Practices:* Asking Questions & Defining Problems; Planning & Carrying Out Investigations; Analyzing & Interpreting Data; Using Mathematics & Computational Thinking; Constructing Explanations & Designing Solutions; Engaging in Argument from Evidence; Obtaining, Evaluation, & Communicating Information
- *ASL Research to Build and Present Knowledge:* Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
- *ASL Viewing - Integration of Knowledge & Ideas:* Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in signs.
- *English Comprehension & Collaboration:* S.L.4.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- *Math:* MP.1 Make sense of problems and persevere in solving them

Content Objective

- Students will follow the scientific method process using STEAM tools and pre-prepared materials pointing out each aspect of the scientific method.

Language Objective

- English: Students will read and write about the procedure and findings during the activity with provided sentence frame and vocabulary support as needed.
- ASL: Students will give a brief summary of the activity using listing and shoulder shifting.

Formative Assessment

- Students will participate in a signed discussion.
- Students will respond/think about and ask questions regarding:
    - What is your hypothesis?

Summative Assessment

- Students will summarize and identify the scientific method practices through both written and signed explanations about the activity.

Materials/Preparation

- ❖ Document Camera
- ❖ Google Slides Powerpoint
  - ➢ Link: STEAM Activity - Let's Try it Out!
- ❖ Vocabulary Cards
  - ➢ Refer to Lesson 1
- ❖ Sentence Frames
  - ➢ I think ____ because ____.
  - ➢ I think the paper can be folded # times because _____.
  - ➢ I folded the paper like _____.
  - ➢ It took me ___ folds before I could not do it anymore.
- ❖ Scientific Method Poster
  - ➢ Refer to Lesson 1
- ❖ Markers
- ❖ Copy Paper
  - ➢ 7 Copies
- ❖ Cardstock Paper
  - ➢ 7 Copies
- ❖ Recording Sheet
  - ➢ 7 Copies
- ❖ Dry Erase Markers
- ❖ Science Thinking Journal & Prompts
  - ➢ Any ideas for your own project?
  - ➢ What is something new you learned today?
  - ➢ What questions do you still have after this lesson?

The Lesson

Introduction

1. Set up the board
   a. Open Google Slides
      i. Link: STEAM Activity - Let's Try it Out!
2. Show examples of science fair projects
   a. Use my own example when I was in 5th grade
   b. Ask students what they notice about the projects?
3. By the end of this unit you all will be experts at the scientific method and share your own insights using this process at the science fair on May 25th!
   a. Explain the Final Performance Task: Learning to Become a Scientist
      i. Goal: Pick something you are fascinated by and explore it from a scientific lens using the scientific method.

        ii. Role: You will become a scientist and ask questions, guess, predict, experiment, and explain your work.
        iii. Audience: You will get to share your presentation during the science fair on May 25th
        iv. Task: Create a proposal with a process of discovery and a final visual presentation to share.
        v. Evaluation: Based on clarity, process, and interesting facts
    b. Keep your own science project in mind as we continue with the unit.
4. Today we are going to become scientists and apply these skills throughout the activity to gain more learning experience. Make sure to explain each step then provide students with time to do the action or task
    a. Today we are going to be doing a little inquiry lab practicing the steps to the scientific method.
    b. Propose the question we will be working to answer today.
        i. How many times can you fold this piece of paper?
            1. Hand out the same size piece of paper to each student.
    c. Ask students to develop a hypothesis:
        i. Based on prior experience, what do you think the answer is?
        ii. Allow students time to develop a hypothesis.
        iii. Sentence frame if support is needed:
            1. I think the paper can be folded # times because _____.
    d. Ask students about procedure methods:
        i. How do you think we can answer this question?
            1. Come up with the procedure guide with students and provide support as needed.
                a. Fold the paper as many times as possible in any way that they think it can be done.
    e. Ask students about materials needed:
        i. What do you think we may need in order to be able to answer this question?
            1. Create a materials list with students and provide support as needed.
                a. A piece of copy paper
                b. Pencil
                c. Recording Sheet
    f. Ask students about data collection:
        i. How can we measure and collect data?
            1. Come up with a data method with students and provide support as needed
                a. Record how many times it was folded
                b. Share with class
    g. Ask students to explain the results:

            i. How did you fold the paper?
                1. Provide support as needed
                    a. I folded the paper like _____.
                    b. It took me ___ folds before I could not do it anymore.
        h. Ask students to reflect on what could be better or change for next time.
            i. What would you do differently?
        i. If there is time, allow students to try what they want to change or do differently next time.
        j. If there is time, allow students to try again with a different kind of paper such as cardstock or a smaller piece of paper.
5. We have had some great practice with this activity and will continue to do more and we learn more in depth about the process of the scientific method.

<u>Procedure</u>

6. ASL Discussion (5 min)
    a. Have students share in a class discussion
    b. Students respond to these prompts
        i. How did a hypothesis support your learning?
        ii. What are some questions you have after our lesson today?
        iii. What is something new you learned today?

Modifications Refer to IEPs to guide modifications

- Frontloading information
- Strategic partnering
- Alternate means of expressing ideas
- Vocabulary support in both English and ASL

Lesson 3: Question - Is it Testable?

Standard

- *Science*: 3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- *Science Engineering Practices:* Asking Questions & Defining Problems
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric
- *English Integration of Knowledge & Ideas:* R.I.4.7 Interpret information presented visually, orally, or quantitatively and explaining how the information contributes to an understanding of the text in which it appears.
- *Math*: MP.1 Make sense of problems and persevere in solving them

Content Objective

- Students will identify the criteria needed to create a question for the scientific method.
- Students will differentiate between good and bad types of questions.

Language Objective

- English: Students will write independently or with the support of sentence frames their question for the science fair.
- ASL: Students will practice using non manual signals for asking questions.

Formative Assessment

- Students will participate in a movement activity to determine if a question is scientific.
- Able to respond/think about and ask questions regarding:

Summative Assessment

- Students will answer targeted questions within their signed journal entry.
- Students will submit a completed worksheet with a proposed question for the science fair project.

Materials/Preparation

- Document Camera
- Google Slides Powerpoint
  - Question - Is it Testable?
- Vocabulary Cards (refer to language objective for examples)
  - Lesson 1
- Sentence Frames (refer to language objective for examples)
- Science Thinking Journal
- Science Fair Question Proposal Worksheet

❖ Scientific Question Poster
❖ iPad

The Lesson

Introduction (5 mins)

1. Set up the board
    a. Open Google Slides
        i. Link to critical thinking presentation: Question - Is it Testable?
2. Remind students about the previous lessons covering the scientific method processes as a whole.
    a. What did we learn about last week?
    b. What are the steps, in your own words?
    c. What kind of experiment did we do?
3. Today we are going to focus on step one of the scientific method- question.
4. During a class group discussion ask students:
    a. What does it mean to question?
        i. Show slide with word & then a picture if needed
            1. Want students to answer unbiased so picture aids should be stick figures or tools that they use
            2. If needed start with picture to guide discussion & have students explain what they notice then make connection to the word/sign
    b. What kinds of questions are there?
    c. What is a scientific question?
        i. Have students copy down the description into their flip chart to be able to refer back to
        ii. Post the scientific question poster under the other infographic to refer back to as needed

Procedure

5. Let's take a closer look at what the criteria is for a scientific question.
    a. The question should be able to be answered with an experiment
    b. The question needs to have a clear and specific goal
    c. The question has cause and effect word choices
    d. The question tends to compare ideas
6. Parts of a scientific question
    a. Variable: something that can change in the experiment
    b. There are two kinds that you will be working with during this practice
    c. Independent and dependent variables
        i. Independent is a variable that the scientist can change
        ii. Dependent is a variable that reacts to the independent change

        iii. Ex. how much water you give a plant is an independent variable; how the plant grows is a dependent variable
7. Propose a scientific question from an example science fair project
    a. When juggling, which kind of soccer ball is easier to control- futsal or regular ball?
        i. Have students share their ideas and what the goal of the question is asking.
8. Show students sample structure for if they are stumped with where to start or if the question is a scientific one
    a. How does ___ affect ___?
    b. What is the effect of ____ on _____?
    c. Allow students time to think about an example; provide one if necessary.
9. Movement Activity
    a. Post up a question and ask students to pick based on what they just learned is the criteria for a scientific question.
        i. Ex. Who invented electricity?
            1. Is this a scientific question?
            2. If yes, stand on the right side of the classroom. If not, stand on the left side of the classroom.
            3. Students volunteer to share their answers and understandings for their reasoning.
        ii. Ex. How do different ingredients affect the stickiness of slime?
            1. Is this a scientific question?
            2. If yes, stand on the right side of the classroom. If not, stand on the left side of the classroom.
            3. Students volunteer to share their answers and understandings for their reasoning.
        iii. Have a few more examples for students to practice with.
            1. How do you make slime?
            2. What is the effect of heat on the melting of candy?
            3. What is a paper airplane?
            4. How does the size of the paper affect how far a paper airplane can fly?
            5. What is the effect of soil type on plant height?
10. Your Turn
    a. Now that we have learned and identified different kinds of questions, let's create our own.
        i. Share how I decided on my own science fair project based on my interests at the time.
        ii. Hand out a worksheet for students to develop their own question for the science fair project.

iii. Students will need to get approval of their question before moving on to the next step of their project.
iv. Support students as needed.
1. If students are stumped with what question to propose; have students think about their own interests and in what ways that can be incorporated into this science project.
2. Try to have the student lead the teacher as a way to check for their understanding with the task.
v. Due to time constraints it may need to be thought about more as homework; but make sure everyone is good to go before moving further in the scientific method process

<u>Closure</u>

11. ASL Discussion (5 min)
    a. Students respond to these prompts
        i. What is a scientific question?
        ii. What question are you thinking of proposing for your project? Why?
        iii. What are some questions you have after our lesson today?
        iv. What is something new you learned today?

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL

Lesson Work Day

Standard

- *Science*: 3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- *Science Engineering Practices:* Asking Questions & Defining Problems
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric
- *English Integration of Knowledge & Ideas:* R.I.4.7 Interpret information presented visually, orally, or quantitatively and explaining how the information contributes to an understanding of the text in which it appears.
- *Math*: MP.1 Make sense of problems and persevere in solving them

Content Objective

- Students will pick a science fair project topic and create their own question

Language Objective

- English: Students will write independently or with the support of sentence frames their question for the science fair.
- ASL: Students will practice using non manual signals for asking questions.

Formative Assessment

- Students will use the provided materials to find a science fair topic.

Summative Assessment

- Students will submit a completed worksheet with a proposed question for the science fair project.

Materials/Preparation

- Document Camera
- Vocabulary Cards (refer to language objective for examples)
    - Lesson 1
- Sentence Frames (refer to language objective for examples)
    - How does ____ affect ___?
    - What is the effect of ____ on _____?
    - Which ___ is/has the best ____?
- Science Thinking Journal
- Science Fair Question Proposal Worksheet
- Scientific Question Poster
- iPad

The Lesson

Introduction (5 mins)

1. Set up the board
    a. Show sentence frames
2. Remind students about the goals of a scientific question
    a. The question should be able to be answered with an experiment
    b. The question needs to have a clear and specific goal
    c. The question has cause and effect word choices
    d. The question tends to compare ideas

Procedure

3. Your Turn
    a. Now that we have learned and identified different kinds of questions, let's create our own.
        i. Hand out the worksheet for students to develop their own question for the science fair project.
        ii. Students will need to get approval of their question before moving on to the next step of their project.
        iii. Support students as needed.
            1. If students are stumped with what question to propose; have students think about their own interests and in what ways that can be incorporated into this science project.
            2. Try to have the student lead the teacher as a way to check for their understanding with the task.
        iv. Students are allowed access to the science fair books and ipad to explore more.
        v. Needs to be an original idea

Closure

4. If students do not finish have them work on it during homework time

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL

Lesson 4: Hypothesis Let's Make a Prediction

Standard

- *Science*: 3-4-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- *Science Engineering Practices:* Asking Questions & Defining Problems
- *English Text Types & Purposes:* W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
- *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric*:*
- *Math:* MP.1 Make sense of problems and persevere in solving them

Content Objective

- Students will identify the criteria needed to create a hypothesis for the scientific method.
- Students will differentiate between good and bad types of hypotheses and explain their reasoning.

Language Objective

- ASL: Students will showcase listing strategies to explain the criteria for writing a hypothesis.
- English: Students will develop a written first draft of their hypothesis.

Formative Assessment

- In either sign or written english students will answer questions such as:
  - What is a hypothesis?
  - What needs to be included in a hypothesis?
  - Why is a hypothesis important?
  - Is this an example of a good hypothesis?
- Students will participate and explain during a movement activity if a statement is a hypothesis.

Summative Assessment

- Students will write a first draft of their hypothesis that is related to their science fair project.

Materials/Preparation

- Document Camera
- Google Slides Powerpoint

- ➢ (4) Hypothesis- Let's Make a Prediction!

- ❖ Vocabulary Cards (refer to language objective for examples)
  - ➢ Hypothesis
  - ➢ Predict
  - ➢ Guess
  - ➢ Think
  - ➢ Believe
- ❖ Sentence Frames (refer to language objective for examples)
  - ➢ If _____ then ____.
  - ➢ I think this because _______.
- ❖ iPad
- ❖ Science Fair Project Books
  - ➢ Students can get ideas and explore other examples

The Lesson

<u>Introduction</u>

1. Set up the board
   a. Open Google Slides
      i. (4) Hypothesis- Let's Make a Prediction!
2. Remind students about the previous lesson- learning about the scientific method process.
   a. Developing good scientific questions to experiment for the science fair
3. Today we are going to learn more about the second step and then apply these skills to our own projects to gain experience..

<u>Procedure</u>

4. During a class group discussion ask students:
   a. What does hypothesis mean?
      i. Show slide with word & then a picture if needed
         1. Want students to answer unbiased so picture aids should be stick figures or tools that they use
         2. If needed start with picture to guide discussion & have students explain what they notice then make connection to the word/sign
      ii. Have students copy down the description into their flip chart to be able to refer back to
      iii. Post the scientific question poster under the other infographic to refer back to as needed

<u>Procedure</u>

5. Let's take a closer look at what the criteria is for a scientific question.
   a. An educated guess
   b. Relates back to the question
   c. If/Then statement

   d. Use scientific language to explain thinking process
6. Show sentence frame sample structure
   a. If _____ then _____.
   b. I think _____ because______.
      i. Think can be swapped for words such as predict, guess, believe
7. Show an example hypothesis from the previous plant example
   a. If I give a plant more water, then it will grow taller. I think it will grow taller because plants need water and having a lot can help the development.
   b. What do you notice?
   c. What do you think?
   d. Have students point out key words such as
      i. If and Then
      ii. Because
8. Parts of a hypothesis:
   a. Important to use scientific language and developing skills to expand our understanding
   b. This looks like using vocabulary such think, predict, guess, believe
9. Ask students
   a. What is an important hypothesis?
      i. Record their ideas on the board for all students to see
10. Allow students an opportunity to use sentence frames as needed
    a. I think ___ because _____.
    b. If ____ then ______.
11. Movement Activity
    a. Post up a statement and ask students to pick based on what they just learned is the criteria for a scientific question.
       i. Ex. If plants grow in cold temperatures then the leaf will change color. I believe this is because of how seasons change.
          1. Is this a hypothesis?
          2. If yes, stand on the right side of the classroom. If not, stand on the left side of the classroom.
          3. Students volunteer to share their answers and understandings for their reasoning.
       ii. Ex. Ice cream melts slower than ice. I think this because ice is only one ingredient.
          1. Is this a hypothesis?
          2. If yes, stand on the right side of the classroom. If not, stand on the left side of the classroom.
          3. Students volunteer to share their answers and understandings for their reasoning.
       iii. Ex. Tea is better than soda.
          1. Is this a hypothesis?

        2. If yes, stand on the right side of the classroom. If not, stand on the left side of the classroom.
        3. Students volunteer to share their answers and understandings for their reasoning.
    iv. Ask students if they can come up with one example.
        1. Propose a question for students to hypothesize with.
        2. How does the size of the paper affect how far a paper airplane can fly?

12. Your Turn
    a. Now that we have learned and identified different kinds of hypotheses, let's create our own.
        i. Hand out a worksheet for students to develop their own question for the science fair project.
        ii. Students will need to get approval of their question before moving on to the next step of their project.
        iii. Support students as needed.
            1. If students are stumped with what question to propose; have students think about their own interests and in what ways that can be incorporated into this science project.
            2. Try to have the student lead the teacher as a way to check for their understanding with the task.
        iv. Due to time constraints it may need to be thought about more as homework
            1. Make sure everyone is good to go before moving further in the scientific method process

<u>Closure</u>

13. Wrap Up
    a. Today we crafted your project hypothesis/guess
        i. Next week we will start thinking about your procedure and materials needed.
    b. Before you leave please hand me your work for today.

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids
- ❖ Brainstorming
- ❖ Vocabulary support in both English and ASL

Lesson 5: Procedure & Materials - Clear Instructions are Important!

Standard

- *Science*: 3-4-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- *Science Engineering Practices:* Planning and Carrying Out Investigations
- *English Text Types & Purposes:* RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text or part of a text.
- *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric*:*
- *Math:* MP.5 Use appropriate tools strategically

Content Objective

- Students will identify the criteria needed to create a materials list and procedures for the scientific method.
- Students will discuss the difference between instructions and word choice.

Language Objective

- ASL: Students will showcase listing strategies while listing the materials needed.
- English: Students will develop a written first draft of their materials.

Formative Assessment

- In either sign or written english students will answer questions such as:
  - What are materials?
  - What is a procedure?
  - What do you need to include in your procedure?
  - Why is a hypothesis important?
  - Is this an example of a materials list?
  - Is there an example of a procedure?

Summative Assessment

- Students will write a first draft of their materials list that is related to their science fair project.

Materials/Preparation

- Document Camera
- Google Slides Powerpoint
  - (5) Procedure and Materials

- ❖ Vocabulary Cards (refer to language objective for examples)
    - ➢
- ❖ Sentence Frames (refer to language objective for examples)
    - ➢ First, ____.
    - ➢ Second, _____.
    - ➢ Next, ______.
    - ➢ Last, ________.
- ❖ iPad
- ❖ Science Fair Project Books
    - ➢ Students can get ideas and explore other examples

The Lesson

Introduction

1. Set up the board
    a. Open Google Slides
        i. (5) Procedure/Materials - Clear Instructions are Important!
2. Remind students about the previous lesson- learning about the scientific method process.
    a. Developing good scientific questions to experiment for the science fair
    b. Hypothesis for the science fair
3. Today we are going to learn more about the third and fourth step and then apply these skills to our own projects to gain experience..

Procedure

4. During a class group discussion ask students:
    a. What does procedure mean?
        i. Show slide with word & then a picture if needed
            1. Want students to answer unbiased so picture aids should be stick figures or tools that they use
            2. If needed start with picture to guide discussion & have students explain what they notice then make connection to the word/sign
        ii. Have students copy down the description into their flip chart to be able to refer back to
        iii. Post the scientific question poster under the other infographic to refer back to as needed

Procedure

5. Show sentence frame sample structure
    a. First, _____.
    b. Next, ______.
    c. Etc.
        i. Think can be swapped for words such as numbers in addition
6. Show an example hypothesis from the previous plant example

a. If I give a plant more water, then it will grow taller. I think it will grow taller because plants need water and having a lot can help the development.
b. What happens next?
c. What do I need to do to test my question?
d. What do you notice?
e. What do you think?

7. Parts of a Procedure:
    a. Make a list
    b. Numbered
    c. Be specific
    d. Clear for others to follow
8. Ask students
    a. Why is procedure important?
        i. Record their ideas on the board for all students to see
9. Allow students an opportunity to use sentence frames as needed
    a. I think ___ because _____.
    b. If ____ then ______.
10. Activity
    a. Post up a statement and ask students to pick based on what they just learned is the criteria for a scientific procedure.
        i. What are the steps?
        ii. How should it be phrased?
11. Your Turn
    a. Now that we have learned and identified different word choice for procedures and materials, let's create our own.
        i. Hand out a worksheet for students to develop their materials list and start their reflection for the science fair project.
        ii. Support students as needed.
            1. If students are stumped with what question to propose; have students think about their own interests and in what ways that can be incorporated into this science project.
            2. Try to have the student lead the teacher as a way to check for their understanding with the task.
            3. Check in with students and their understanding of the task
        iii. Due to time constraints it may need to be thought about more as homework
            1. Make sure everyone is good to go before moving further in the scientific method process

<u>Closure</u>

12. Wrap Up
    a. Today we crafted your project materials list
        i. You are ready to start doing the work.
    b. Before you leave please hand me your work for today.

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids
- ❖ Brainstorming
- ❖ Vocabulary support in both English and ASL

Lesson 6: Experiment and Data Collection - Let's Put it into Action!

Standard

- ❖ *Science*: 3-4-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- ❖ *Science Engineering Practices:* Planning and Carrying Out Investigations
- ❖ *English Text Types & Purposes:* RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text or part of a text.
- ❖ *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- ❖ *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric*:*
- ❖ *Math:* MP.5 Use appropriate tools strategically

Content Objective

- ❖ Students will identify the purpose of an experiment and the importance of data collection.
- ❖ Students will participate in a more fully developed scientific experiment and collect data.

Language Objective

- ❖ ASL: Students will share their ideas during a discussion.
- ❖ English: Students will write the details of the science experiment and the occurrences during.

Formative Assessment

- ❖ In either sign or written english students will answer questions such as:
  - ➢ What is an experiment?
  - ➢ What is data collection?
  - ➢ Why is doing an experiment important?
  - ➢ Why is a data collection process important?

Summative Assessment

- ❖ Students will turn in a science recording sheet focusing on the science project activity.
- ❖ Students will be provided a sample worksheet to use for their own project.

Materials/Preparation

- ❖ Document Camera
- ❖ Google Slides Powerpoint
  - ➢ (6) Experiment - Let's Put it into Action!
- ❖ Sentence Frames (refer to language objective for examples)

        - ➢ I observed _____.
        - ➢ I noticed _____.
        - ➢ I saw ______.
        - ➢ Oit needs to be ______.
- ❖ iPad
- ❖ Science Fair Project Books
    - ➢ Students can get ideas and explore other examples
- ❖ Recording Sheet
- ❖ Pencil
- ❖ Colorful Gift Tissue Paper
- ❖ Shiny Gift Tissue Paper
- ❖ Wrapping Paper
- ❖ Cardstock Paper
- ❖ Paper Towel
- ❖ Parchment Paper
- ❖ White Copy Paper
- ❖ Post-it Note
- ❖ Notebook Paper
- ❖ Toilet Paper
- ❖ Paper Envelope
- ❖ Paper Bag
- ❖ Streamer Paper

The Lesson

Introduction

1. Set up the board
    a. Open Google Slides
        i. (6) Experiment - Let's Put it into Action!
2. Pass out to the students their flipchart and the papers to take home to their parents to further explain their science project that will need to be completed with their family at home.
3. Remind students about the previous lesson- learning about the scientific method process.
    a. Refer to the poster highlighting each step
4. Today we are going to learn more about the fifth and sixth step and then apply these skills to our own projects to gain experience.

Procedure

5. During a class group discussion ask students:
    a. What does experiment mean?
        i. Show slide with word & then a picture if needed

            1. Want students to answer unbiased so picture aids should be stick figures or tools that they use
            2. If needed start with picture to guide discussion & have students explain what they notice then make connection to the word/sign
        ii. Have students copy down the description into their flip chart to be able to refer back to
            1. After the timer goes off, explain what was just copied.
        iii. Post the scientific experiment poster under the other infographic to refer back to as needed
    b. What does experiment mean?
        i. Show slide with word & then a picture if needed
            1. Want students to answer unbiased so picture aids should be stick figures or tools that they use
            2. If needed start with picture to guide discussion & have students explain what they notice then make connection to the word/sign
        ii. Have students copy down the description into their flip chart to be able to refer back to
            1. After the timer goes off, explain what was just copied.
        iii. Post the scientific experiment poster under the other infographic to refer back to as needed
6. Activity- Now it's the students turn!
    a. Let's try our first experiment but with a little bit of a different twist.
    b. Copy down onto a recording sheet and allow students time to experiment.
        i. Question: Does the material affect the amount of times a paper can be folded?
            1. Ask students how it is different from the previous activity with a white copy paper?
            2. Ask students why we ask a question?
            3. Copy it onto record sheet
        ii. Hypothesis: I think that the _______ will be folded more than __________.
            1. Ask students what does hypothesis mean?
            2. Pick two of the materials that you want to test from the samples available.
            3. Make a note of student's choices and allow them to fill in the sentence frame with their choice
        iii. Procedure: 1. Pick two types of paper to compare. 2. Label Trial 1 with a paper sample. 3. Start to fold and make a tally for each fold. 4. Write the total number of folds. 5. Repeat steps with the other kind of paper.
            1. Ask students why we need a procedure?

2. Copy onto the record sheet.
3. Model

iv. Materials: Recording Sheet, Pencil, Colorful Gift Tissue Paper, Shiny Gift Tissue Paper, Wrapping Paper, Cardstock Paper, Paper Towel, Parchment Paper, White Copy Paper, Post-it Note, Notebook Paper, Toilet Paper, Paper Envelope, Paper Bag, Streamer Paper
   1. Ask students to share why we have to have a list of materials?
   2. Copy onto the recording sheet the first two points and the two choices they made during the hypothesis.

v. Experiment: Follow the Procedure; Take Pictures; Make Observations
   1. Model the process.
   2. Ask students what we do for conducting the experiment?
   3. Remind students to take pictures and make observations.

vi. Data Collection Record tally marks for each trial.
   1. Model the process
   2. Ask students why we need to collect data?

vii. Summarize: I folded the paper into __<u>(shape)</u>______.With the __<u>(type)</u>____ it took __<u>(#)</u>___ times. With the __<u>(type)</u>__ it took ____<u>(#)</u>_____ times. My hypothesis was _______.
   1. Provide support and model
   2. Ask students why we need to summarize?

viii. Reevaluate: Next time I will _________.
   1. Ask why we need to reevaluate?

<u>Closure</u>

7. Wrap Up
   a. Today we practiced how to run an experiment with different trials testing different materials.
      i. You are ready to start doing the work for your own project..
   b. Before you leave please hand me your work for today.

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids
- ❖ Brainstorming
- ❖ Vocabulary support in both English and ASL

Lesson 6: Experiment and Data Collection - Let's Put it into Action!

Standard

- *Science*: 3-4-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- *Science Engineering Practices:* Planning and Carrying Out Investigations
- *English Text Types & Purposes:* RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text or part of a text.
- *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric*:*
- *Math:* MP.5 Use appropriate tools strategically

Content Objective

- Students will identify the purpose of an experiment and the importance of data collection.
- Students will participate in a more fully developed scientific experiment and collect data.

Language Objective

- ASL: Students will share their ideas during a discussion.
- English: Students will write the details of the science experiment and the occurrences during.

Formative Assessment

- In either sign or written english students will answer questions such as:
    - What is an experiment?
    - What is data collection?
    - Why is doing an experiment important?
    - Why is a data collection process important?

Summative Assessment

- Students will turn in a science recording sheet focusing on the science project activity.
- Students will be provided a sample worksheet to use for their own project.

Materials/Preparation

- Document Camera
- Google Slides Powerpoint
    - (6) Experiment - Let's Put it into Action!
- Sentence Frames (refer to language objective for examples)

- ➢ I observed _____.
- ➢ I noticed _____.
- ➢ I saw ______.
- ➢ Oit needs to be ______.

- ❖ iPad
- ❖ Science Fair Project Books
    - ➢ Students can get ideas and explore other examples
- ❖ Recording Sheet
- ❖ Pencil
- ❖ Colorful Gift Tissue Paper
- ❖ Shiny Gift Tissue Paper
- ❖ Wrapping Paper
- ❖ Cardstock Paper
- ❖ Paper Towel
- ❖ Parchment Paper
- ❖ White Copy Paper
- ❖ Post-it Note
- ❖ Notebook Paper
- ❖ Toilet Paper
- ❖ Paper Envelope
- ❖ Paper Bag
- ❖ Streamer Paper

The Lesson

Introduction

1. Set up the board
    a. Open Google Slides
        i. (6) Experiment - Let's Put it into Action!
2. Pass out to the students their flipchart
3. Remind students about the previous lesson- learning about the scientific method process.
    a. Refer to the poster highlighting each step
4. Today we are going to learn more about the fifth and sixth step and then apply these skills to our own projects to gain experience.

Procedure

5. Activity- Now it’s the students turn!
    i. Procedure: 1. Pick two types of paper to compare. 2. Label Trial 1 with a paper sample. 3. Start to fold and make a tally for each fold. 4. Write the total number of folds. 5. Repeat steps with the other kind of paper.
        1. Ask students why we need a procedure?
        2. Copy onto the record sheet.

3. Model

ii. Materials: Recording Sheet, Pencil, Colorful Gift Tissue Paper, Shiny Gift Tissue Paper, Wrapping Paper, Cardstock Paper, Paper Towel, Parchment Paper, White Copy Paper, Post-it Note, Notebook Paper, Toilet Paper, Paper Envelope, Paper Bag, Streamer Paper
    1. Ask students to share why we have to have a list of materials?
    2. Copy onto the recording sheet the first two points and the two choices they made during the hypothesis.

iii. Experiment: Follow the Procedure; Take Pictures; Make Observations
    1. Model the process.
    2. Ask students what we do for conducting the experiment?
    3. Remind students to take pictures and make observations.

iv. Data Collection Record tally marks for each trial.
    1. Model the process
    2. Ask students why we need to collect data?

v. Summarize: I folded the paper into __(shape)______.With the __(type)____ it took __(#)___ times. With the __(type)__ it took ____(#)_____ times. My hypothesis was _______.
    1. Provide support and model
    2. Ask students why we need to summarize?

vi. Reevaluate: Next time I will _________.
    1. Ask why we need to reevaluate?

Closure

6. Wrap Up
    a. Today we practiced how to run an experiment with different trials testing different materials.
        i. You are ready to start doing the work for your own project..
    b. Before you leave please hand me your work for today.

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids
- ❖ Brainstorming
- ❖ Vocabulary support in both English and ASL

Lesson 7: Summarize and Reevaluate- Share it!

Standard

- *Science*: 3-4-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- *Science Engineering Practices:* Planning and Carrying Out Investigations
- *English Text Types & Purposes:* RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text or part of a text.
- *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric*:*
- *Math:* MP.5 Use appropriate tools strategically

Content Objective

- Students will identify the purpose of summarizing findings and re evaluating their work.
- Students will continue to use the previous science experiment sample to practice each step of the process.

Language Objective

- ASL: Students will share their ideas during a discussion.
- English: Students will write the details of the science experiment and the occurrences during.

Formative Assessment

- In either sign or written english students will answer questions such as:
  - What is a summary?
  - What is reevaluation?
  - Why is it important to summarize findings?
  - Why is it important to reevaluate?

Summative Assessment

- Students will turn in a completed science recording sheet focusing on the science project activity.
- Students will be provided a sample worksheet to use for their own project.

Materials/Preparation

- Document Camera
- Google Slides Powerpoint
  - (7) Summarize and Reevaluate
- Sentence Frames (refer to language objective for examples)

    - ➢ I guessed ____ and it was _____.
    - ➢ My hypothesis was _____.
    - ➢ I thought ______.
    - ➢ Next time I will _____.
    - ➢ I am still curious about ____.
- ❖ iPad
- ❖ Science Fair Project Books
    - ➢ Students can get ideas and explore other examples
- ❖ Recording Sheet
- ❖ Pencil
- ❖ Colorful Gift Tissue Paper
- ❖ Shiny Gift Tissue Paper
- ❖ Wrapping Paper
- ❖ Cardstock Paper
- ❖ Paper Towel
- ❖ Parchment Paper
- ❖ White Copy Paper
- ❖ Post-it Note
- ❖ Notebook Paper
- ❖ Toilet Paper
- ❖ Paper Envelope
- ❖ Paper Bag
- ❖ Streamer Paper

The Lesson

Introduction

1. Set up the board
    a. Open Google Slides
        i. (7) Summarize and Reevaluate
2. Pass out to the students their flipchart and the papers to take home to their parents to further explain their science project that will need to be completed with their family at home.
3. Remind students about the previous lesson- learning about the scientific method process.
    a. Refer to the poster highlighting each step
4. Today we are going to learn more about the last two steps and then apply these skills to our own projects to gain experience.

Procedure

5. During a class group discussion ask students:
    a. What does summarizing findings mean?
        i. Show slide with word & then a picture if needed

            1. Want students to answer unbiased so picture aids should be stick figures or tools that they use
            2. If needed start with picture to guide discussion & have students explain what they notice then make connection to the word/sign
        ii. Have students copy down the description into their flip chart to be able to refer back to
            1. After the timer goes off, explain what was just copied.
        iii. Post the scientific experiment poster under the other infographic to refer back to as needed
        iv. Show supportive sentence frames for students to better understand the concept.
            1. I guessed ____ and it was _____.
            2. My hypothesis was _____.
            3. I thought ______.
    b. What does reevaluate mean?
        i. Show slide with word & then a picture if needed
            1. Want students to answer unbiased so picture aids should be stick figures or tools that they use
            2. If needed start with picture to guide discussion & have students explain what they notice then make connection to the word/sign
        ii. Have students copy down the description into their flip chart to be able to refer back to
            1. After the timer goes off, explain what was just copied.
        iii. Post the scientific experiment poster under the other infographic to refer back to as needed
        iv. Show supportive sentence frames for students to better understand the concept.
            1. Next time I will _____.
            2. I am still curious about ____.
6. Activity- Now it's the students turn!
    a. Let's try our first experiment but with a little bit of a different twist.
    b. Copy down onto a recording sheet and allow students time to answer - set a timer for 3 minutes if need help with classroom management.
        i. Summarize: I folded the paper into __(shape)______.With the __(type)_____ it took __(#)___ times. With the __(type)__ it took ____(#)_____ times. My hypothesis was _______.
            1. Provide support and model
            2. Ask students why we need to summarize?
        ii. Reevaluate: Next time I will _________.
            1. Ask why we need to reevaluate?

7. Share the tri-fold presentation for the paper folding experiment.
    a. Ask students to point out certain parts of the scientific method.
        i. Ex. Where is the question on the board?
        ii. Why is it important to include?
    b. This allows for an on-the-fly assessment to see their level of understanding.

Closure

8. Wrap Up
    a. Today we practiced how to run an experiment with different trials testing different materials.
        i. You are ready to start doing the work for your own project..
        ii. Take home this flipchart so next week while you are home you can have a reminder for what and how to do it.
        iii. Take home a blank recording sheet if you feel it will be helpful with your own project.
    b. Before you leave please hand me your recording sheet for today.

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids
- ❖ Brainstorming
- ❖ Vocabulary support in both English and ASL

Lesson Work Day

Standard

- *Science*: 3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- *Science Engineering Practices:* Asking Questions & Defining Problems
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric
- *English Integration of Knowledge & Ideas:* R.I.4.7 Interpret information presented visually, orally, or quantitatively and explaining how the information contributes to an understanding of the text in which it appears.
- *Math*: MP.1 Make sense of problems and persevere in solving them

Content Objective

- Students will work with support to create their materials and procedure plan for their own project

Language Objective

- English: Students will write independently or with the support of sentence frames their materials and procedures for the science fair.
- ASL: Students will practice using listing techniques.

Formative Assessment

- Students will use reference materials to know what is needed.

Summative Assessment

- Students will create a list of materials and procedures for the science fair project.

Materials/Preparation

- Document Camera
- Vocabulary Cards (refer to language objective for examples)
    - Lesson 1
- Sentence Frames (refer to language objective for examples)
- Question and Hypothesis Paper
- Materials and Procedure Paper
- iPad

The Lesson

Introduction (5 mins)

1. Set up the board
    a. Show sentence frames

2. Review the steps of the scientific method and what we have accomplished in relation to their science fair projects so far.
    a. Share the display board for reference
3. Remind students about the purpose for materials and procedures

Procedure

4. Your Turn
    a. Utilize the science fair books to scan or reference for necessary information.
    b. Help students one on one to make or find a list of materials.
    c. Ask students to start a procedure plan in order to make a discovery related to their question.

Closure

5. If students do not finish work on it with them during homework time.
6. Don't forget to take home your prep work so that the experiment can be completed at home.
7. Students should take the scientific method flipchart home for reference.
8. Pass out a letter as an additional reminder for parents about next steps- finishing the experiment before Monday May 15th

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL

Lesson 8: Display Board Making- Show it Off!

Standard

- *Science*: 3-4-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- *Science Engineering Practices:* Obtaining, Evaluating, and Communicating Information
- *English Text Types & Purposes:* RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text or part of a text.
- *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric*:*
- *Math:* MP.5 Use appropriate tools strategically

Content Objective

- Students will create their own display boards for their science fair projects.
- Students will follow the guidelines and instructions for set up.

Language Objective

- ASL: Students will share their ideas about the science fair experiment.
- English: Students will label the different parts of their project.

Formative Assessment

- In either sign or written english students will answer questions such as:
    - What is each part of the scientific method?
    - What is the set up supposed to look like?

Summative Assessment

- Students will have a finished display with the required materials for the upcoming science fair- labels, scientific method information, pictures, etc.

Materials/Preparation

- Document Camera
- Display Board Examples
- Sentence Frames
    - I guessed ____ and it was _____.
    - My hypothesis was _____.
    - I thought ______.
    - Next time I will _____.
    - I am still curious about ____.

- ❖ iPad
- ❖ Science Fair Project Books
    - ➢ Students can get ideas and explore other examples
- ❖ Recording Sheet
- ❖ Display Board Labels

The Lesson

Introduction

1. Set up the Display Board Samples
    a. The paper folding activity
2. Remind students of each step of the scientific process
    a. Have students point out the steps according to the display board
    b. Ask students to clarify what each example looks like?
3. Remind students about the previous lesson- learning about the scientific method process.
    a. Refer to the poster highlighting each step
4. Today we are going to set up your own display board based on the experiments you did at home.

Procedure

5. Prep students to do their work:
    a. Pass out labels for students to cut and prepare.
    b. If needed, have students type up the information from their recording sheet.
    c. Make sure the text size is around 24 so it can be easily read on their board.
    d. Provide students with colored construction paper for them to choose and make their board unique.
    e. Make sure the scissors and glue are accessible.
    f. Remind students of the sentence frames to use when writing up each part of the method if not already completed at home.
6. Allow students time to work on their project, they can set up around the room; at their desk or on the floor.
    a. Assist as needed.

Closure

7. Have students place their boards on the counter to work on in the next coming days.
    a. Make sure all materials are returned to their expected places and throw away any scraps.

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer

- Visual Aids
- Brainstorming
- Vocabulary support in both English and ASL

Lesson 9: Science Fair Presentation Videos- Access for All!

Standard

- *Science*: 3-4-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- *Science Engineering Practices:* Obtaining, Evaluating, and Communicating Information
- *English Text Types & Purposes:* RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text or part of a text.
- *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric.
- *Math:* MP.5 Use appropriate tools strategically.

Content Objective

- Students will practice their presentation for the science fair.
- Students will record their explanation of their project and create a QR code.

Language Objective

- ASL: Students will utilize vocabulary signs to share their explanations.
- English: Students will read the different parts of their project and translate.

Formative Assessment

- In either sign or written english students will answer questions such as:
  - What is the question?
  - What is your hypothesis?
  - What materials are needed?
  - What is the procedure?
  - What do the pictures show?
  - What data did you collect/test?
  - What is your summary?
  - How would you reevaluate?
  - Did you enjoy doing this project?

Summative Assessment

- Students will have a filmed video explaining their project to be added to their display board.

Materials/Preparation

- ❖ Display Board Examples
- ❖ iPad
- ❖ Mounts or Tripod for Filming
- ❖ Display Board

The Lesson

Introduction

1. Set up the Display Board Samples
    a. The paper folding activity
2. Remind students of each step of the scientific process
    a. Have students point out the steps according to the display board
    b. Ask students to clarify what each example looks like?
3. Remind students about the previous lesson- learning about the scientific method process.
    a. Refer to the poster highlighting each step
4. Today we are going to practice your presentations in order to film them and add it to your display board.

Procedure

5. Prep students to do their work:
    a. Make sure students have their display boards.
    b. If students are still finishing up, allow them some extra time and explain that we may need to find time in other parts of our day to catch up.
6. Have students work in pairs or individually to practice signing.
7. If ready, can film themselves presenting their projects.
    a. Make sure to have a clean background with the board to refer to as needed.
    b. Make sure the camera angle is appropriate and include the signer, display, and framing to make it easily accessible.
    c. Students may need extra support from peers and teachers.
        i. Review with the student their signing and provide feedback as needed.

Closure

8. Have students place their boards along the wall once finished.
    a. Students should email or share the video so it can be uploaded and accessible as a QR link.

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids

- Brainstorming
- Vocabulary support in both English and ASL

Lesson 10: Science Fair Day- Sharing with our School!

Standard

- *Science*: 3-4-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- *Science Engineering Practices:* Obtaining, Evaluating, and Communicating Information
- *English Text Types & Purposes:* RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text or part of a text.
- *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric
- *Math:* MP.5 Use appropriate tools strategically

Content Objective

- Students will critique a peer's work using a rubric.
- Students will share their insights of scientific discovery to the school community.

Language Objective

- ASL: Students will utilize vocabulary signs to share their explanations.
- English: Students will read the rubric and check for completion in their peer's work.

Formative Assessment

- In sign students will answer questions such as:
  - What was your favorite part of your project?
  - What did you learn?
  - Why do you think that happened during your experiment?

Summative Assessment

- Students will submit a graded rubric based on their peer's presentation.

Materials/Preparation

- Student Display Boards
- iPads
- Rubrics
  - 19 copies
- Judges Sheets
  - Packets for 8 judges with 18 judging sheets included

The Lesson

Introduction

1. Set up the Display Board Samples
    a. The paper folding activity
2. Remind students of each step of the scientific process.
3. Put the student rubric on the projector to refer to throughout the lesson.
    a. Have students take turns highlighting each new section of the rubric.
        i. Explain the different scoring options on a scale of 1 to 4 points.
        ii. Allow students to ask questions and provide clarification.
4. Students will be paired up with a predetermined partner to evaluate.
5. Today we are going to practice using a rubric and sharing our projects with others.

Procedure

6. Each student should gather their display board and any other materials they may be showing during the science fair.
7. Walk over to the Social Hall and set up
    a. Each student will have a table for their board and materials with a chair if needed to sit or take a break from standing/presenting.
8. Have students take turns presenting their projects to each other while the other student critiques using the rubric.
    a. Make sure to be roaming; providing support and clarification as needed.
9. Once students have finished turn in the papers and prepare for the school community to walk around and look at the projects.
10. During the science fair block of time students should:
    a. Answer questions from peers, teachers, adults, and judges
    b. Share an overview of their project
    c. Be respectful and engageed
11. Make sure to give the judges a recording sheet for the evaluations, offer water and cookies, and thank them for their participation.

Closure

12. After the science fair, students clean up their space and take it back to the classroom.
    a. Winners will be announced at the awards ceremony for elementary students.

Modifications Refer to IEPs to guide modifications

- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids
- ❖ Brainstorming
- ❖ Vocabulary support in both English and ASL

Lesson 11: Post Assessment- Retention is Key!

Standard

- *Science*: 3-4-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- *Science Engineering Practices:* Obtaining, Evaluating, and Communicating Information
- *English Text Types & Purposes:* RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text or part of a text.
- *English Writing-Research to Build & Present Knowledge:* W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- *ASL Discourse & Presentation- Comprehension & Collaboration:* Evaluate a signer's point of view, reasoning, and use of evidence and rhetoric
- *Math:* MP.5 Use appropriate tools strategically

Content Objective

- Students will reflect on their experience with the unit and write/sign about the concepts discussed throughout it.

Language Objective

- ASL: Students will utilize vocabulary signs to share their explanations in preparation for completing the post assessment.
- English: Students will write their responses to the three questions in the post assessment.

Formative Assessment

- In either sign or written english students will answer questions such as:
    - Do you enjoy learning about science? Why or why not?
    - What is the scientific method and its steps?
    - How does the method help scientists?

Summative Assessment

- Students will turn in their post assessment.

Materials/Preparation

- Display Board Example
- iPad
- Post Assessment Worksheet
    - 19 copies

The Lesson

Introduction

1. Set up the Display Board Sample
    a. The paper folding activity
2. Remind students about the pre-assessment at the beginning of the unit- now it is time to see how much we have learned.
3. Pass out the pre-assessments to each of the students

Procedure

4. Have students write their name and date on the paper, when ready place the cub hands on their head to symbolize they are ready for the next step.
5. Sign the first question and then allow for students to answer it.
    a. Check in with students one on one if they need help translating their ideas from ASL to English.
6. Sign the second question and then allow for students to answer it.
    a. Check in with students one on one if they need help translating their ideas from ASL to English.
7. Sign the third question and allow for students to answer

Closure

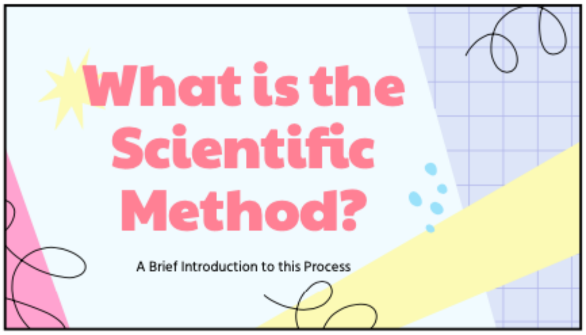
8. Once students are finished collect their work and allow them to have quiet free time on their iPad.

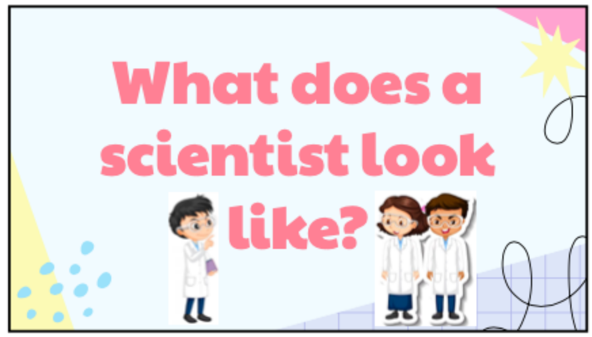
Modifications Refer to IEPs to guide modifications

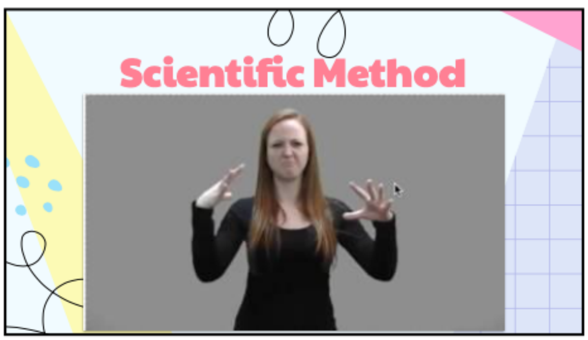
- ❖ Frontloading information
- ❖ Strategic partnering
- ❖ Alternate means of expressing ideas
- ❖ Vocabulary support in both English and ASL
- ❖ Graphic Organizer
- ❖ Visual Aids
- ❖ Brainstorming
- ❖ Vocabulary support in both English and ASL

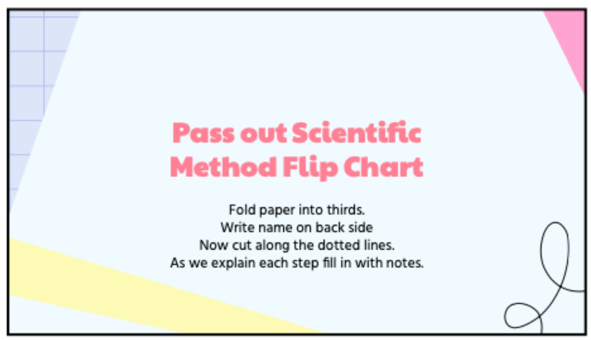
Materials (Slides, Worksheets, Additional Books)

Lesson 1 Slides & Worksheets:









Name Date

SCIENTIFIC METHOD INTRODUCTION

We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not?

What is the scientific method and its steps?

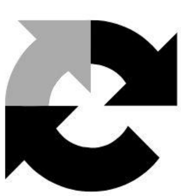
How does this method help scientists?

Experiment

Data

Findings

Reevaluate

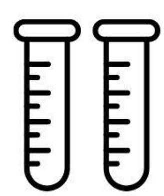


Question

Hypothesis

Procedure

Materials

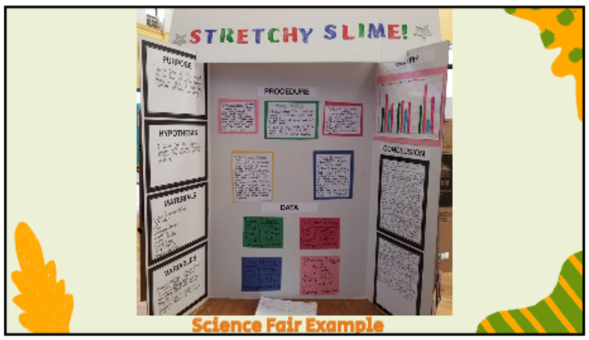


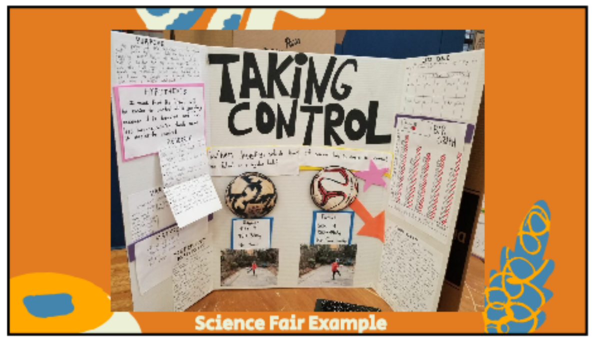
THE SCIENTIFIC METHOD

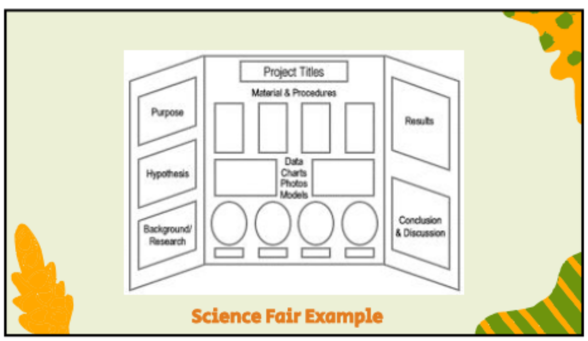
THE SCIENTIFIC METHOD

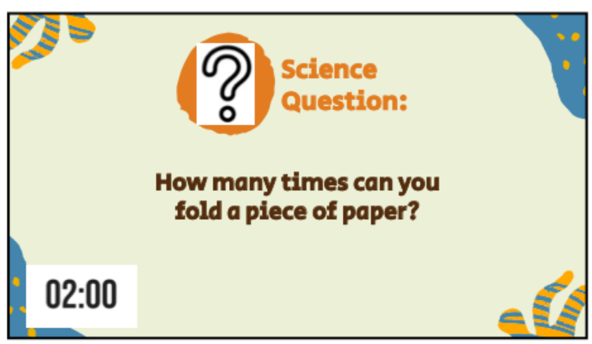
- Ask a Question
- Create a Hypothesis
- Write the Procedure
- Gather Materials
- Conduct Experiment
- Collect Data
- Summarize Findings
- Re-evaluate Process

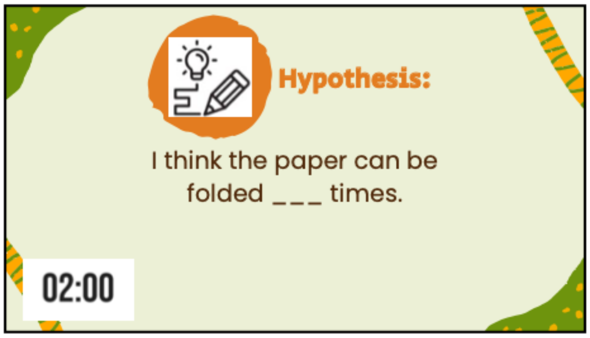
Lesson 2 Slides &Worksheets:

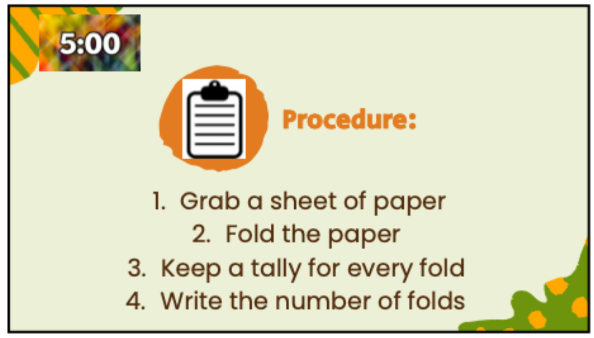


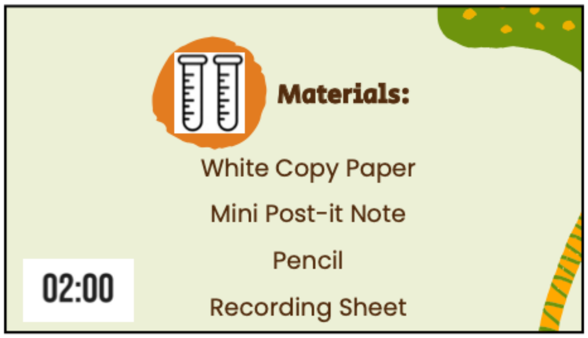






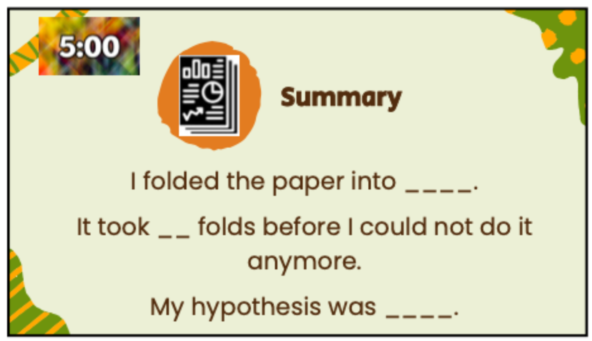

Hypothesis:
I think the paper can be folded ___ times.
02:00


5:00
Procedure:
1. Grab a sheet of paper
2. Fold the paper
3. Keep a tally for every fold
4. Write the number of folds

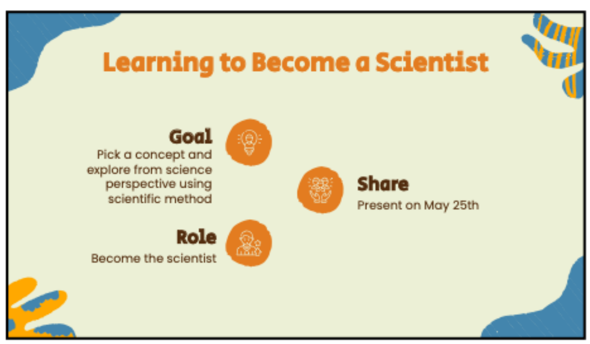

Materials:
White Copy Paper
Mini Post-it Note
Pencil
Recording Sheet
02:00


5:00
Experiment:
Time to try it!


Collect Data
Keep a tally for every fold


5:00
Summary
I folded the paper into ____.
It took __ folds before I could not do it anymore.
My hypothesis was ____.


Re-Evaluate
What would you do differently?
02:00


Learning to Become a Scientist
Goal
Pick a concept and explore from science perspective using scientific method
Share
Present on May 25th
Role
Become the scientist

Name Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

HYPOTHESIS:

PROCEDURE

MATERIALS

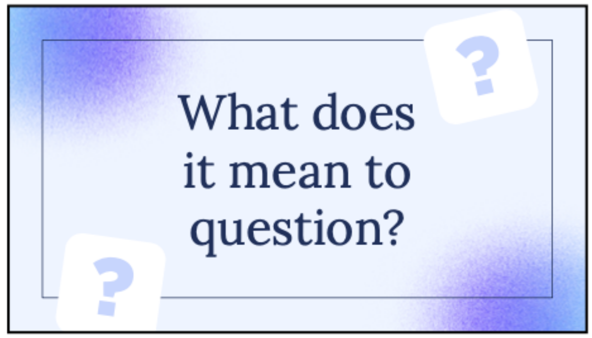
EXPERIMENT NOTES

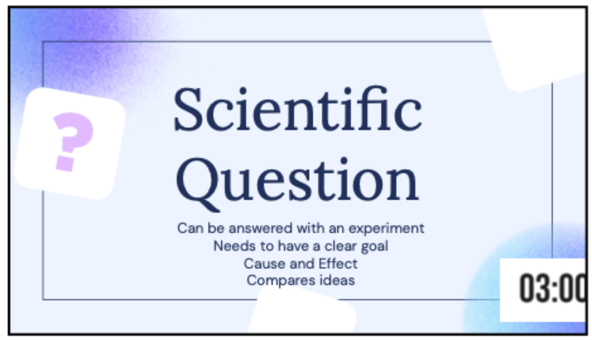
DATA COLLECTION

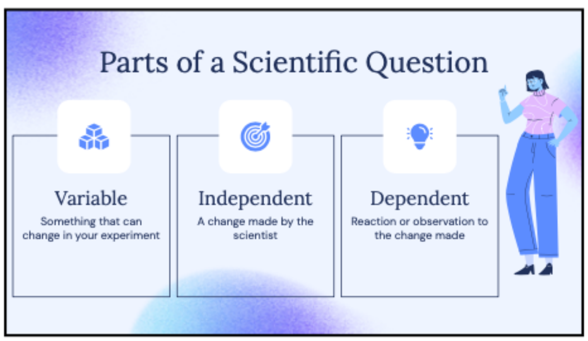
SUMMARIZE FINDINGS

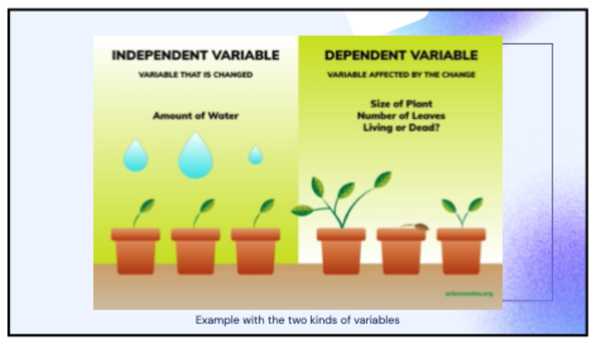
REEVALUATE PROCESS

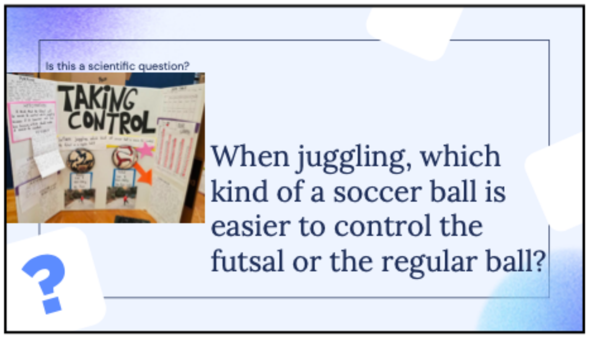
Lesson 3 Slides & Worksheets:

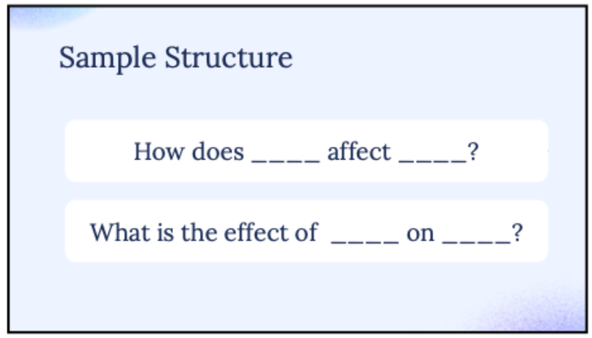




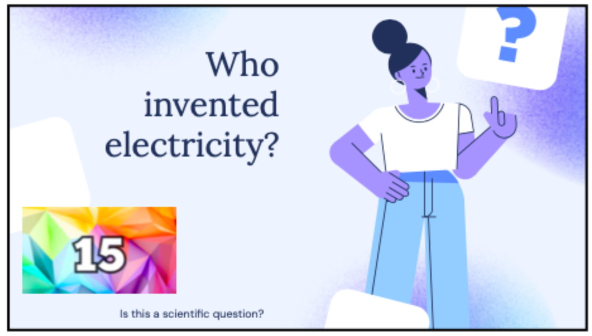





Is this a scientific question?
TAKING CONTROL
When juggling, which kind of a soccer ball is easier to control the futsal or the regular ball?


Sample Structure
How does ____ affect ____?
What is the effect of ____ on ____?


01
Let's Move!
Time to put our skills to the test!
Read the question.
Is it a scientific question?
If yes, go on one side of the room.
If no, move to the other side of the room.
Explain your thinking

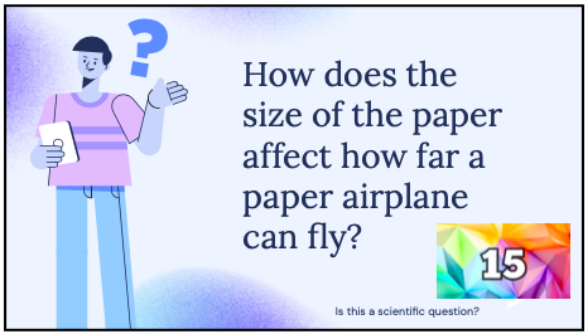

Who invented electricity?
15
Is this a scientific question?

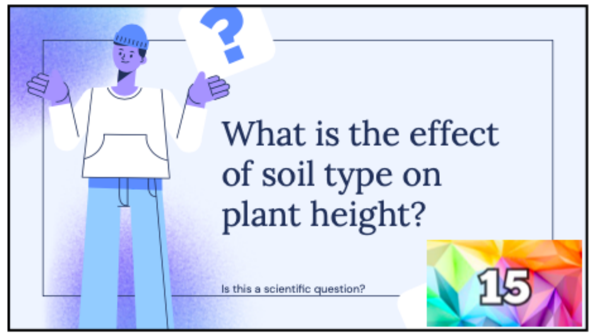

How does different ingredients affect the stickiness of slime?
15
Is this a scientific question?


How do you make slime?
Is this a scientific question?
15

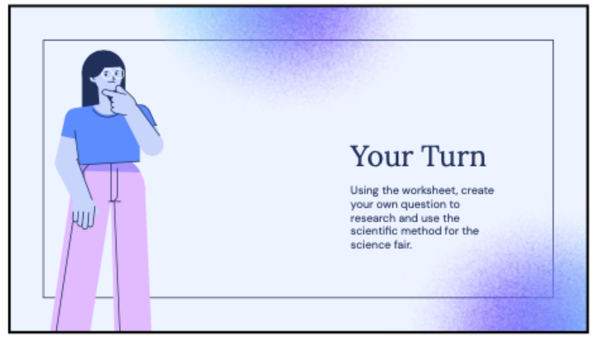

What is the effect of heat on the melting of candy?
15
Is this a scientific question?


What is a paper airplane?
15
Is this a scientific question?


How does the size of the paper affect how far a paper airplane can fly?
15
Is this a scientific question?


What is the effect of soil type on plant height?
Is this a scientific question?
15


Science Fair
Do you want to work in pairs or individually?


Your Turn
Using the worksheet, create your own question to research and use the scientific method for the science fair.

Name Date

SCIENCE FAIR QUESTION PROPOSAL

Write your own question for your project:

GROUP MEMBERS:

PROPOSED QUESTION

WHY ARE YOU PICKING THIS TOPIC?

EXTRA NOTES

SCIENTIFIC QUESTION GUIDELINES

DOES IT APPLY?:

Does it have a clear goal?

Can you experiment?

WORD CHOICE

How

What

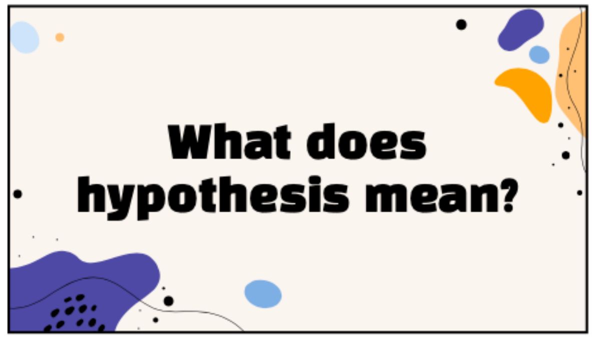
Which

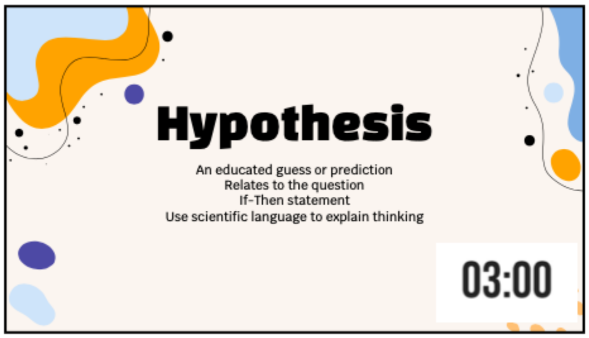
SENTENCE FRAMES:

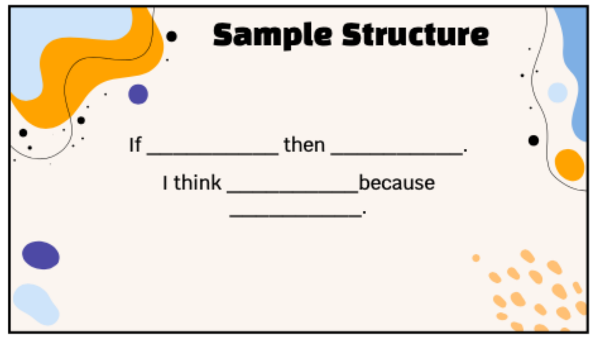
How does _________ affect _________?

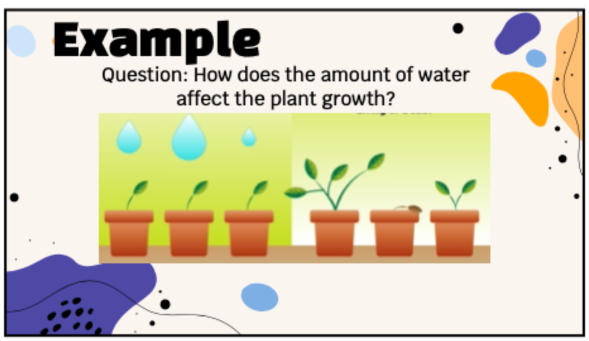
What is the effect of __________ on _________?

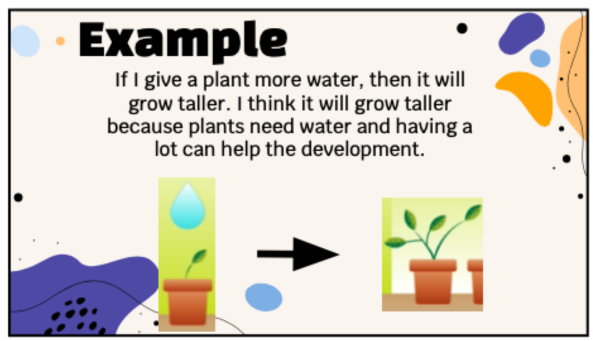
Lesson 4 Slides & Worksheets:

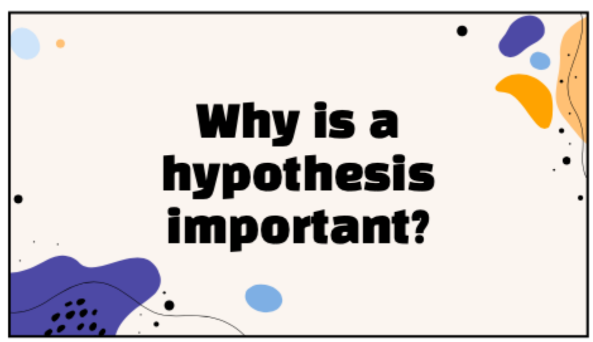


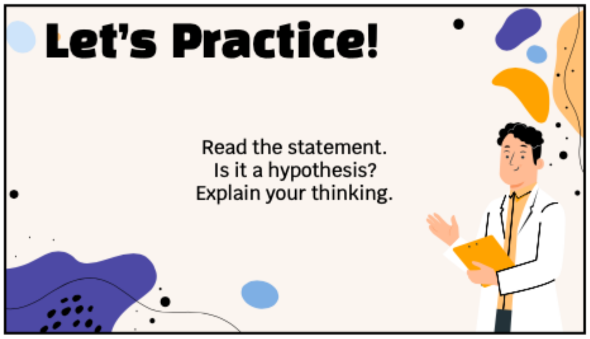




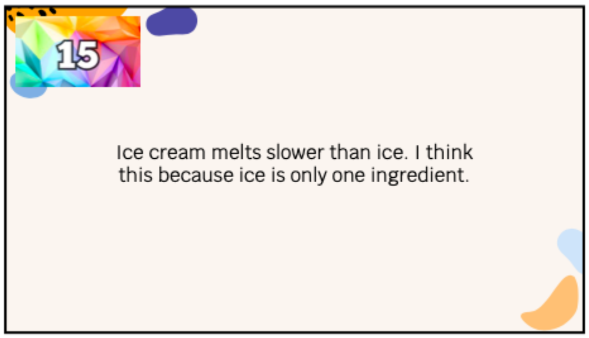




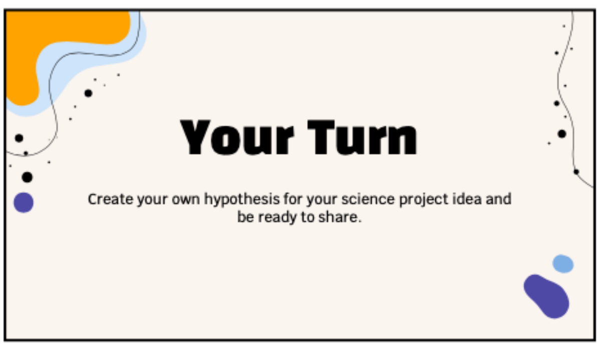



Let's Practice!
Read the statement.
Is it a hypothesis?
Explain your thinking.


15
If plants grow in cold temperatures then the leaf will change color. I believe this is because of how seasons change.


15
Ice cream melts slower than ice. I think this because ice is only one ingredient.


15
Tea is better than soda.


Your Turn
Create your own hypothesis for your science project idea and be ready to share.

Name Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

GROUP MEMBERS:

PROPOSED HYPOTHESIS

EXPLAIN YOUR THINKING.

EXTRA NOTES

CREATE A HYPOTHESIS

DOES IT APPLY?:

Include science language

Relates to initial question

VERBS TO USE:

Believe | **Think**

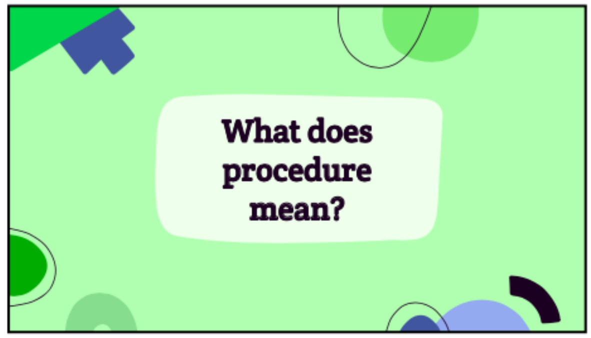
Predict | **Guess**

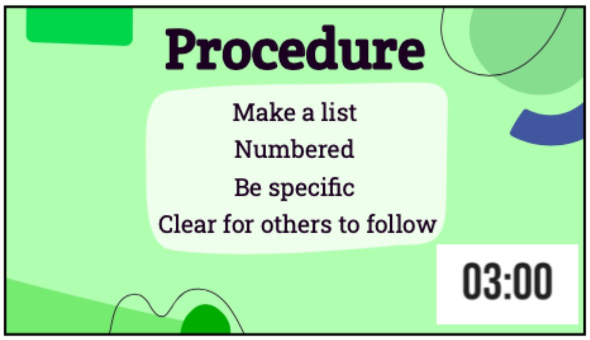
SENTENCE FRAMES:

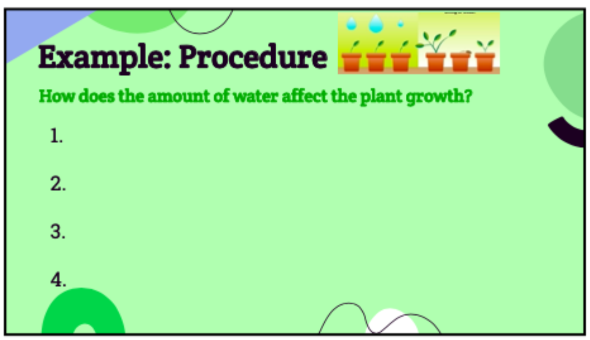
If ________ then ________.

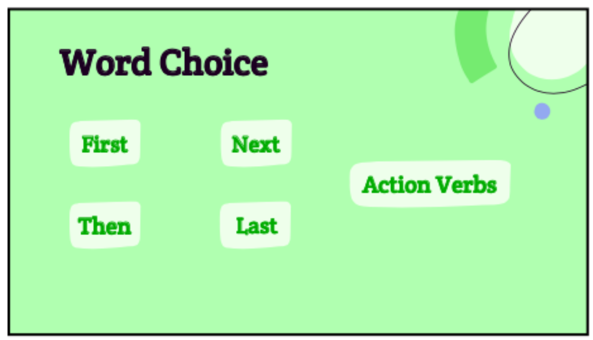
I think ________ because ________.

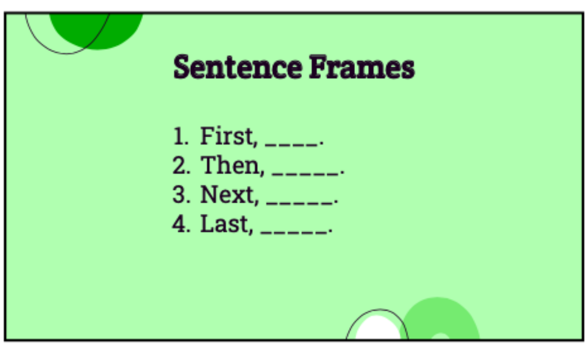
Lesson 5 Slides & Worksheets:

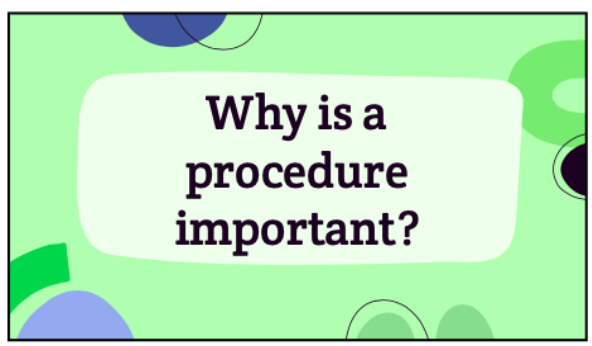


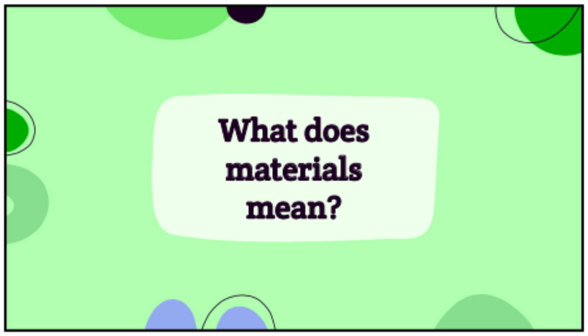




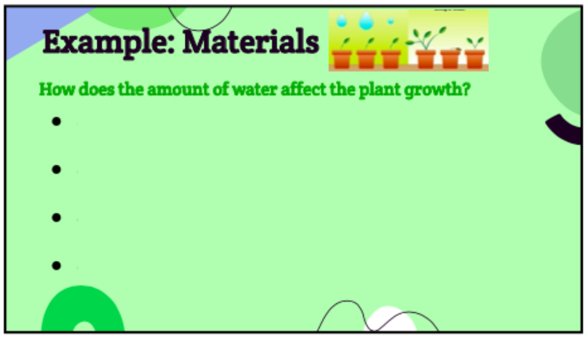


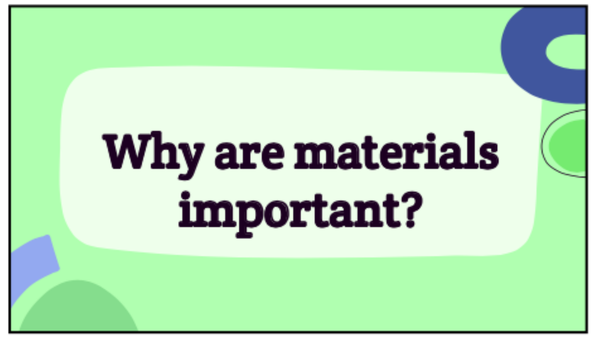


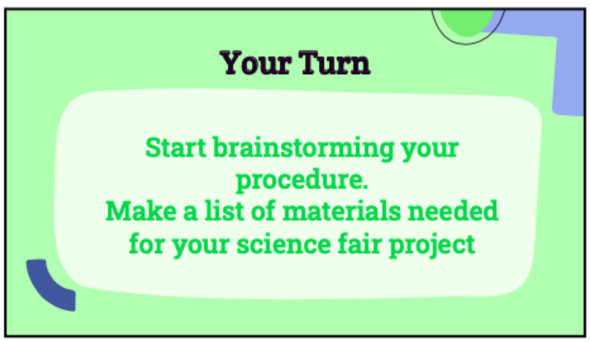



What does materials mean?


03:00
Materials
Make a list
Be specific
The things you need for the experiment


Example: Materials
How does the amount of water affect the plant growth?


Why are materials important?


Your Turn
Start brainstorming your procedure.
Make a list of materials needed for your science fair project

Name Date

SCIENCE FAIR MATERIALS AND PROCEDURE PROPOSAL

List out the supplies needed for your experiment.
Write out your specific instructions.

MATERIALS LIST

PROCEDURE OUTLINE

WRITE THE PROCEDURE

DOES IT APPLY?:

Is it specific and clear?

Can it be tried again?

WORDS TO USE:

First

Then

Next

Last

SENTENCE FRAMES:

First, ________.

Next, ________.

1.
2.
3.
4.

WRITE THE MATERIALS

DOES IT APPLY?:

Is it a list?

Is it specific?

WORDS TO USE:

Have

Need

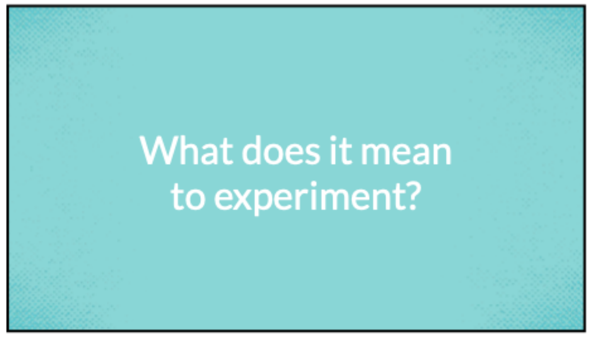
SENTENCE FRAMES:

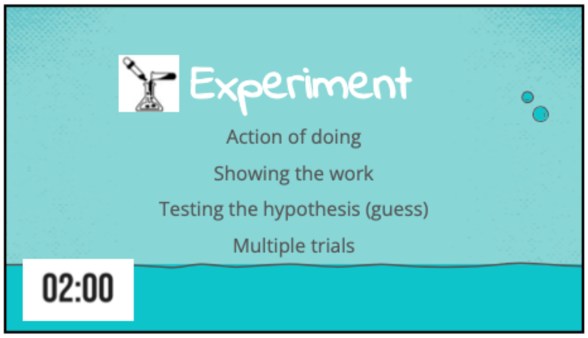
Will need:

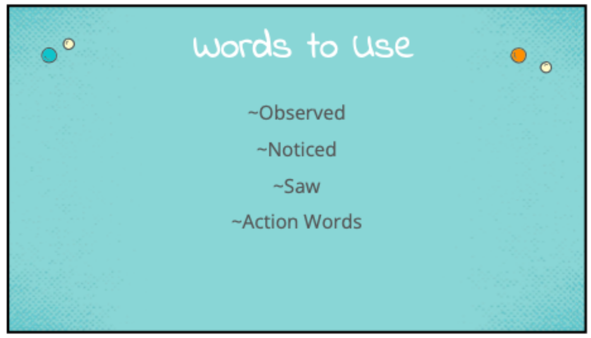
Should have:

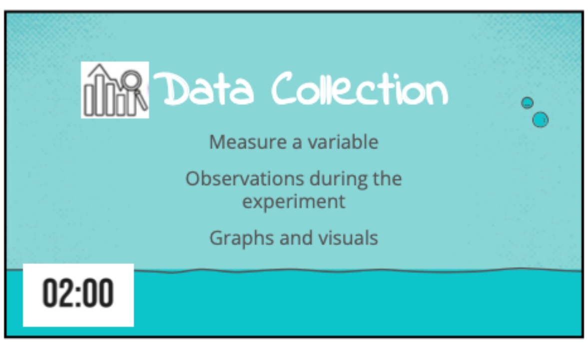
-
-
-
-

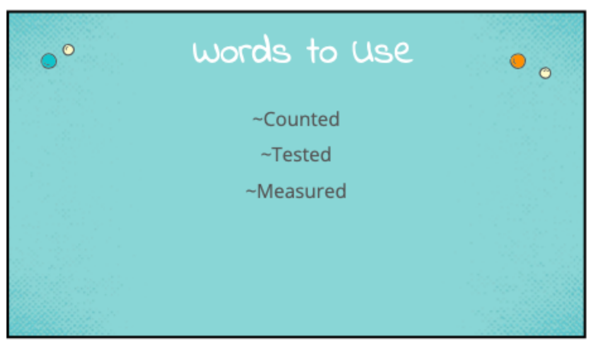
Lesson 6 Slides & Worksheets:

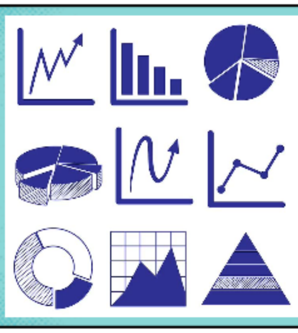












Sample Graphs to Show Experiment

Your Turn

Let's review experiment practices with an activity we were introduced to at the beginning of the unit.

03:00

Let's Experiment!

Question: Does the material affect the amount of times a paper can be folded?

Hypothesis: I think that the ______ will be folded more than ________.

5:00

Let's Experiment!

Procedure:

1. Pick two types of paper to compare.
2. Label Trial 1 with a paper sample.
3. Start to fold and make a tally for each fold.
4. Write the total number of folds.
5. Repeat steps with the other kind of paper.

03:00

Let's Experiment!

Materials:

- Recording Sheet
- Pencil

Pick Two:

- Colorful Gift Tissue Paper
- Shiny Gift Tissue Paper
- Wrapping Paper
- Cardstock Paper
- Paper Towel
- Parchment Paper
- White Copy Paper
- Post-it Note
- Notebook Paper
- Toilet Paper
- Paper Envelope
- Paper Bag
- Streamer Paper

Let's Experiment!

Experiment:

- Follow the Procedure
- Take Pictures
- Make Observations

Collect Data:

- Record tally marks for each trial.

5:00

Let's Experiment!

Summarize:

I folded the paper into __(shape)______.

With the __(type)____ it took __(#)___ times. With the __(type)__ it took ____(#)_____ times.

My hypothesis was ______.

Reevaluate:

Next time I will _______.

5:00

CONDUCT EXPERIMENT

DOES IT APPLY?:

Did I try it multiple times?

Did I take pictures?

WORDS TO USE:

- Observed
- Saw
- Noticed
- Action Words

SENTENCE FRAMES:

Will need:

Should have:

-
-
-
-

COLLECT DATA

DOES IT APPLY?:

Graphs and Visuals

Were observations made?

WORDS TO USE:

Counted

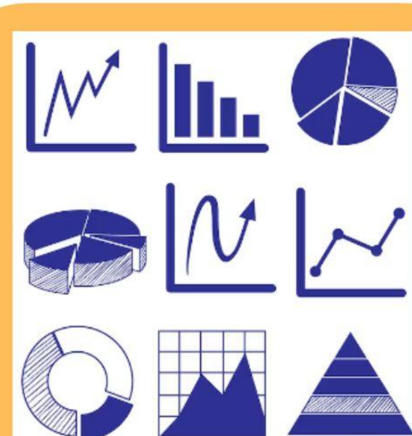
Tested

Measured

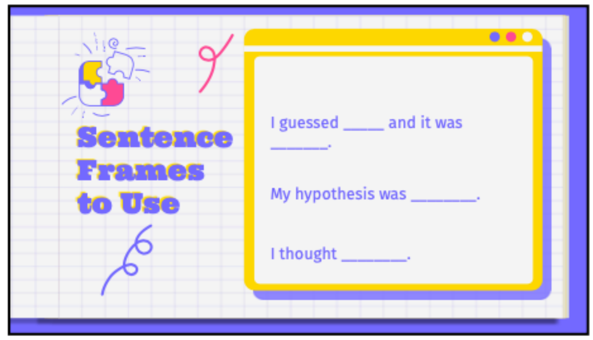
Past Tense

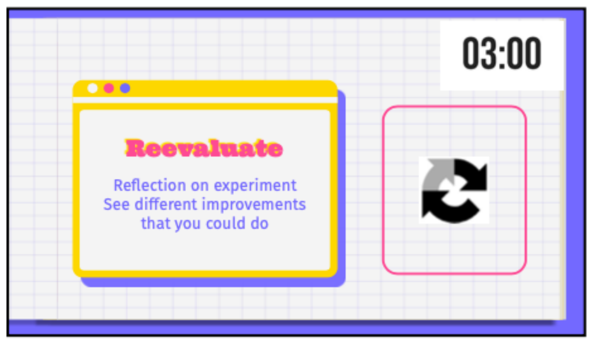
SENTENCE FRAMES:

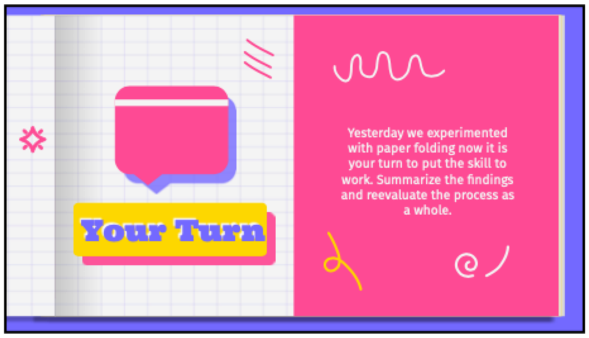
I counted ___.

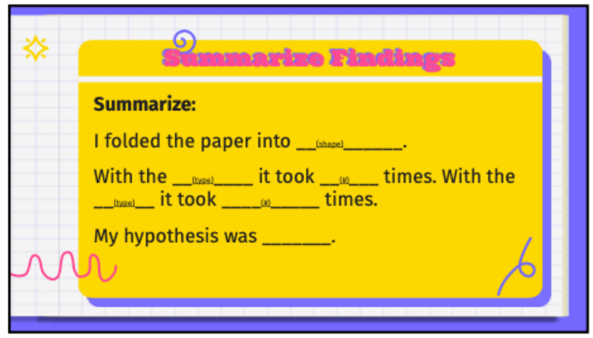


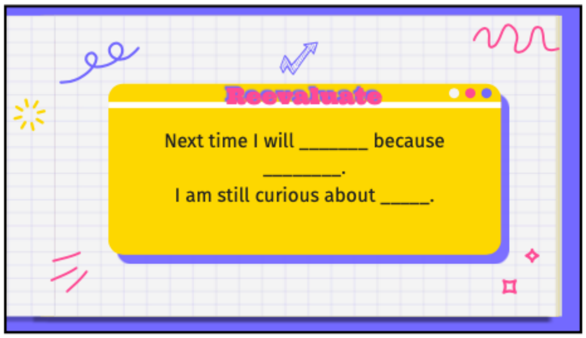
Lesson 7 Slides & Worksheets:

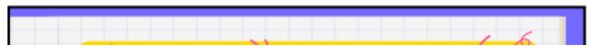





Your Turn
Yesterday we experimented with paper folding now it is your turn to put the skill to work. Summarize the findings and reevaluate the process as a whole.


Summarize Findings
Summarize:
I folded the paper into __(shape)______.
With the __(type)____ it took __(#)___ times. With the __(type)__ it took ____(#)_____ times.
My hypothesis was _______.


Reevaluate
Next time I will _______ because ________.
I am still curious about _____.



SUMMARIZE FINDINGS

DOES IT APPLY?:

Include science language

Relates to initial question

VERBS TO USE:

Believe

Think

Predict

Guess

SENTENCE FRAMES:

If ________ then ________.

I think ________ because ________.

REEVALUATE PROCESS

DOES IT APPLY?:

What would you do differently?

Relates to initial question

VERBS TO USE:

Think

Want

Will

SENTENCE FRAMES:

Next time I will ____________.

I will __________________________.

I want to ___________________.

Lesson 8:
No slides or worksheets available

Lesson 9:
No slides or worksheets available

Lesson 10:

Project #

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points:

Judge's Signature:

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/ or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name________________________ Score:________

Lesson 11:

Name Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not?

What is the scientific method and its steps?

How does this method help scientists?

Additional Resources for Classroom

Books to Include in Classroom Library Related to the Science Curriculum

- Guide to the Best Science Fair Projects by Janice Van Cleave
- The 101 Coolest Simple Science Experiments by Rachel Miller, Holly Homer, & Jamie Harrington
- Not-So-Ordinary Science: 49 Projects that Ooze, Pop, Zoom, & More! By Elsie Olson

Websites to Reference Related to the Science Curriculum

- www.sciencebuddies.org
- https://youtu.be/6cyXVF_rpWU

Parent Communication

Introduction to Curriculum Letter:

Dear Parents/Guardians:
I would like to take this opportunity to introduce myself. My name is Isabella Rizzo and I am a graduate student at UC San Diego earning my Masters of Arts in Bilingual Education ASL and English. I am very excited to have my final student teaching placement in Mr. Tarpey's science classroom here at California School for the Deaf, Riverside.

During my time with your student I will be implementing a curriculum that I have created to support their learning experience with the scientific method. This curriculum will be a hands-on opportunity for students to gain a deeper understanding of the steps and have real life application with the process. By the end of the unit students will show their understanding and curiosity with a presentation at the annual science fair being hosted May 25th, 2023. The goals of this unit include:

1. Utilizing American Sign Language and Academic English by keeping a journal to record scientific discoveries in accordance with inquiries and occurrences related to the scientific method practices.
2. Identifying the steps of the scientific method such as developing a question, creating a hypothesis, making a plan, recording results, and concluding findings.
3. Applying scientific method practices to answer their own questions.

This curriculum is supported and built on the basis of the standards from Next Generation Science Standards in regards to the Science Engineering Practices and Engineering Guidelines for grades 3 - 5. There will be processes and steps in place to apply the scientific method and critical thinking practices as a class; small group; and at the individual level. Students will answer questions at each step of the scientific method by applying it to their own project. Hopefully students will be able to take what they have learned about the scientific method and apply it to any part of their life seeing the joy in the inquiry process and how science continues to change.

If you would like to take a closer look at the standards and practices that are guiding our learning experience in the classroom; here is a link with more information:
https://www.nextgenscience.org/topic-arrangement/3-5engineering-design

I am very much looking forward to supporting and getting to know your students better as we finish out the school year. I can't wait to see your students flourish and become scientists to better understand the world and environment around us.

Best,
Isabella Rizzo

5/1 Letter Update:
May 1, 2023

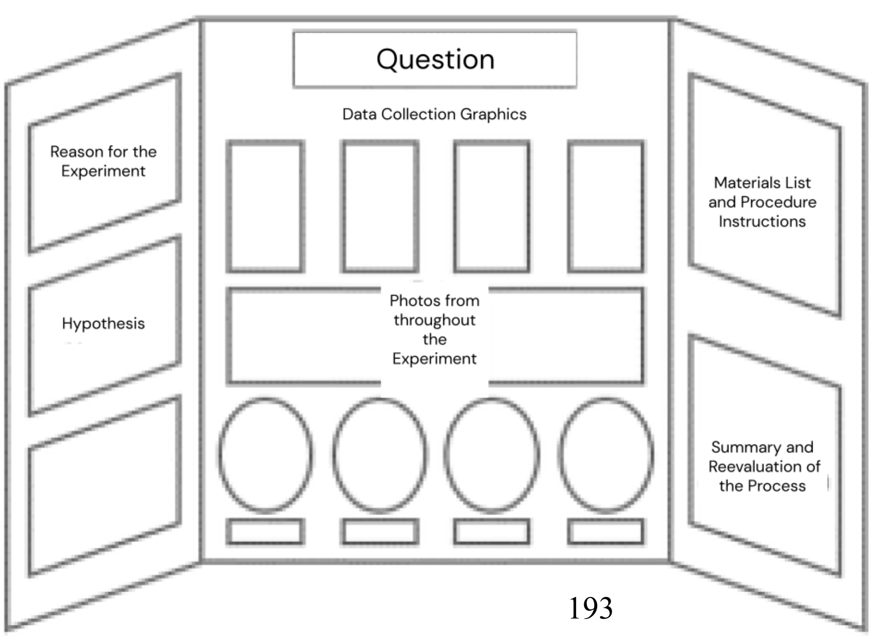
Dear Parents/Guardians:

The science fair is coming up! The final presentation will be on Thursday May 25th from 1-3 pm in Mr. Tarpey's Room 204. You are more than welcome to come and join in seeing your child's presentation and all of the other student presentations.

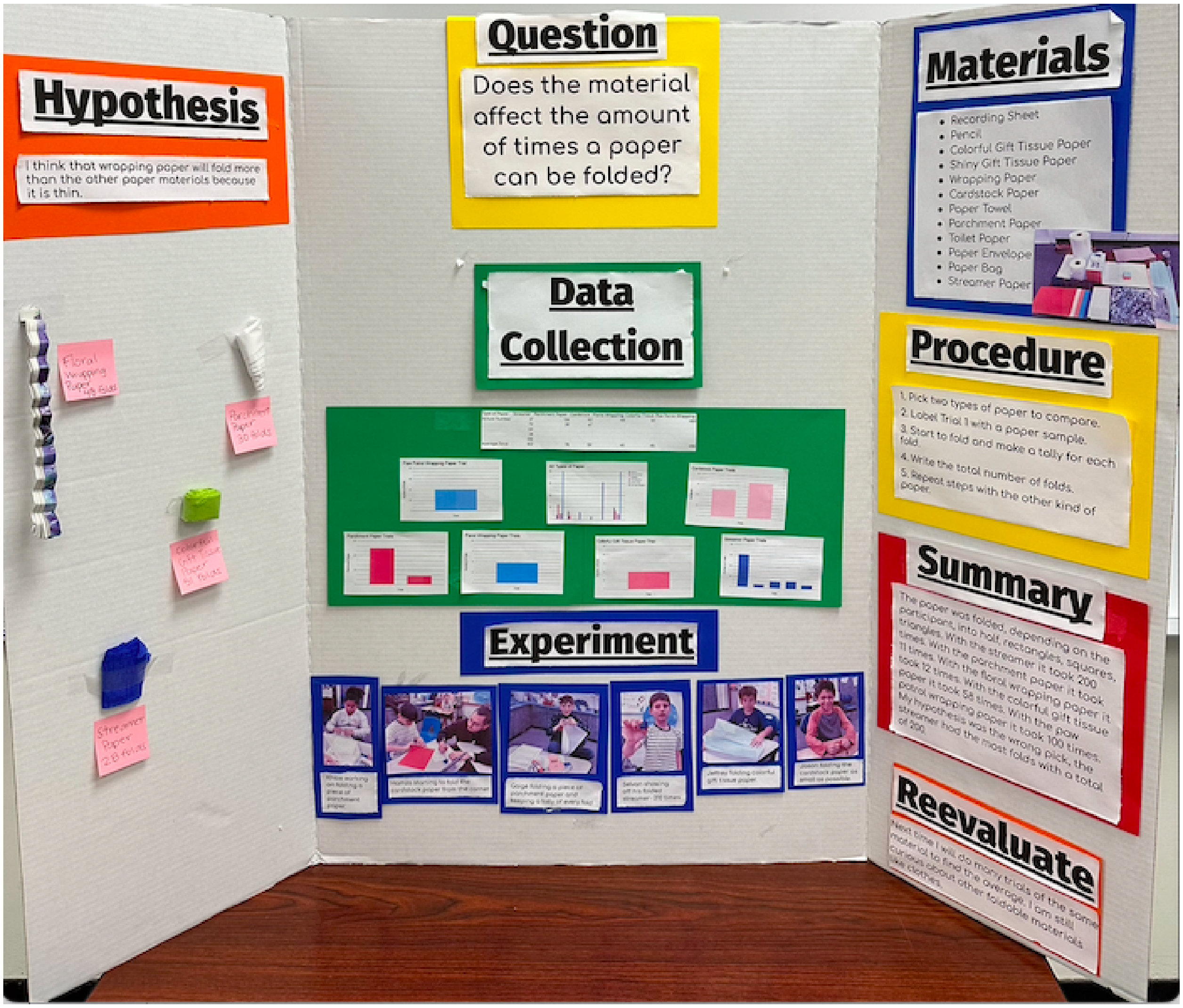
In order to best support your child, there are a few things that will need to be provided for them. A tri-fold cardboard poster for students to be able to showcase their presentation. It is important to get a tri-fold so that it can stand on its own. There are a few places you can get one; both Target and Walmart are carrying these for around $4. On the board students will include their scientific question, hypothesis, a list of materials that were used, the instruction steps for conducting the experiment, pictures showing them doing it, their data with results, and an explanation for what to improve or do differently next time. We also enclose the template for students to follow and set up on their posters.

In class students are deciding their question and creating their hypothesis along with developing their list of materials. This project will be completed at home if necessary with some support from you. If there are any issues with gathering the necessary materials please feel free to reach out so we can work together to best help your student. Please contact the inter, Isabella Rizzo at irrizzo@ucsd.edu, Andrew Tarpey at atarpey@csdr-cde.ca.gov, and Ryan Zarembka at rzaremkda@csdr-cde.ca.gov

Thank you,
-Fourth Grade Team



5/5 Letter Update:
May 5th, 2023



This is a sample of the display board set up for the science fair.

On Monday May 15th and Tuesday May 16th we will have some time during class to set up the boards. Please send your student to school with their tri-fold poster board, we will have the big labels (i.e question, hypothesis, etc). Please have their record sheet completed with information from their experiment. Thank you! If you have any questions feel free to reach out to: intern Isabella Rizzo irrizzo@ucsd.edu, teacher Andrew Tarpey atarpey@csdr-cde.ca.gov, and teacher Ryan Zarembka rzaremkda@csdr-cde.ca.gov.

-Fourth Grade Team

5/10 Email Update
May 10th, 2023

Hello,

This is a reminder that your student should be working on completing their experiment for the science fair. This past Friday each student took home a recording sheet that we have been practicing with in class. Make sure to use that guideline when doing their own project.

On Monday May 15th and Tuesday May 16th we will have some time during class to set up their display boards. Please send your student to school with their tri-fold poster board and their record sheet with all their necessary information. We will provide labels (i.e question, hypothesis, etc) for students to identify their parts of the project and give time in class to make the display board. Looking forward to seeing all their hard work. If you have any questions feel free to reach out to: intern Isabella Rizzo irrizzo@ucsd.edu, teacher Andrew Tarpey atarpey@csdr-cde.ca.gov, and teacher Ryan Zarembka rzaremkda@csdr-cde.ca.gov.

Thanks
-Fourth Grade Team

Rubrics

Rubric for Completion

Points	Criteria
3	Worksheet is completely filled in
2	Worksheet is partially filled in
1	Worksheet is not filled in

Rubric for Understanding

Written Text Rubric for Understanding

Criteria	Understanding (3)	Partial Understanding (2)	In Need of Support (1)
Content and Accuracy	Written response includes use of science concepts and vocabulary	Written responses allude to science concepts and vocabulary	Written response is off topic
Clarity and Neatness	Handwriting is readable	Handwriting is readable with some separation.	Unable to understand the thinking process
Levels of Support	Writing with clarity and no support.	Writing with clarity and support.	Writing is unclear and with support.

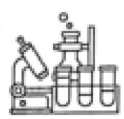
Signed Rubric for Understanding

Criteria	Understanding (3)	Partial Understanding (2)	In Need of Support (1)
Content and Accuracy	Use of science signs and fingerspelling to explain concepts.	Use of fingerspelling to explain concepts.	Signed response is off topic.
Signing Space	Clean background and ample visual view of signing.	Clean background with partial visual view of signing.	Distracting background and no visible signing.
Levels of Support	Signing with clarity and no support.	Signing with clarity and support.	Signing unclear and with support.

APPENDIX B: STUDENT WORK SAMPLES

Name Student 1 [redacted] Date 4/19/23

SCIENTIFIC METHOD INTRODUCTION



We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Yes

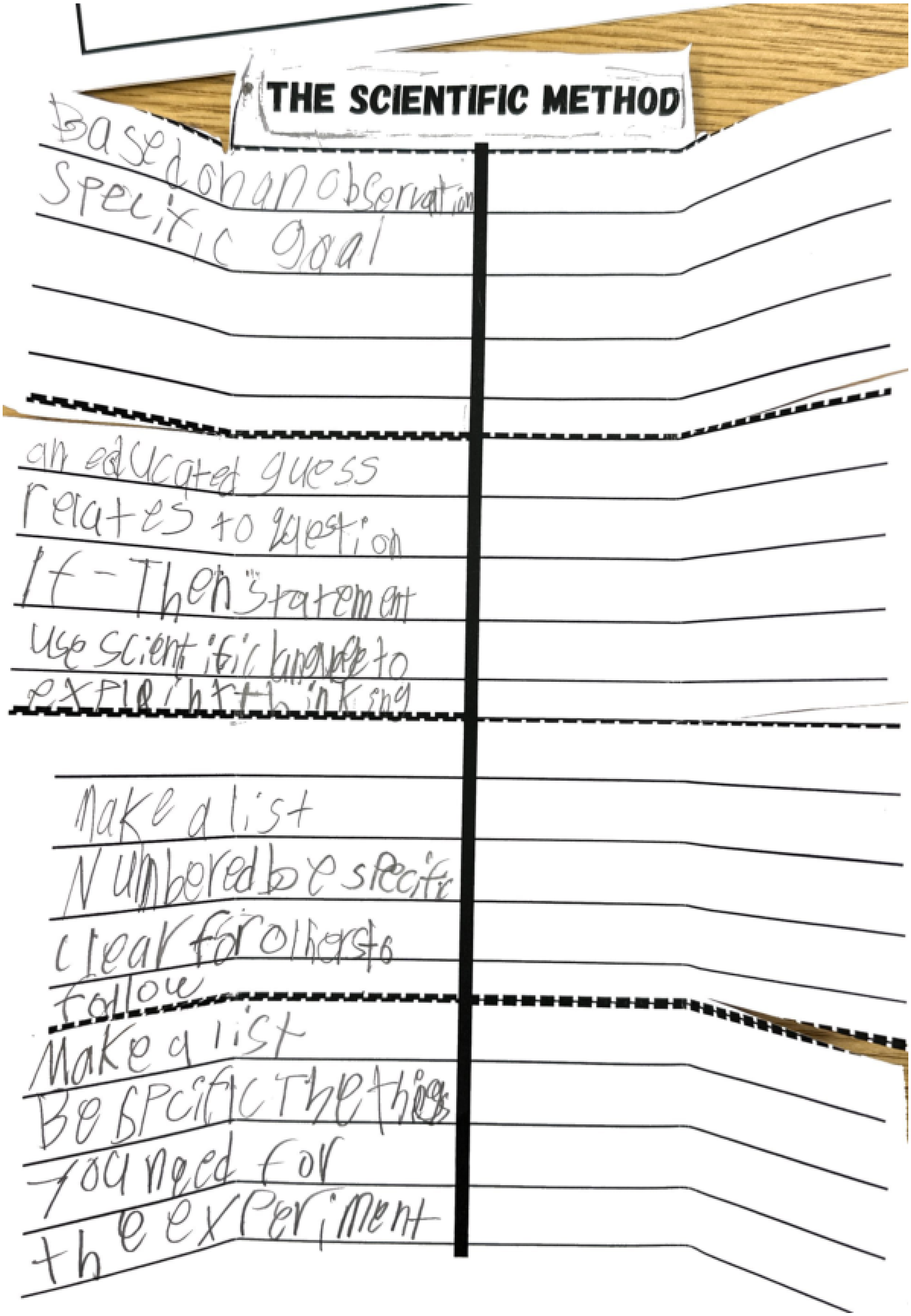
Do you enjoy learning about science? Why or why not?

Dissct animals learn about gentics(DNA)

What is the scientific method and its steps? I don't know

important to Read and understand.

How does this method help scientists?


THE SCIENTIFIC METHOD
Based on an observation
Specific goal
an educated guess
relates to question
If - Then statement
use scientific language to
Make a list
Numbered be specific
clear for others to
follow
Make a list
Be specific the things
you need for
the experiment

Name Student #1 Date 4/24/22

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

I think the paper can be folded 5 times

PROCEDURE

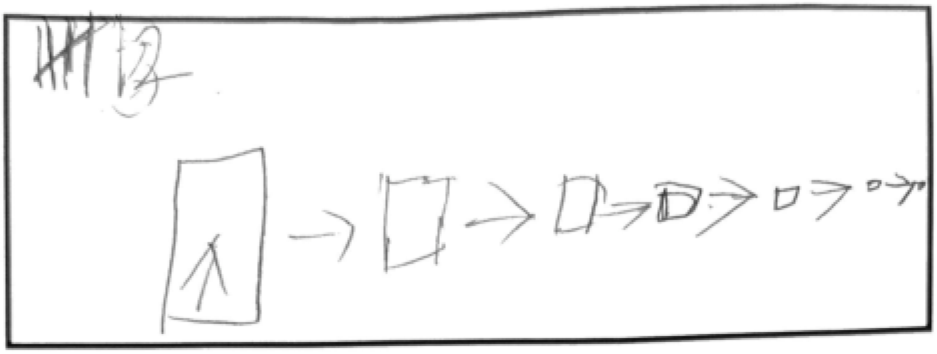
1. Grab a sheet of paper
2. Fold the paper
3. Keep a tally for every fold
4. Write the number of folds

MATERIALS

whtie copy paper
mini Post-it note
pencil
Recording sheet.

EXPERIMENT NOTES

DATA COLLECTION



SUMMARIZE FINDINGS

I folded the paper into squ
It took 8 folds befor I count
anymore my hypothess was
less than

REEVALUATE PROCESS

Name Student #1 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How does time in vinegar affect an egg?

HYPOTHESIS:

How if egg in vinegar for 24 hrs it will become different color.

PROCEDURE

1. Put egg in cup
2. Pour vinegar to cover egg
3. squeeze food coloring into vinegar
4. Repeat for four different cups - Red dye, Yellow dye, No dye, Water.

MATERIALS

Egg (raw)
vinegar
water

EXPERIMENT NOTES

5. Set aside and wait
6. check on it everyday for a week

DATA COLLECTION

SUMMARIZE FINDINGS

REEVALUATE PROCESS

Name Student #1 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

How does DNA affect people play sports?

WHY ARE YOU PICKING THIS TOPIC?

How does time in ~~B~~ vinegar affect an egg?

EXTRA NOTES

Name Student #1 Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

GROUP MEMBERS:

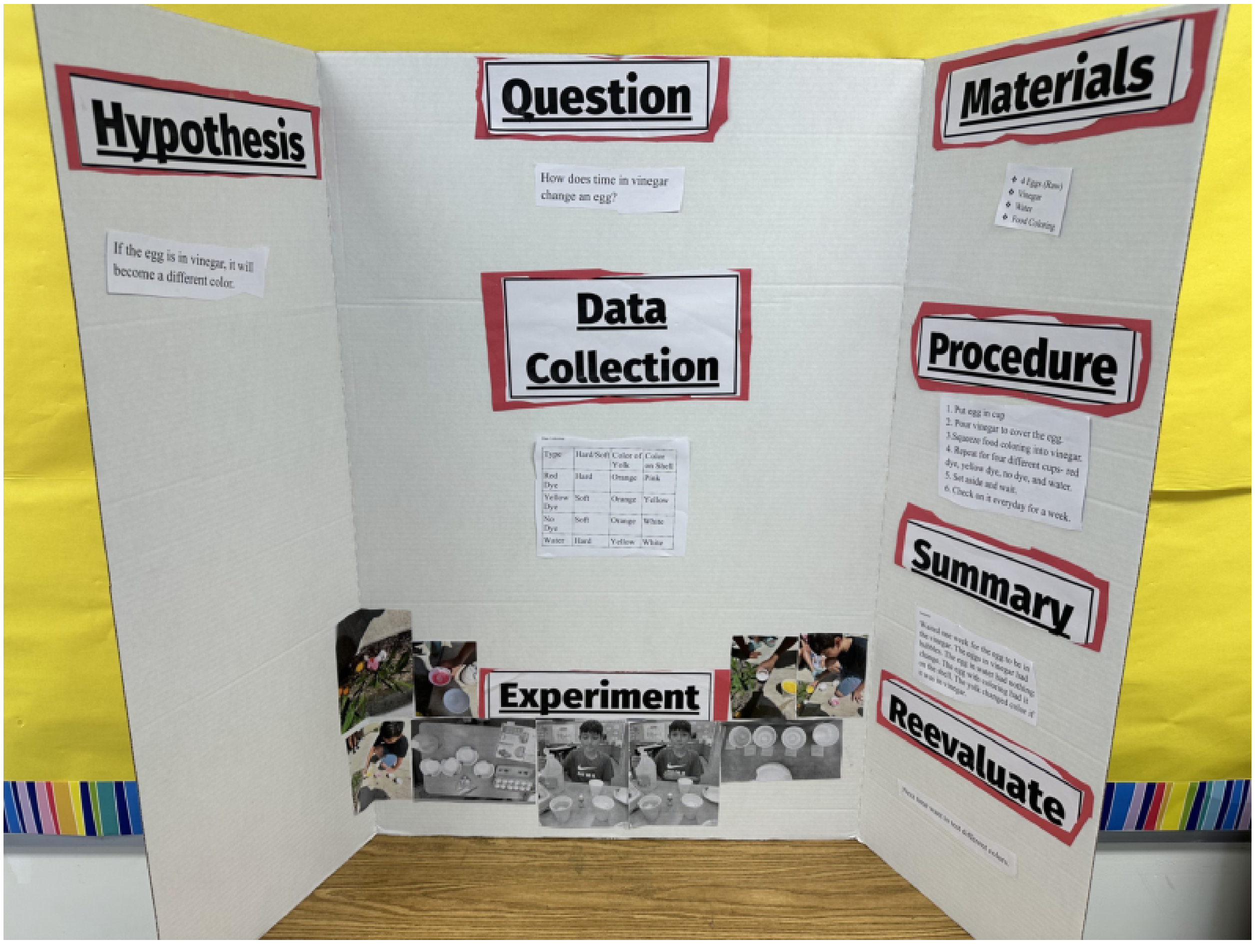
PROPOSED HYPOTHESIS

If the egg is in vinegar for 24 hrs it will become a different color.

EXPLAIN YOUR THINKING.

Because can see color change

EXTRA NOTES


Hypothesis
If the egg is in vinegar, it will become a different color.
Question
How does time in vinegar change an egg?
Data Collection
Type | Hard/Soft | Color of Yolk | Color on Shell
Red Dye | Hard | Orange | Pink
Yellow Dye | Soft | Orange | Yellow
No Dye | Soft | Orange | White
Water | Hard | Yellow | White
Experiment
Materials
4 Eggs (Raw)
Vinegar
Water
Food Coloring
Procedure
1. Put egg in cup
2. Pour vinegar to cover the egg.
3.Squeeze food coloring into vinegar.
4. Repeat for four different cups- red dye, yellow dye, no dye, and water.
5. Set aside and wait.
6. Check on it everyday for a week.
Summary
Reevaluate

Student #1

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/ or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #18 Score:________

#1

Scores	Mean: 34
41	
34	
36	
25	
	Total: 136

Additional Comments:

Student #1

Name [redacted] Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? yes

that's [illegible] for making

What is the scientific method and its steps?

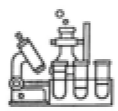
1. question 6. Data collection
2. hypothesis 7. Experiment
3. procedure 8. Reevaluate
4. materials
5. Summary

How does this method help scientists?

if follow methhod will learn better.

Name Student #2 Date 11/8/23

SCIENTIFIC METHOD INTRODUCTION

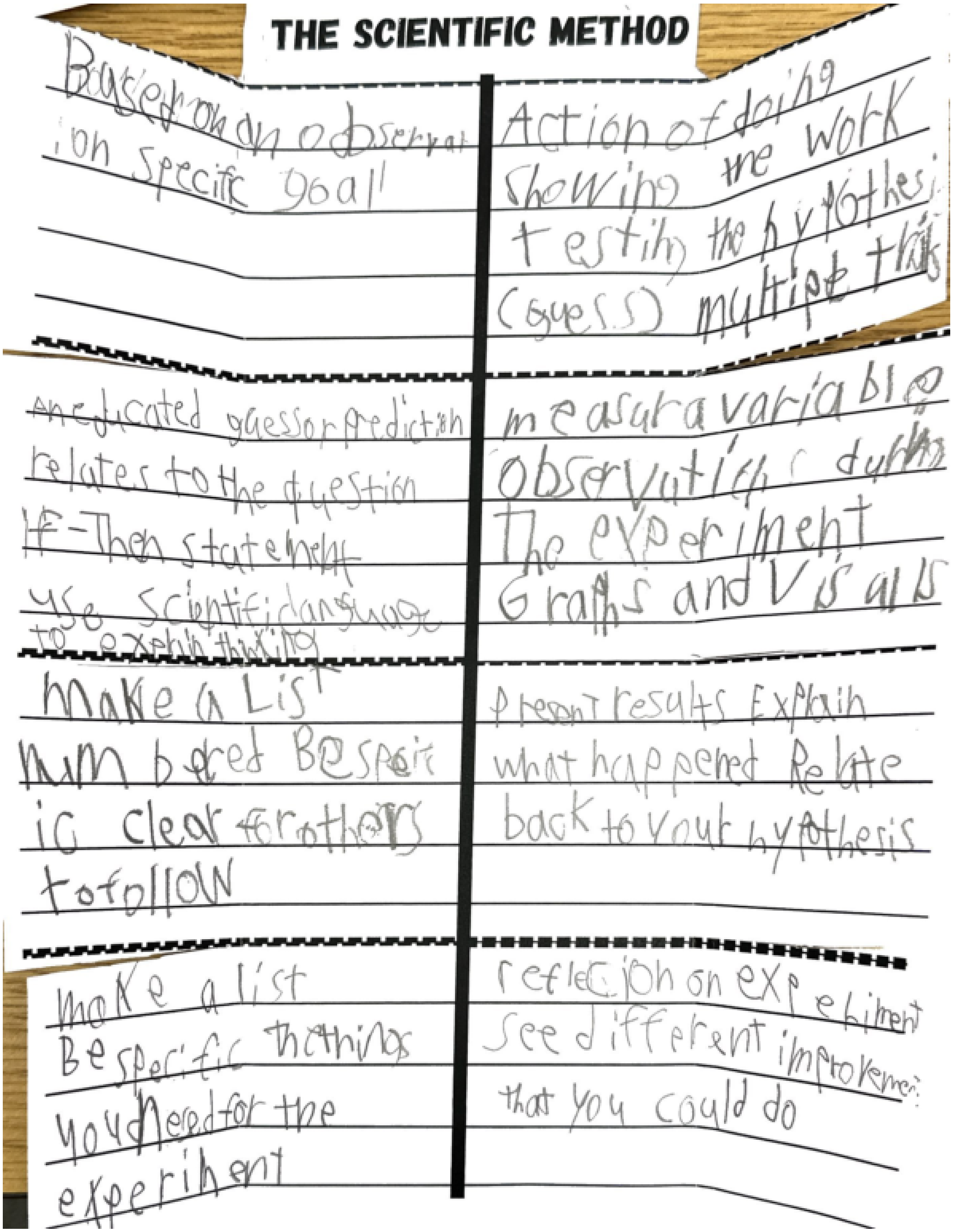


We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? Yes because it makes me fun and I it's make me learna bout Animals.

What is the scientific method and its steps? if you not follow the rules you will get hit or geting hart

How does this method help scientists? if you help people they will understand more


THE SCIENTIFIC METHOD
Based on an observation specific goal
Action of doing showing the work testing the hypothesis (guess) multiple things
an educated guess or prediction relates to the question If-Then statement use scientific language to explain thinking
measure variable observation during the experiment Graphs and Visuals
make a List numbered Be specific clear for others to follow
present results Explain what happened Relate back to your hypothesis
make a list Be specific the things you need for the experiment
reflection on experiment see different improvements that you could do

Name Student #2 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times you can fold a piece of paper

HYPOTHESIS:

I think the paper can be folded 6 times.

PROCEDURE

1. Grab a sheet of pap
2. Fold the paper
3. Keep a tally for every fold
4. Write the number of fold

MATERIALS

White copy paper
mini post-it note
Pencil
Recording sheet

EXPERIMENT NOTES

DATA COLLECTION

I fold the paper into squares.

it took 6 folds before I could not do it any more

my hypothesis was same

SUMMARIZE FINDINGS

REEVALUATE PROCESS

DATA COLLECTION

Trial 1 with wrapping paper	Trial 2 with Streamer Paper 500	

SUMMARIZE FINDINGS

I folded the paper into rectangle.
with the Streamer paper it took 500 times.
with the wrapping paper it took 29 times
my hypothesis was right

REEVALUATE PROCESS

Next time I will differentkindsof becuse
it can fold different way
I am still curious about _____.

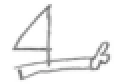
Student #2

Date 4-21-23

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

What if I a super SAIL BoAt. 

P.88

WHY ARE YOU PICKING THIS TOPIC?

BeCuse it have machine, it move and it go to the water

EXTRA NOTES

Which boat will go farther-two sail or one?

Nam Student #2 Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

GROUP MEMBERS:

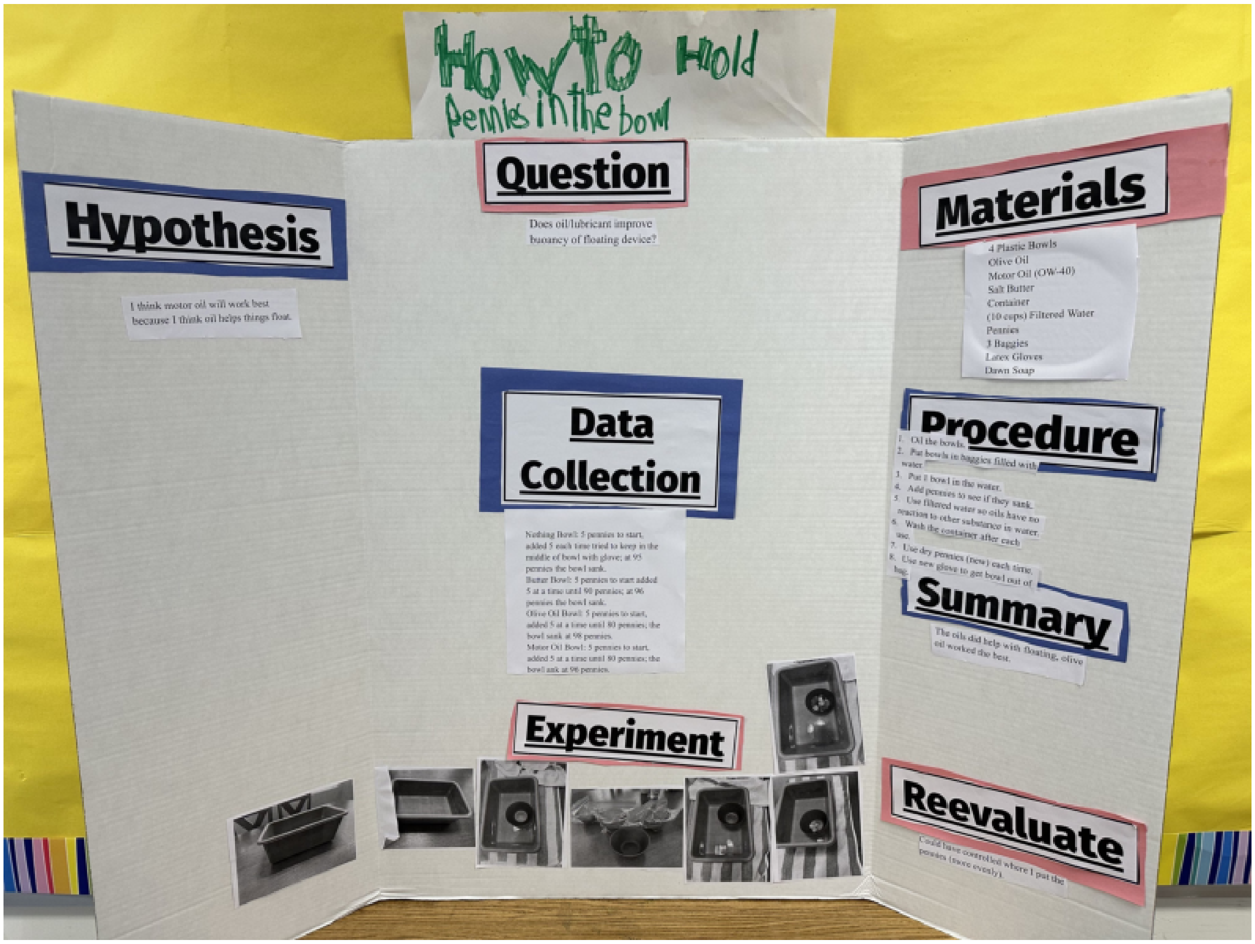
PROPOSED HYPOTHESIS

which (wood or plastic) materil would make a toy boat go faster

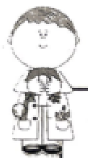
EXPLAIN YOUR THINKING.

I Think wood go fastor plastic I was Thinking about wood go Slow Plastic go fast

EXTRA NOTES


How to Hold
pennies in the bowl
Question
Does oil/lubricant improve buoyancy of floating device?
Hypothesis
I think motor oil will work best because I think oil helps things float.
Materials
4 Plastic Bowls
Olive Oil
Motor Oil (OW-40)
Salt Butter
Container
(10 cups) Filtered Water
Pennies
3 Baggies
Latex Gloves
Dawn Soap
Data Collection
Nothing Bowl: 5 pennies to start, added 5 each time tried to keep in the middle of bowl with glove; at 95 pennies the bowl sank.
Butter Bowl: 5 pennies to start added 5 at a time until 90 pennies; at 96 pennies the bowl sank.
Olive Oil Bowl: 5 pennies to start, added 5 at a time until 80 pennies; the bowl sank at 98 pennies.
Motor Oil Bowl: 5 pennies to start, added 5 at a time until 80 pennies; the bowl sank at 96 pennies.
Procedure
1. Oil the bowls.
2. Put bowls in baggies filled with water.
3. Put 1 bowl in the water.
4. Add pennies to see if they sank.
5. Use filtered water so oils have no reaction to other substance in water.
6. Wash the container after each use.
7. Use dry pennies (new) each time.
8. Use new glove to get bowl out of bag.
Summary
The oils did help with floating, olive oil worked the best.
Experiment
Reevaluate
Could have controlled where I put the pennies (more evenly).

Student #2



Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	~~There is no question and/or hypothesis.~~	~~There is a question and/or hypothesis but they are unclear.~~	~~A question and hypothesis are both present and written clearly.~~	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	~~A description of the experiment and procedures were not present.~~	~~There is a description of the experiment but it is unclear and only some steps are present.~~	~~There is a description of the experiment and steps of the procedure were present.~~	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	~~No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)~~	~~There is a conclusion but it is unclear and does not have data to support it.~~	There is a clear stated conclusion with some data to support it.	~~There is a clear stated conclusion that has tables, charts, notes and/ or pictures to support it.~~
Trifold Presentation	~~There is no trifold to present the project.~~	~~A trifold is present but is incomplete and missing important information.~~	~~A trifold is present and contains all important information related to the project.~~	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #17

Score: 95%
15/16

#2

ScoresMean: 30.5	
26	
28	
30	
31	
31Total: 183	
37	

Additional Comments: Presentation skills practice suggers to create a graph for data. Use table better.

Name Student #2 Date 5/30/23

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? Yes Becuse I have fan With Science.

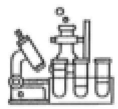
What is the scientific method and its steps? Question mean When peple is talking about question hypothesis means what Win the best

How does this method help scientists? its help to follow for science

Student #3

Name [redacted] Student #3 Date 4/18/23

SCIENTIFIC METHOD INTRODUCTION



We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? No, because science is not my thing And its complicated a lot of reading and writing.

What is the scientific method and its steps? learn to understand gather information

How does this method help scientists? don't know

Name Student #3 Date 4/20/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

5

PROCEDURE

MATERIALS

EXPERIMENT NOTES

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into 9.
It took 9 folds before folds before
I could not do it anymore.

REEVALUATE PROCESS

Name Student #3 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

I think the paper can be folded 595 times.

PROCEDURE

1 Grab a sheet of paper
2 Fold the paper keep
3 a tally for every fold
4 (write the number of folds

MATERIALS

white copy paper mini post it note
pencil
Recording sheet

EXPERIMENT NOTES

DATA COLLECTION

||||

SUMMARIZE FINDINGS

I folded the papers into ______

It took 7 folds before I could not do it.

My hypothesis was more than 5 stlldest

REEVALUATE PROCESS

make smaller folds

Name Student #3 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the material afect the amount of times a paper can be folded?

HYPOTHESIS:

I think that the STREAMER paper will be folded more than PARCHMENT ~~PAPER~~.

PROCEDURE

MATERIALS

- streamer PAPER
- PARCHMENT paper
- recording sheet

EXPERIMENT NOTES

DATA COLLECTION

Trial1w streamer	Trial 2 with Parchment
37	126

Guess 3

SUMMARIZE FINDINGS

I folded the eaperihto with the ___ it took ___ times. my hypothesis was ___.

REEVALUATE PROCESS

Next time I will ___ because I am still curious about ___.

Name Student #3 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

How does amount of wind change speed of windmill?

WHY ARE YOU PICKING THIS TOPIC?

like the design want to make

EXTRA NOTES

whirring windmill
test wind vs. no wind

Name Student #3 Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

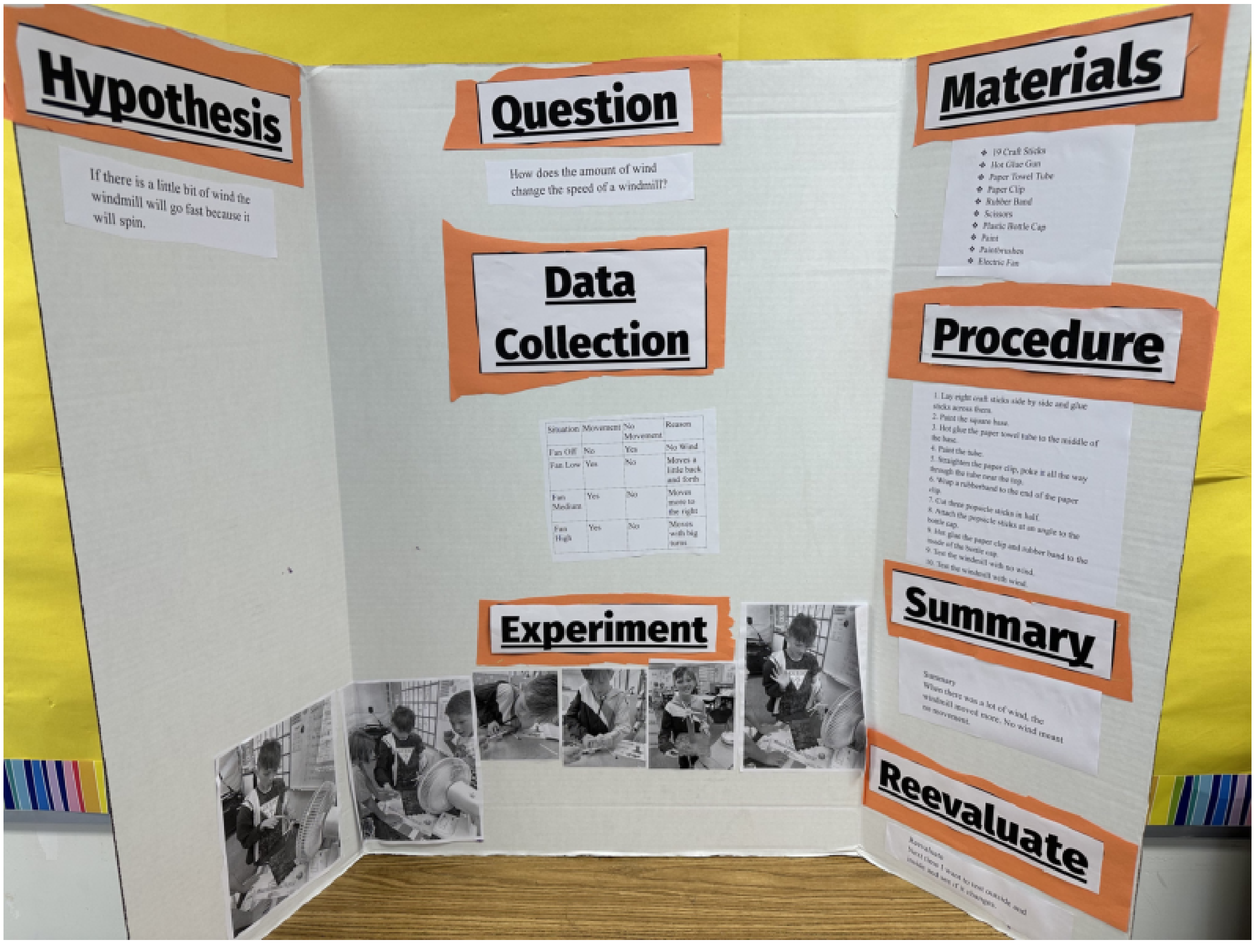
GROUP MEMBERS:

PROPOSED HYPOTHESIS

If there is alittle bit of wind the windmill will go fast because it will spin.

EXPLAIN YOUR THINKING.

EXTRA NOTES


Hypothesis
If there is a little bit of wind the windmill will go fast because it will spin.
Question
How does the amount of wind change the speed of a windmill?
Data Collection
Situation | Movement | No Movement | Reason
Fan Off | No | Yes | No Wind
Fan Low | Yes | No | Moves a little back and forth
Fan Medium | Yes | No | Moves more to the right
Fan High | Yes | No | Moves with big turns
Experiment
Materials
19 Craft Sticks
Hot Glue Gun
Paper Towel Tube
Paper Clip
Rubber Band
Scissors
Plastic Bottle Cap
Paint
Paintbrushes
Electric Fan
Procedure
2. Paint the square base.
3. Hot glue the paper towel tube to the middle of the base.
4. Paint the tube.
10. Test the windmill with wind.
Summary
Summary
When there was a lot of wind, the windmill moved more. No wind meant no movement.
Reevaluate

Student #3

Science Fair Rubric

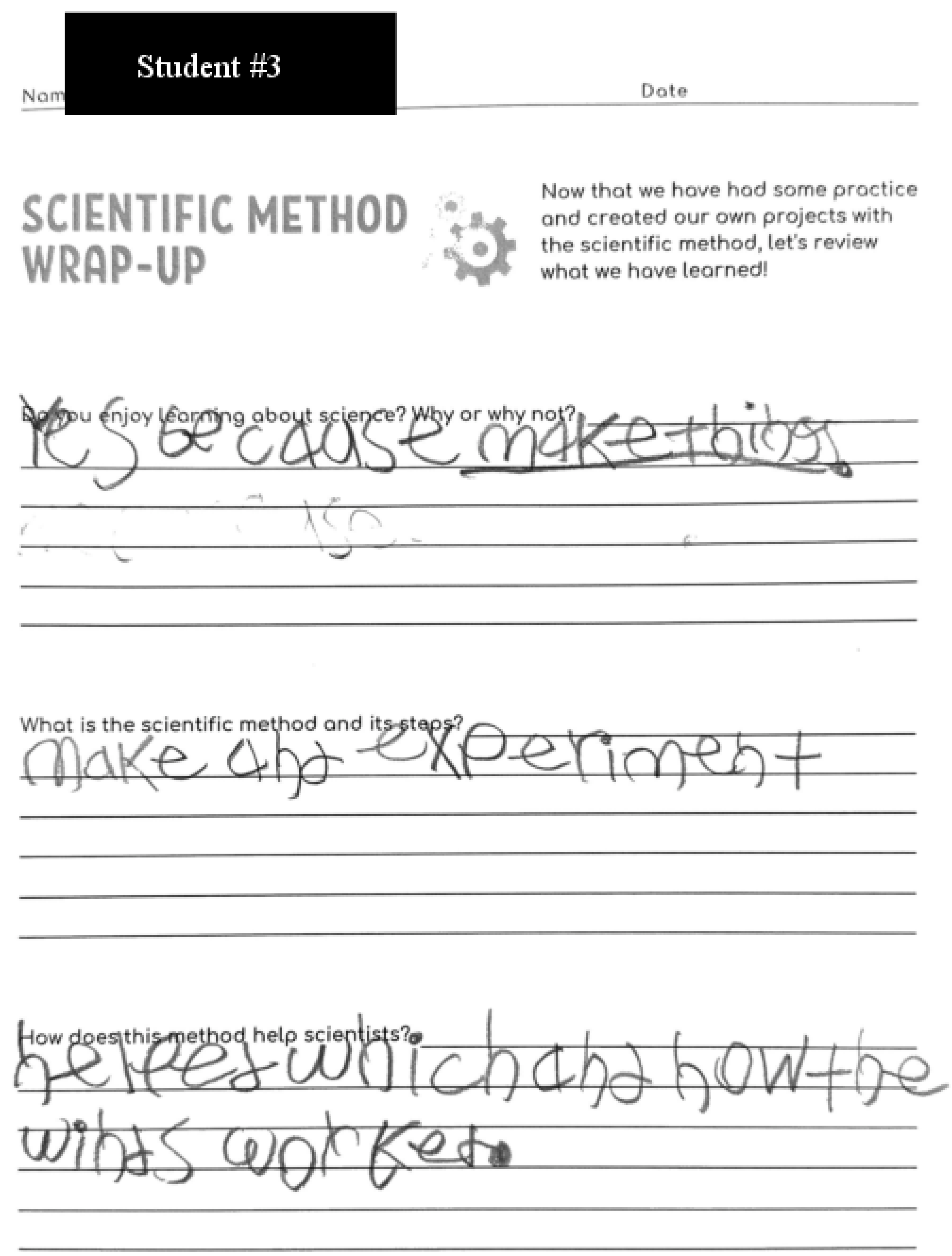
Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #16 Score: 16/16

#3

ScoresMean: 31.5	
25	
29	
30	
31	
35Total: 189	
39	

Additional Comments: Presentation skills practice. No quantitative data with numbers could be measured by time.


Nam Student #3 Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not?

Yes because make things

What is the scientific method and its steps?

make and experiment

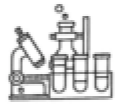
How does this method help scientists?

helps which and how the whats worked.

Student #4

Name Student #4 Date 1-5-23

SCIENTIFIC METHOD INTRODUCTION

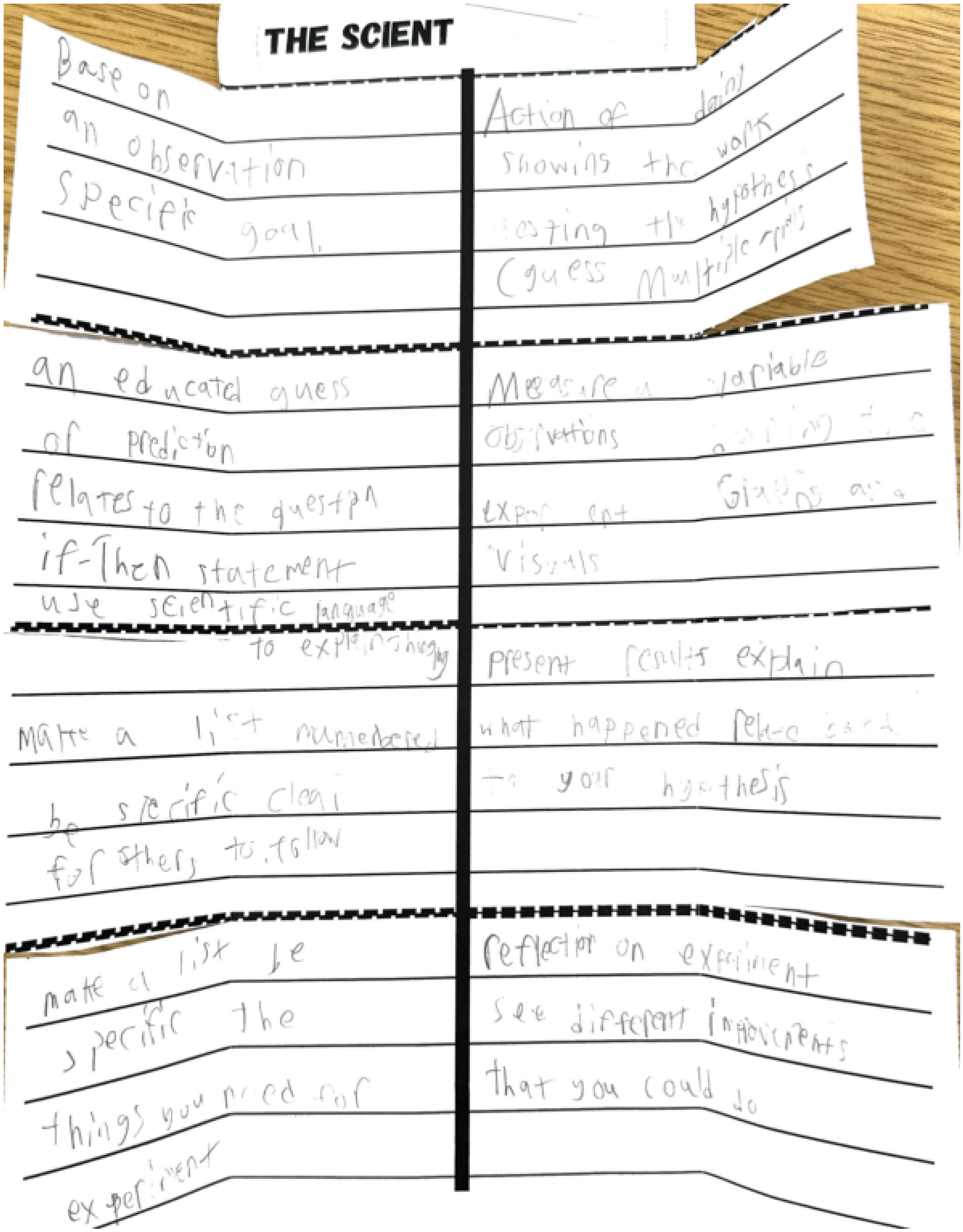


We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? yes I like it. And I like to see animal's alot

What is the scientific method and its steps? If not follow rules it will happen.

How does this method help scientists? Help to understand more


THE SCIENT
Base on
an observation
Specific goal.
Action of doing
Showing the work
testing the hypothesis
guess
an educated guess
of prediction
relates to the question
if-Then statement
use scientific language
to explain things
Measure a variable
observations
experiment
visuals
present results explain
what happened
to your hypothesis
make a list numbered
be specific clear
for others to follow
make a list be
specific the
things you need for
experiment
reflection on experiment
see different improvements
that you could do

Name Student #4 Date 5-3-23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the [illegible] affect the amount [illegible] times a paper can be folded?

HYPOTHESIS:

I think that ~~the~~ Shiny gift tissue paper will be folded more than Tissue.

PROCEDURE

MATERIALS

Recording
Sheet pencil
Tissue
Shiny Gift
Tissue paper

EXPERIMENT NOTES

DATA COLLECTION

Trial with envelope. streamer
tissue

SUMMARIZE FINDINGS

I folded the paper into circle.
With the tissue it took many times.
With the

REEVALUATE PROCESS

Next time I will — because —
I am still curious about —.

By Student #4 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

6th

PROPOSED QUESTION

6H what happens to raisins in sparkling water versus tapwater

WHY ARE YOU PICKING THIS TOPIC?

6th I like to see if it would spill over.

EXTRA NOTES

6th ~~Clear soda~~ sparkling water, A clear glass of water, handful of raisins

Student #4

Date 4-28-23

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

GROUP MEMBERS:

PROPOSED HYPOTHESIS

I think raisins in sparkling water will have bubbles and float because light.

EXPLAIN YOUR THINKING.

EXTRA NOTES

Name Student #4 Date May 21, 2023

SCIENTIFIC METHOD RECORD SHEET

One interesting egg (OR) RAW eggs VS Boiled eggs

QUESTION:

Will three raw eggs and three boiled eggs be different or same in three different liquids? (Vinegar, zero coke and Lemon juice)

HYPOTHESIS:

I think eggs' colors change and eggs will be soft because they stay in glasses for 20 hours with three different liquids.

PROCEDURE

I put each egg in each glass.
Three raw eggs } six eggs in
Three boiled eggs } six glasses
I poured Vinegar in two glasses
I poured zero Coke in two glasses
I poured lemon juice in two glasses
The eggs stayed in glasses for 20 hours.

MATERIALS

Six eggs :
-3 Raw eggs
-3 boiled eggs
-plastic bottle zero coke
-plastic bottle Vinegar
-glass bottle lemon juice
-six small glasses

EXPERIMENT NOTES

I tested if each egg looks different in colors, sizes, egg shells fallen out or softness.
I also tested what eggs looked like after I removed egg shells.

DATA COLLECTION

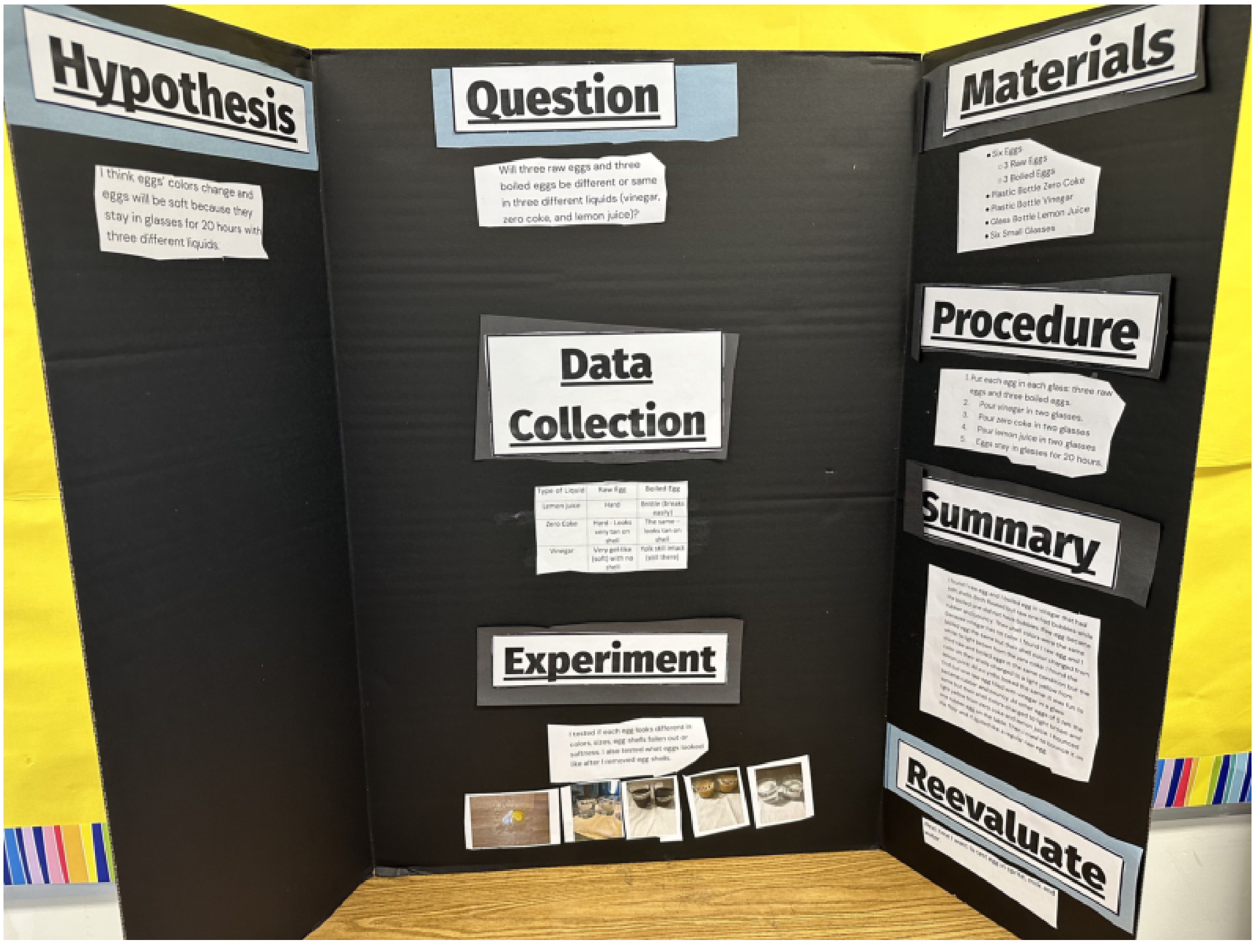
?

SUMMARIZE FINDINGS

I found 1 Raw egg and 1 Boiled egg in Vinegar that had soft shells. Both floated ~~bu~~ But raw one had bubble while boiled one didn't have bubbles. Raw egg became rubber and bouncy. Their shell colors were same because Vinegar has no color.
I found 1 raw and 1 boiled eggs the same but their shell color changed from white to light brown from Zero coke
I found third ~~Raw~~ Raw and boiled eggs in the same Condition but the color on thier shells changed to light yellow from lemon juice.
All six yolks looked the same.

REEVALUATE PROCESS

It was fun to find out one raw egg ~~for~~ filled with vinegar in a glass became rubber and bouncy. All other eggs of 5 ~~looked~~ felt the same but their shell colors changed to light brown and light yellow from zero coke and lemon juice.
I bounced one rubber egg on table. Then I tried to bounce it on floor and It spilled like regular raw egg.


Hypothesis
I think eggs' colors change and eggs will be soft because they stay in glasses for 20 hours with three different liquids.
Question
Will three raw eggs and three boiled eggs be different or same in three different liquids (vinegar, zero coke, and lemon juice)?
Data Collection
Type of Liquid
Raw Egg
Boiled Egg
Lemon juice
Hard
Brittle (Breaks easily)
Zero Coke
Hard - Looks very tan on shell
The same - looks tan on shell
Vinegar
Very gel-like (soft) with no shell
Yolk still intact (still there)
Experiment
I tested if each egg looks different in colors, sizes, egg shells fallen out or softness. I also tested what eggs looked like after I removed egg shells.
Materials
Six Eggs
3 Raw Eggs
3 Boiled Eggs
Plastic Bottle Zero Coke
Plastic Bottle Vinegar
Glass Bottle Lemon Juice
Six Small Glasses
Procedure
1. Put each egg in each glass: three raw eggs and three boiled eggs.
2. Pour vinegar in two glasses.
3. Pour zero coke in two glasses
4. Pour lemon juice in two glasses
5. Eggs stay in glasses for 20 hours.
Summary
Reevaluate

Student #4

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #15 Score: 4

16/16

#4

ScoresMean: 31.8	
24	
28	
32	
34	
35Total: 191	
38	

Additional Comments: Presentation skill practice.

Try to communicate instead of look, could measure how much to pour.

Nam[redacted] **Student #4** Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? because I didnt try eggs in glass.

What is the scientific method and its steps? which is that best
1. Question
2. Hypothesis

How does this method help scientists? [illegible] ing scyence

Student #5

Name Student #5 Date

SCIENTIFIC METHOD INTRODUCTION

We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? Yes because I like to use scence coat xperment, and research on living, non living.

What is the scientific method and its steps? learn tu understand and gather information on dont now

How does this method help scientists?

Name Student #5 Date [illegible]

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How told a piece of pa[illegible]
many timer cna yo

HYPOTHESIS:

5

PROCEDURE

MATERIALS

EXPERIMENT NOTES

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into squares

summary

REEVALUATE PROCESS

Name Student #5 Date 4\24-

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

I THINK THE PAPER CAN BE FOLDED 5 TIMES.

PROCEDURE

1. GRAB A SHEET OF PAPER
2. FOLD THE PAPER
3. KEEP A TALLY FOR EVERY FOLD
4. Write the number of folds

MATERIALS

WHITE COPY PAPER
MINI POST-IT NOTE
PENCIL
RECORDING SHEET

EXPERIMENT NOTES

DATA COLLECTION

~~IIII~~ II

SUMMARIZE FINDINGS

REEVALUATE PROCESS

Name Student #5 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the material affect the amount of times a paper can be folded?

HYPOTHESIS:

I THINK THAT THE STREAMER WILL BE FOLDED MORE THAN CARDSTOCK PAPER.

PROCEDURE

MATERIALS

- STEAMER PAPER
- CARDSTOCK PAPER
- Recording sheet

EXPERIMENT NOTES

DATA COLLECTION

TRIAL 1 WITH STANDARD PAPER	TRIAL 2 WITH CARDSTOCK PAPER	
GUESS=40	GUESS 500	
II ← 72	II ← 52	

SUMMARIZE FINDINGS

I folded the paper into ______. With the ______ it took __ times. With the ______ it took __ times. My hypothesis was ______.

REEVALUATE PROCESS

Next time I will __ because ______

I am still curious about

Name Student #5 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

* How far can different objects go with a homemade catapult?

WHY ARE YOU PICKING THIS TOPIC?

How does wheel size affect how far a Balloon powered car can go?

EXTRA NOTES

Balloon-powered car challenge

crunch, kit kat, Ferrero rocher, Mr Beast chocolate bar

Name Student #5 Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

GROUP MEMBERS:

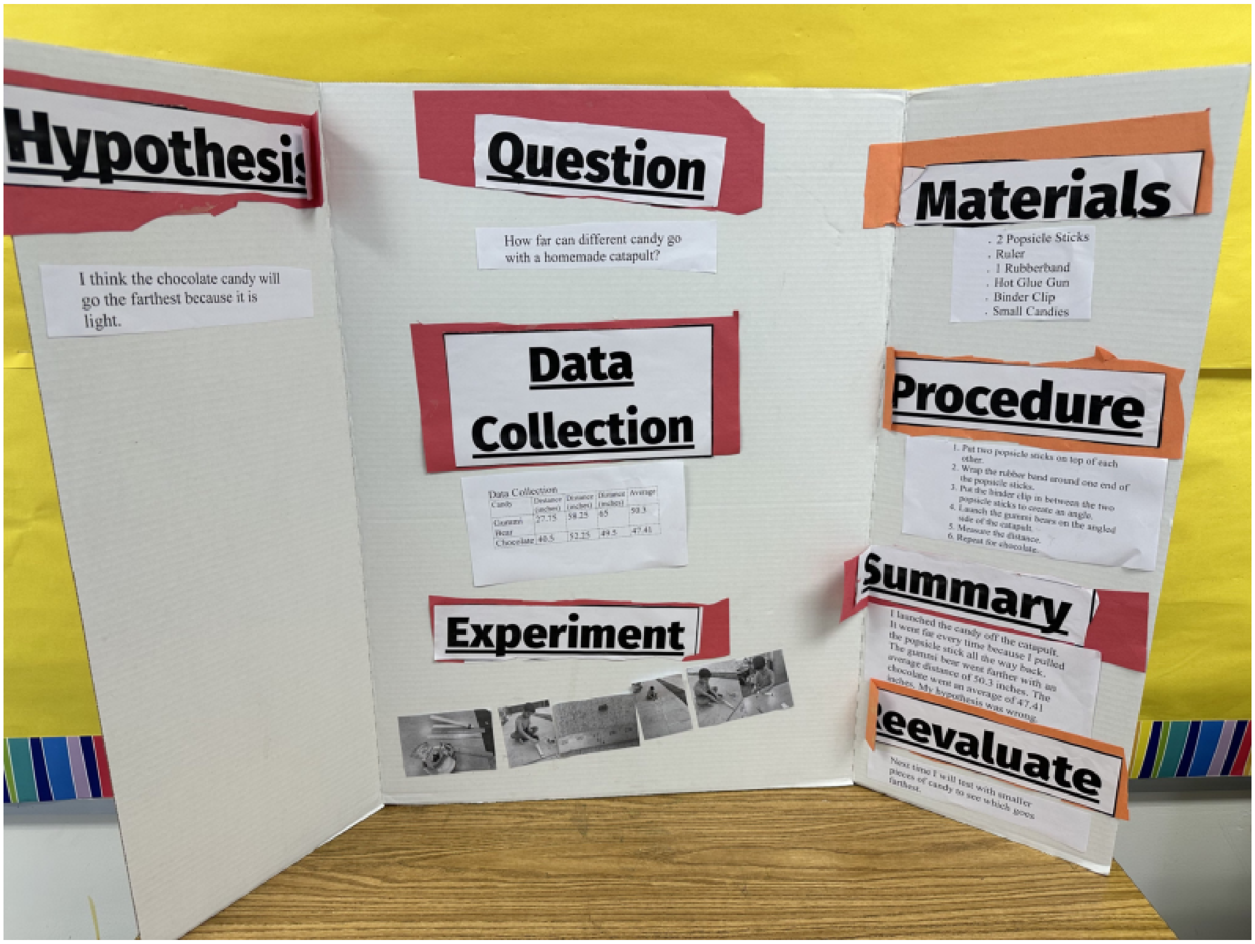
PROPOSED HYPOTHESIS WHAT WILL HAPPEN?

I think the ferrero rocher chocale will go farthest.

EXPLAIN YOUR THINKING. WHY DO YOU THINK THAT?

Because it is big and the shape.

EXTRA NOTES



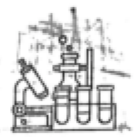
#5

ScoresMean: 33.6	
26	
31	
34	
35	
37Total: 202	
39	

Additional Comments: Presentation skills- practice more. Ant reason why chocolate is heavy, graph coils be more clear, add math calculations.

Name Student #6 Date 4-19-23

SCIENTIFIC METHOD INTRODUCTION



We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? yes like science

becuse I can learn

and under stand many

things

What is the scientific method and its steps?

learn to understan

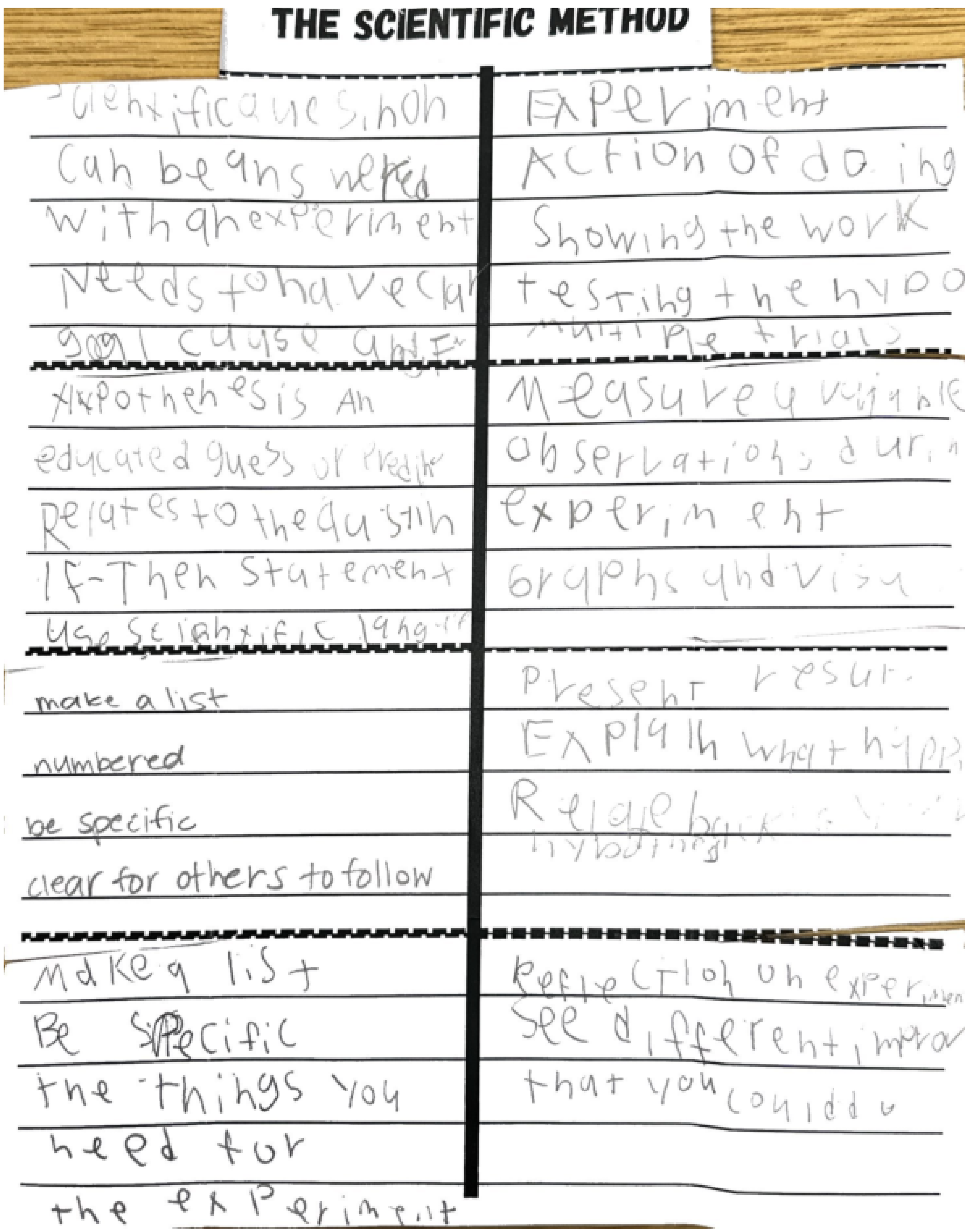
gathr infmation

different experimnts

How does this method help scientists?

learn to better understand


THE SCIENTI
ETHOD
Question
Experiment
Hypothesis
Data
Procedure
Findings
Materials
Reevaluate


THE SCIENTIFIC METHOD

Scientific question
Can be answered
with an experiment
Needs to have clear
goal cause and ef

Hypothesis is an
educated guess or predic
relates to the question
If-Then statement
use scientific languag

make a list
numbered
be specific
clear for others to follow

Make a list
Be specific
the things you
need for
the experiment

Experiment
Action of doing
Showing the work
testing the hypo
multiple trials

Measure a variable
observations durin
experiment
graphs and visu

Present resul
Explain what happ
Relate back
hypothesis

Reflection on experimen
See different improv
that you could do

Name Student #6 Date 4/20/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can yoh fold a Piece of Piece of Paper

HYPOTHESIS:

I think the Paper can be folded 10 times because then it can be any more

PROCEDURE

MATERIALS

EXPERIMENT NOTES

| | | | / | | \

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into square
It took 10 folds before I
couldn not do it anymore

REEVALUATE PROCESS

Name Student #6 Date 4/24/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper

HYPOTHESIS:

A piece of ~~paper~~ paper can be folded 5 times.

PROCEDURE

1 Grab a sheet of paper
2 Fold the paper ~~Keep a tally for every~~
3 Keep tally for every fold
4 Write the number of folds

MATERIALS

White copy paper
Mini Post-it Note
Pencil
Recording sheet

EXPERIMENT NOTES

| | | | | | |
1 2 3 4 5 6 7 8 9 10

DATA COLLECTION

i folded the Paper into sqares it took 10 ~~#~~ folds before i could not do it anymore rectangles squares anymore

My hypothesis was less than

SUMMARIZE FINDINGS

REEVALUATE PROCESS

i make smalle ~~#~~ folds

Name Student #6 Date 5/2/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

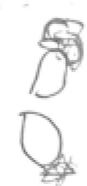
Does the material affect the amount of times a can be folded

HYPOTHESIS: I think that the flower wra paper color ful tissue paper

PROCEDURE

MATERIALS

- flower wrapping paper
- recording sheet ~~pencil~~
- cardstock paper



EXPERIMENT NOTES

DATA COLLECTION

TRIAL 1	TRIAL 2	
[illegible]	[illegible]	

SUMMARIZE FINDINGS

I folded the paper [illegible] with the Flower [illegible] the [illegible] — times [illegible]

REEVALUATE PROCESS

Next time I will — becuse — I am Still curious about —

Name Student #6 Date 4/21/23

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

How many rub ber bands does it take to explode different fruits

WHY ARE YOU PICKING THIS TOPIC?

watermelon | APPLE
Pineapple
Lemon

EXTRA NOTES

EXPLODING WATERMELON

Student #6 Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

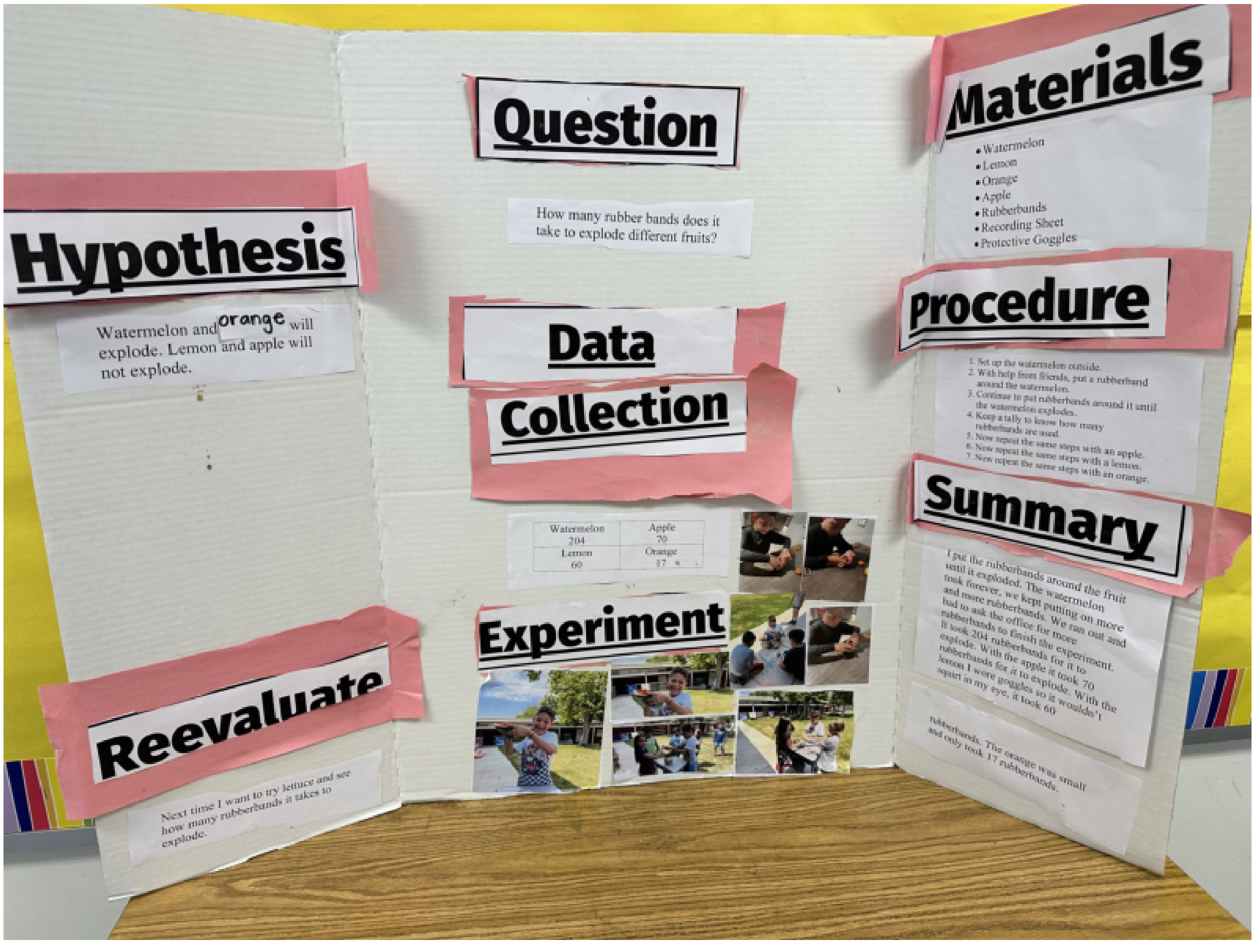
GROUP MEMBERS:

PROPOSED HYPOTHESIS

W HICH DO YOU THINK FRUIT(S) WILL EXPLOE?

EXPLAIN YOUR THINKING.

EXTRA NOTES


Question
How many rubber bands does it take to explode different fruits?
Materials
• Watermelon
• Lemon
• Orange
• Apple
• Rubberbands
• Recording Sheet
• Protective Goggles
Hypothesis
Watermelon and orange will explode. Lemon and apple will not explode.
Procedure
1. Set up the watermelon outside.
2. With help from friends, put a rubberband around the watermelon.
3. Continue to put rubberbands around it until the watermelon explodes.
4. Keep a tally to know how many rubberbands are used.
5. Now repeat the same steps with an apple.
6. Now repeat the same steps with a lemon.
7. Now repeat the same steps with an orange.
Data Collection
Watermelon 204
Apple 70
Lemon 60
Orange 17
Summary
I put the rubberbands around the fruit until it exploded. The watermelon took forever, we kept putting on more and more rubberbands. We ran out and had to ask the office for more rubberbands to finish the experiment. It took 204 rubberbands for it to explode. With the apple it took 70 rubberbands for it to explode. With the lemon I wore goggles so it wouldn't squirt in my eye, it took 60 rubberbands. The orange was small and only took 17 rubberbands.
Experiment
Reevaluate
Next time I want to try lettuce and see how many rubberbands it takes to explode.

#6

ScoresMean: 33.2	
24	
33	
33	
34	
36Total: 199	
39	

Additional Comments: Bar graph would be a good idea.

Student #6

Name [redacted] Date 5/30/23

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not?

yes becayse fun and i got to learn.

What is the scientific method and its steps?

Rudder bands helped tighten the melon and it exploded

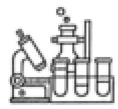
1. Question 2. Hypothe 3. materil 4. procedure 5. summary 6. reeva 7. Data collectin 8. Experi

How does this method help scientists?

can learn from it

Name Student #7 Date 4/18/23

SCIENTIFIC METHOD INTRODUCTION



We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? I like using a microslope to see parts of human body and mix things.

What is the scientific method and its steps? learn to underesrstand: gather information diferent expeiments.

How does this method help scientists? learn to better understand.

Name Student #7 Date [illegible]

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

4

PROCEDURE

MATERIALS

EXPERIMENT NOTES

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into

It took 10 folds before I could not do it anymore.

REEVALUATE PROCESS

Name [redacted] Student #7 Date 1/24/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold apiece of paper?

HYPOTHESIS:

I think the paper can be folded 5 times.

PROCEDURE

1. grab a Sheet of paper
2. fold the paper
3. Keep a tally for every fold
4. write the number of folds

MATERIALS

White copy paper
mini post-it note
pencil
Recording Sheet

EXPERIMENT NOTES

卌 卌 卌 |

DATA COLLECTION

N

SUMMARIZE FINDINGS

I folded the paper into squares rectangles It took 16 folds before I could not it anymore. my hypothesis was less than

REEVALUATE PROCESS

Name Student #7 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the materiial affect the amount of times a paper can be folded?

HYPOTHESIS:

I think that the streamer will be folded more than paper.

PROCEDURE

I folded the paper into

MATERIALS

- STREAMER PAPER
- TISSUE PAPER
- recording sheet

EXPERIMENT NOTES

DATA COLLECTION 400 guess

guess 60

Trial 1 with streamer	Trial 2 with tissue paper	
	51	

SUMMARIZE FINDINGS

I folded the paper into with the
it took times with the
it took times my hypothesis
was

REEVALUATE PROCESS

next time I will because
I am still curious about

Name Student #7 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

How does size of magnet and Slime affect movement?

WHY ARE YOU PICKING THIS TOPIC?

fun dand curios

EXTRA NOTES

Slitthering slime.

Name Student #7

Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then ____. I think ____ because ____.

GROUP MEMBERS:

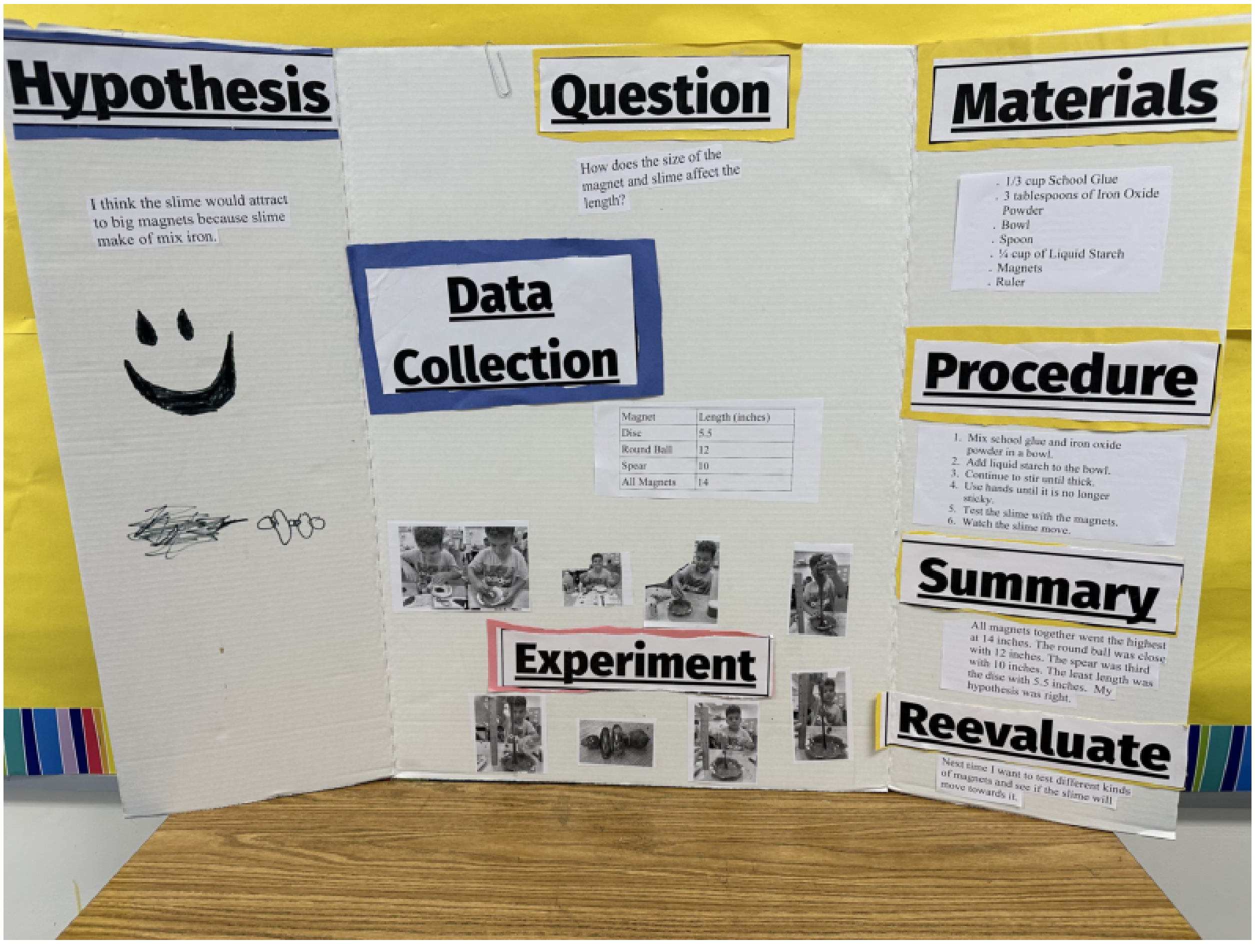
PROPOSED HYPOTHESIS

I think tre slime would attract to magnets,

EXPLAIN YOUR THINKING.

I think Slime movel magne to magnet Because Slime make of mix Iron.

EXTRA NOTES


Hypothesis
I think the slime would attract to big magnets because slime make of mix iron.
Question
How does the size of the magnet and slime affect the length?
Data Collection
Magnet | Length (inches)
Disc | 5.5
Round Ball | 12
Spear | 10
All Magnets | 14
Experiment
Materials
. 1/3 cup School Glue
. 3 tablespoons of Iron Oxide Powder
. Bowl
. Spoon
. ¼ cup of Liquid Starch
. Magnets
. Ruler
Procedure
1. Mix school glue and iron oxide powder in a bowl.
2. Add liquid starch to the bowl.
3. Continue to stir until thick.
4. Use hands until it is no longer sticky.
5. Test the slime with the magnets.
6. Watch the slime move.
Summary
All magnets together went the highest at 14 inches. The round ball was close with 12 inches. The spear was third with 10 inches. The least length was the disc with 5.5 inches. My hypothesis was right.
Reevaluate
Next time I want to test different kinds of magnets and see if the slime will move towards it.

Student #7

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #13 Score: 15/16

#7

ScoresMean: 33.5	
27	
27	
31	
35	
35Total: 201	
46	

Additional Comments: Could add bar graph.

Nam[redacted] Student #7 Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? Yes because I like to Learn about body.

I like to disseict rat and see inside the body.

What is the scientific method and its steps?

1. ? Question 2. Hypothesis 3. Materials

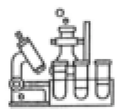
4. Data collect 5. summary 6. experim

7. Procedure 8. reevaluate

How does this method help scientists? important to follow and understand.

Name Student #8 Date 4/18/23

SCIENTIFIC METHOD INTRODUCTION



We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? Yes, because I learn from SCIENtIFIC and learn How make and fun enjoy.

What is the scientific method and its steps? learn to understand gather information different experiments.

How does this method help scientists? Help to teach and learn, learn to better understand

Name Student #8 Date 4-20-23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many time can you fold a Piece of paper

HYPOTHESIS:

6

PROCEDURE

MATERIALS

EXPERIMENT NOTES

6

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the Paper into squares It took 6 folds berore I Could Not do It anymore.

REEVALUATE PROCESS

Name [redacted] Student #8 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper.

HYPOTHESIS:

I think the paper can be folded 4 times.

PROCEDURE

1. Grab a Sheet of Paper
2. Fold the Paper
3. Keep a tally
4. write the number of folds

MATERIALS

white copy paper
mini Post-it note
Pencil
Regoraing Sheet

EXPERIMENT NOTES

IIII 4

~~IIII~~ 5

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into squares
it toot 4 folds before I could
not do it anymore my hypothesis
was same

REEVALUATE PROCESS

what would you do fold it into
rectangles make smaller folds
differently

Name Student #8 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the material affect the amount of time a paper can be folded

HYPOTHESIS:

I think that the steamer paper than parchment paper.

PROCEDURE

MATERIALS

- Steamer paper
  Resording Sheet pencil
- Parchment paper
  Recording Sheet pencil

EXPERIMENT NOTES

DATA COLLECTION

guess 30

Trial 1 with streamer 𝍸 𝍸 𝍸 𝍸 𝍸 III	Trial 2 with parchment 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 |||| 𝍸	

SUMMARIZE FINDINGS

I folded the paper into

with the streger it took 28 times.

with the it took

times.

my hypothesis was

REEVALUATE PROCESS

Next time I will besause

. I am still sarious

I am still curious about

Name Student #8 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

Glue or boray which is better for making
Slime? Glue or Boray

WHY ARE YOU PICKING THIS TOPIC?

I like make and fun

EXTRA NOTES

Name Student #8 Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then ____. I think ____ because ____.

GROUP MEMBERS:

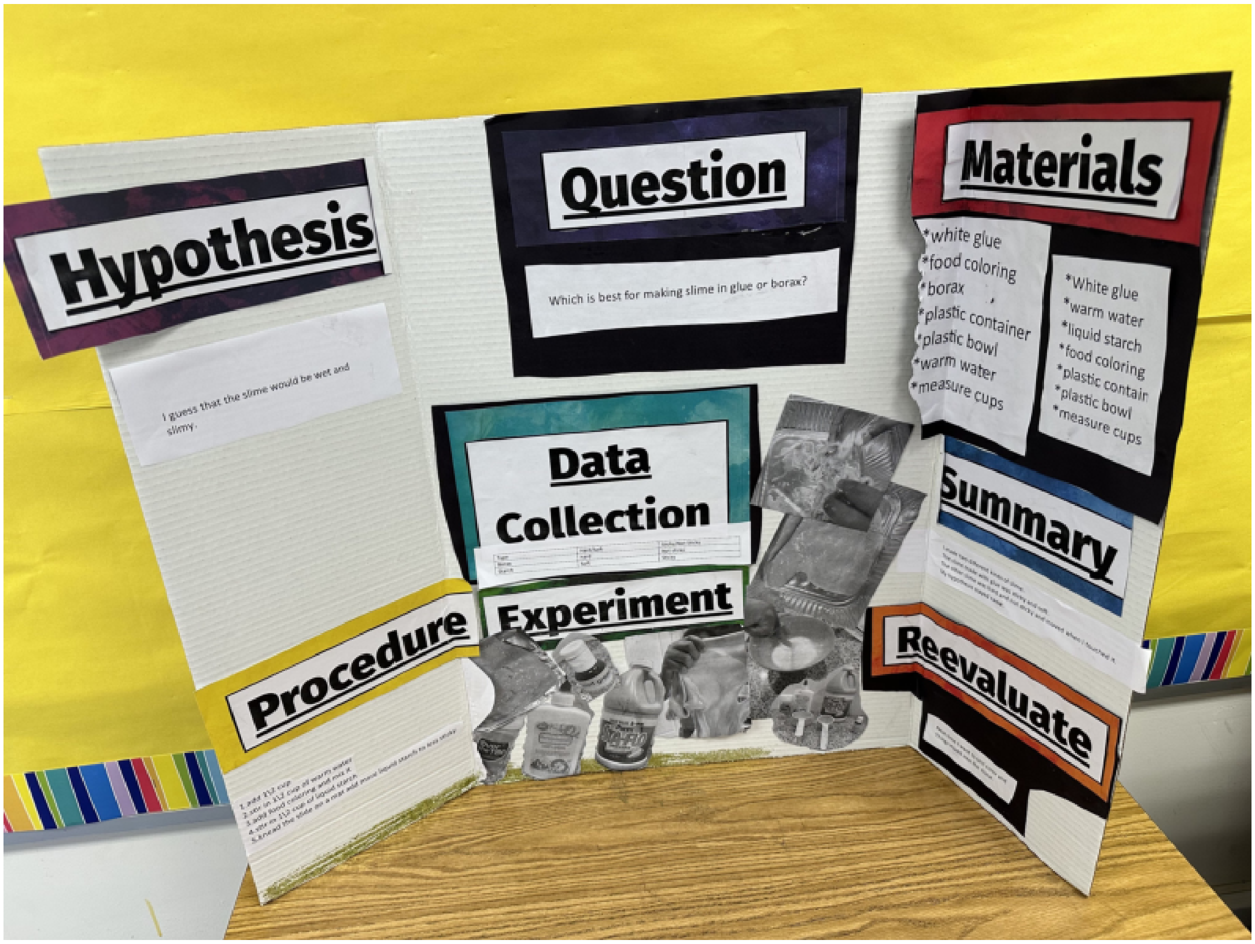
Khloe

PROPOSED HYPOTHESIS

I thik guss Glue, why best?, because glue will become soft,

EXPLAIN YOUR THINKING.

EXTRA NOTES



Hypothesis
I guess that the slime would be wet and slimy.
Question
Which is best for making slime in glue or borax?
Materials
*white glue
*food coloring
*borax
*plastic container
*plastic bowl
*warm water
*measure cups
*White glue
*warm water
*liquid starch
*food coloring
*plastic contain
*plastic bowl
*measure cups
Data Collection
Summary
Procedure
Experiment
Reevaluate

Student #8

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #6 Score: 4
8/16

#8

ScoresMean: 32.7	
23	
26	
30	
34	
39Total: 196	
44	

Additional Comments: Need answer to question, summary and hypothesis need to be consistent. Could measure how much water/liquid to add each time, no math table or graph.

Name Student #8 Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? Yes why FUN
I make Things Slime

What is the scientific method and its steps? 1, Question
2. Hypothesis 3. Data collection 4. Summary
5. Procedare 6. Materials 7. Reevaluate
8 Experiment

How does this method help scientists? learn to experiment.

Name Student #9 Date 4/18/23

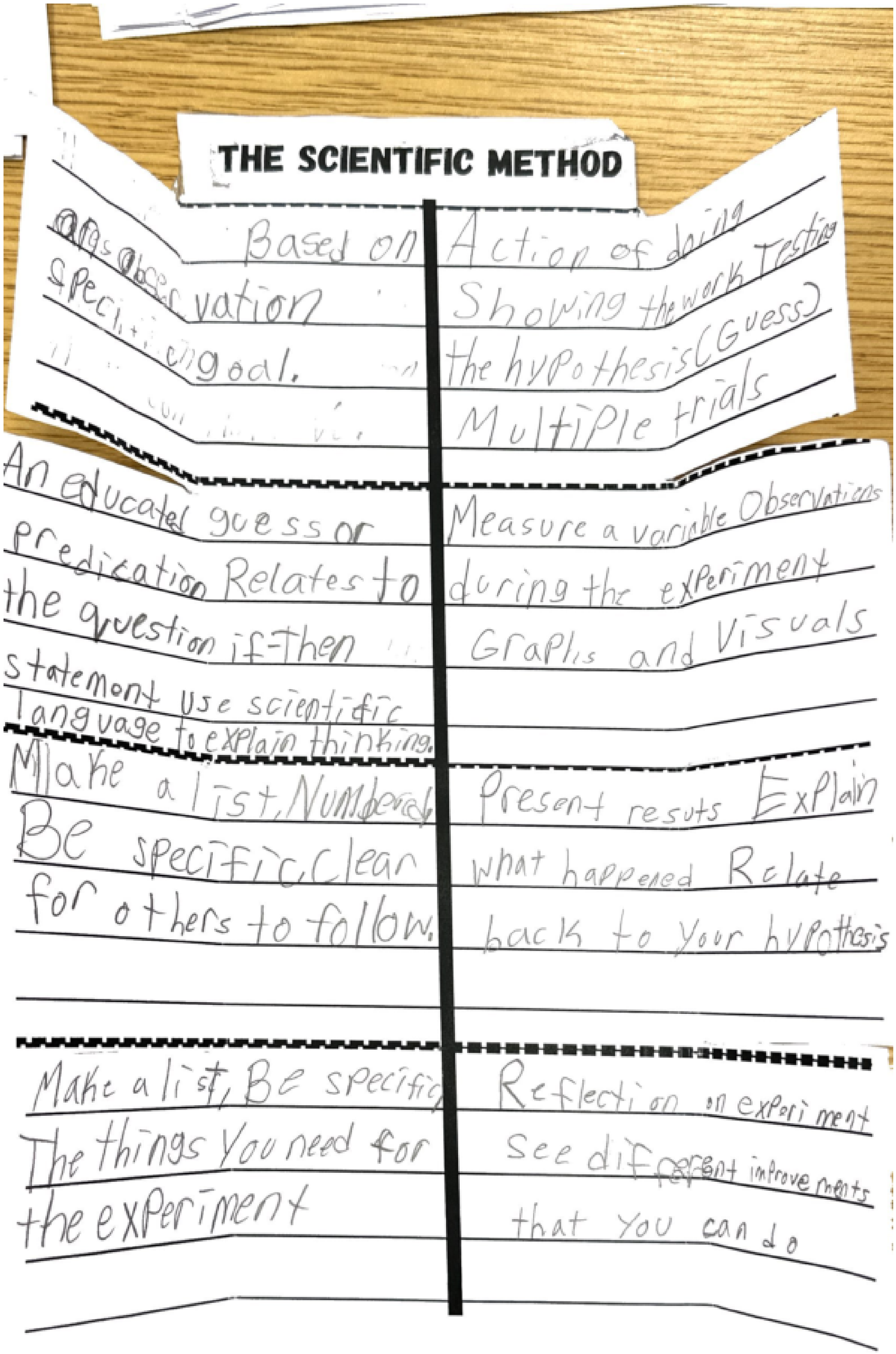
SCIENTIFIC METHOD INTRODUCTION

We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? Yes, I really enjoy learning about science! Because we gets to learn about animal's eyes, their vision, and blackout. And I get to imagine about science!

What is the scientific method and its steps? First step is safety, because if no safety, everyone can be killed, or injury. Second step is follow rules.

How does this method help scientists? Because Plans make their experiment not blow up, or go BOOM!.


THE SCIENTIFIC METHOD
Based on observation
specific goal.
Action of doing
Showing the work Testing
the hypothesis (Guess)
Multiple trials
An educated guess or
predication Relates to
the question if-Then
statement use scientific
language to explain thinking.
Measure a variable Observations
during the experiment
Graphs and Visuals
Make a list, Numbered
Be specific, clear
for others to follow.
Present resuts Explain
what happened Relate
back to your hypothesis
Make a list, Be specific
The things You need for
the experiment
Reflection on experiment
See different improvements
that You can do

Name Student #9 Date 4/24/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

I think the paper can be folded 5 times.

PROCEDURE

1. Grab a sheet of paper
2. Fold the paper
3. Keep a tally for every fold
4. write the number of folds

MATERIALS

white copy paper
mini post-it note
pencil
Recording sheet

EXPERIMENT NOTES

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into squares. It took 15 folds before I could not do it anymore. My hypothesis was less than.

REEVALUATE PROCESS

Name Student #9 Date 5/3/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the material affect the amount of times a paper can be folded.

HYPOTHESIS:

I think that the Colorful Gift Tissue Paper will be folded more than Wrapping Paper.

PROCEDURE

Colorful Gift Tissue Paper, Wrapping Paper.

MATERIALS

Recording Sheet, Pencil
[illegible]
Paper

EXPERIMENT NOTES

DATA COLLECTION

Trial 1 with wrapping paper	Trial 2 with Colorful Gift Tissue Paper	
43	58	

SUMMARIZE FINDINGS

I folded the paper into square.

With the wrapping paper, it took 43 times. with the Colorful Gift Tissue Paper, it took 58 times. My hypothesis was 68 times with wrapping paper, 65 with Colorful Gift Tissue Paper, was right
My hyponhesis was right.

REEVALUATE PROCESS

Next time I will test on the Parchment Paper because I yet test on it. I am still curious about envelope paper.

Student #9

Date 4/25/23

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

[redacted]

PROPOSED QUESTION

Which flavor will attract the fly's attention?

WHY ARE YOU PICKING THIS TOPIC?

Because I want less fly in our house, so they can't bother us.

EXTRA NOTES

Which Bait works best for a Homemade Fly Trap?

Honey, Avocado oil, Nutella and Melty Ice cream.

Name Student #9 Date 4/28/23

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

GROUP MEMBERS:

[redacted]

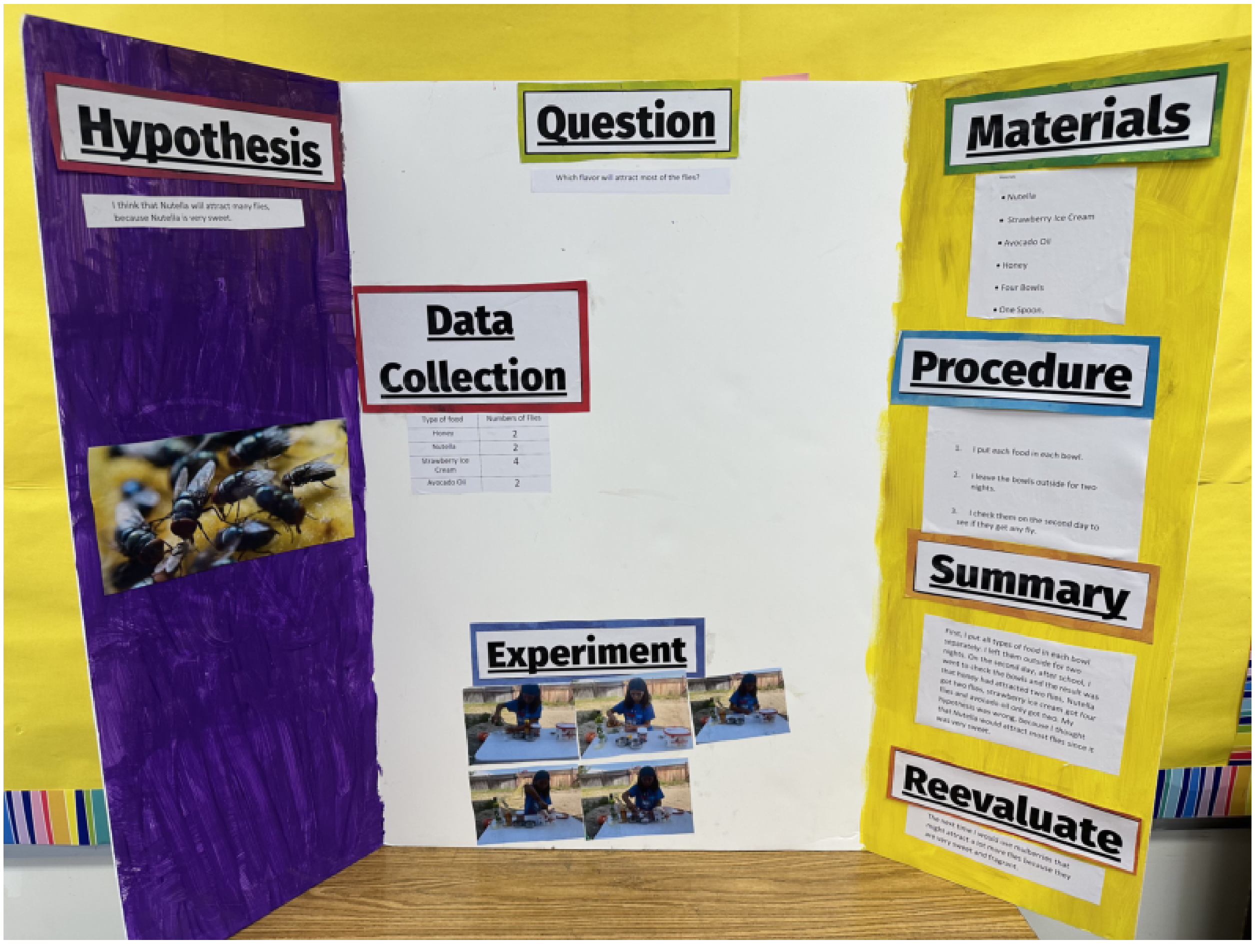
PROPOSED HYPOTHESIS

I will sct four different kind of flavors, then I will come back later to check which flavor have most fly.

EXPLAIN YOUR THINKING.

EXTRA NOTES

Plus I think that Nutella will get most fly than another flavors, because Nutella is very sweet.


Hypothesis
I think that Nutella will attract many flies, because Nutella is very sweet.
Question
Which flavor will attract most of the flies?
Data Collection
Type of food | Numbers of Flies
Honey | 2
Nutella | 2
Strawberry Ice Cream | 4
Avocado Oil | 2
Experiment
Materials
• Nutella
• Strawberry Ice Cream
• Avocado Oil
• Honey
• Four Bowls
• One Spoon.
Procedure
1. I put each food in each bowl.
2. I leave the bowls outside for two nights.
3. I check them on the second day to see if they got any fly.
Summary
Reevaluate

Student #9

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name: **Student #11**

Score: 16

16/16

#9

ScoresMean: 39.2	
34	
36	
37	
40	
40Total: 235	
48	

Additional Comments: Do flies smell, how do you count the flies? Could research why it is attracted to the food choices and how much sugar is in each.

Name Student #9 Date 5/30/23

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

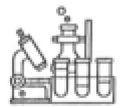
Do you enjoy learning about science? Why or why not? Yes I really enjoy learning about science, because we gets to learn about very cool stuff.

What is the scientific method and its steps? Method means the way of steps of describing, or to sugery an rat.

How does this method help scientists? Method makes their experiment, or their very important project to success not fail, or make an unclear explode.

Name Student #10 Date 4-19-23

SCIENTIFIC METHOD INTRODUCTION

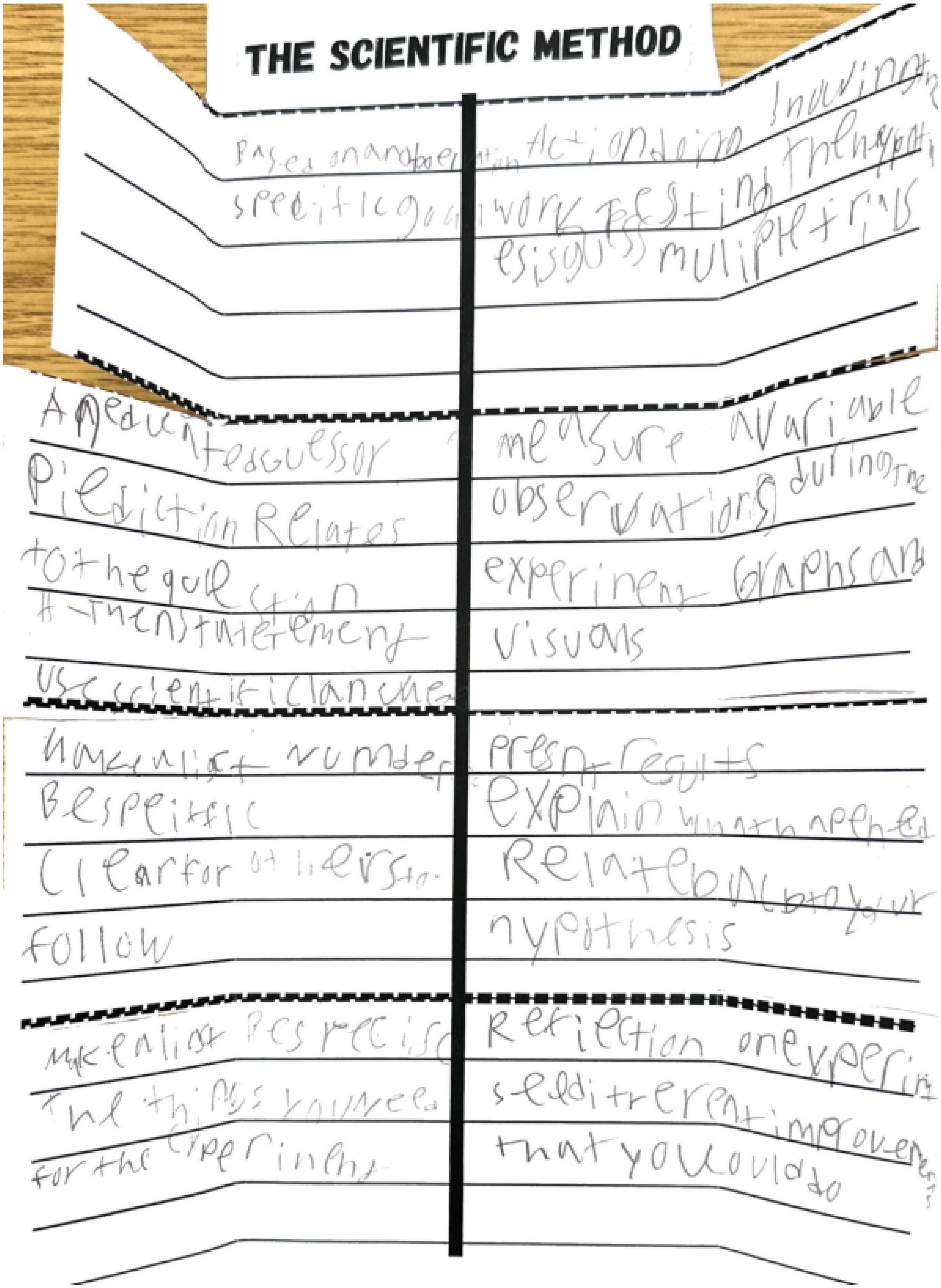


We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? yes why enjoy
I Learning how body works.

What is the scientific method and its steps? It not follow rules
it will happen.

How does this method help scientists? helps to understand
more.


THE SCIENTIFIC METHOD
measure a variable
observations during the
Visuals
present results
explain what happened
Relate back to your
hypothesis
Be specific
follow

Name Student #10 Date 4-24-23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

HoW mAny Times cAn y fold a piece paper?

HYPOTHESIS:

I think the paper can be folded 6 times.

PROCEDURE

1. Gran a sheet of paper
2. fold the paper
3. keep a tally for every fold
4. write the number

MATERIALS

white copy paper
mini post-it note
pencil
recurting sheet

EXPERIMENT NOTES

DATA COLLECTION

卌 III

SUMMARIZE FINDINGS

I folded the paper into 9 squares
I took 6 folds before I couldnt fold it
anymore. My hypothesis was it
more than

REEVALUATE PROCESS

Name Student #10 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does stremager in affect the amount of times a paper can be folded?

HYPOTHESIS:

I think that the ~~streamer~~ will be folded more than 10.

PROCEDURE

MATERIALS

Recording sheet
pencil
streamer paper
shiny gift tissue paper

EXPERIMENT NOTES

|||

DATA COLLECTION

trial with Streamer ~~Shiny~~	trial 2 with Shiny	

32 21

SUMMARIZE FINDINGS

I folded the paper into a shape
with the Streamer type it took 32 times. With the Shiny type it took 21 times. My hypothesis was right

REEVALUATE PROCESS

Next time I will 32 21 because I am still curious about ___.

Name [redacted] Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

[redacted]

PROPOSED QUESTION

I like gum. I want to see what happens.

WHY ARE YOU PICKING THIS TOPIC?

what happens when gum is in water?

~~EXTRA NOTES~~ New Question

gum: what happens to gum's color in water?

Date

IENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then ____. I think ____ because ____.

GROUP MEMBERS:

[redacted] Student #10

PROPOSED HYPOTHESIS

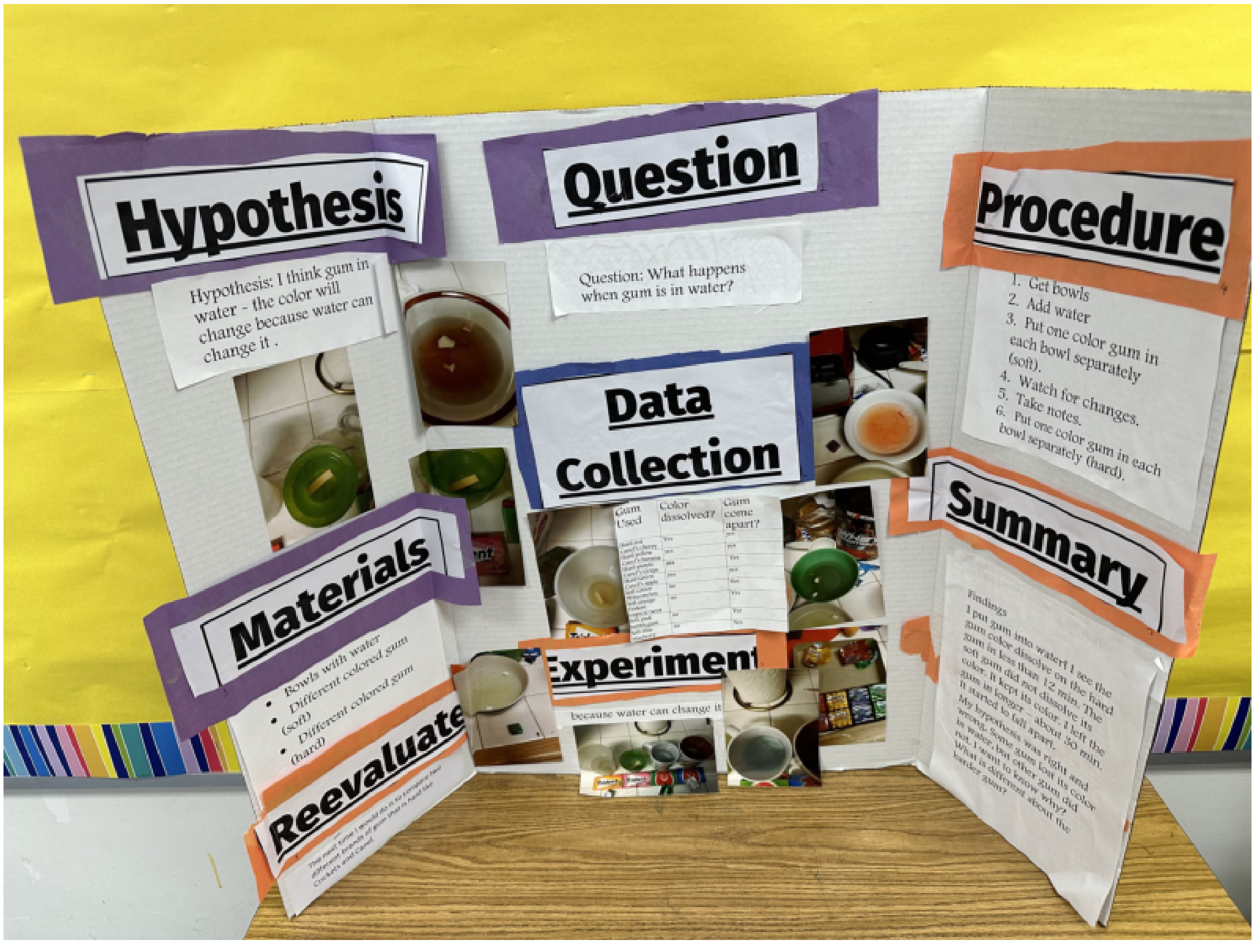
I think if gum is in water the color will change because

EXPLAIN YOUR THINKING.

water can change it.

EXTRA NOTES

gum


Hypothesis
Hypothesis: I think gum in water - the color will change because water can change it .
Question
Question: What happens when gum is in water?
Procedure
1. Get bowls
2. Add water
3. Put one color gum in each bowl separately (soft).
4. Watch for changes.
5. Take notes.
6. Put one color gum in each bowl separately (hard).
Data Collection
Gum Used
Color dissolved?
Gum come apart?
Materials
Bowls with water
Different colored gum (soft)
Different colored gum (hard)
Summary
Findings
I put gum into water! I see the gum color dissolve on the hard gum in less than 12 min. The soft gum did not dissolve its color. It kept its color. I left the gum in longer - about 30 min. It started to fall apart.
My hypothesis was right and wrong. Some gum lost its color in water, but other gum did not. I want to know why?
What is different about the harder gum?
Experiment
because water can change it
Reevaluate

Student #10

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #12 Score: 16/16

#10

ScoresMean: 35.5	
28	
32	
33	
37	
38Total: 213	
45	

Additional Comments: Awesome questions to continue research. No table/graph presented.

Nam[redacted] Student #10

Date 5/30-223

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not?

yes becuse se fun and I Lofe to learnp

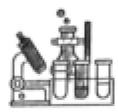
What is the scientific method and its steps?

I have experimeny question
Hypothesis materials procedure
relevauinte Data

How does this method help scientists? helps tui learn
experiment ti nth understand
summary

Name Student #11 Date

SCIENTIFIC METHOD INTRODUCTION

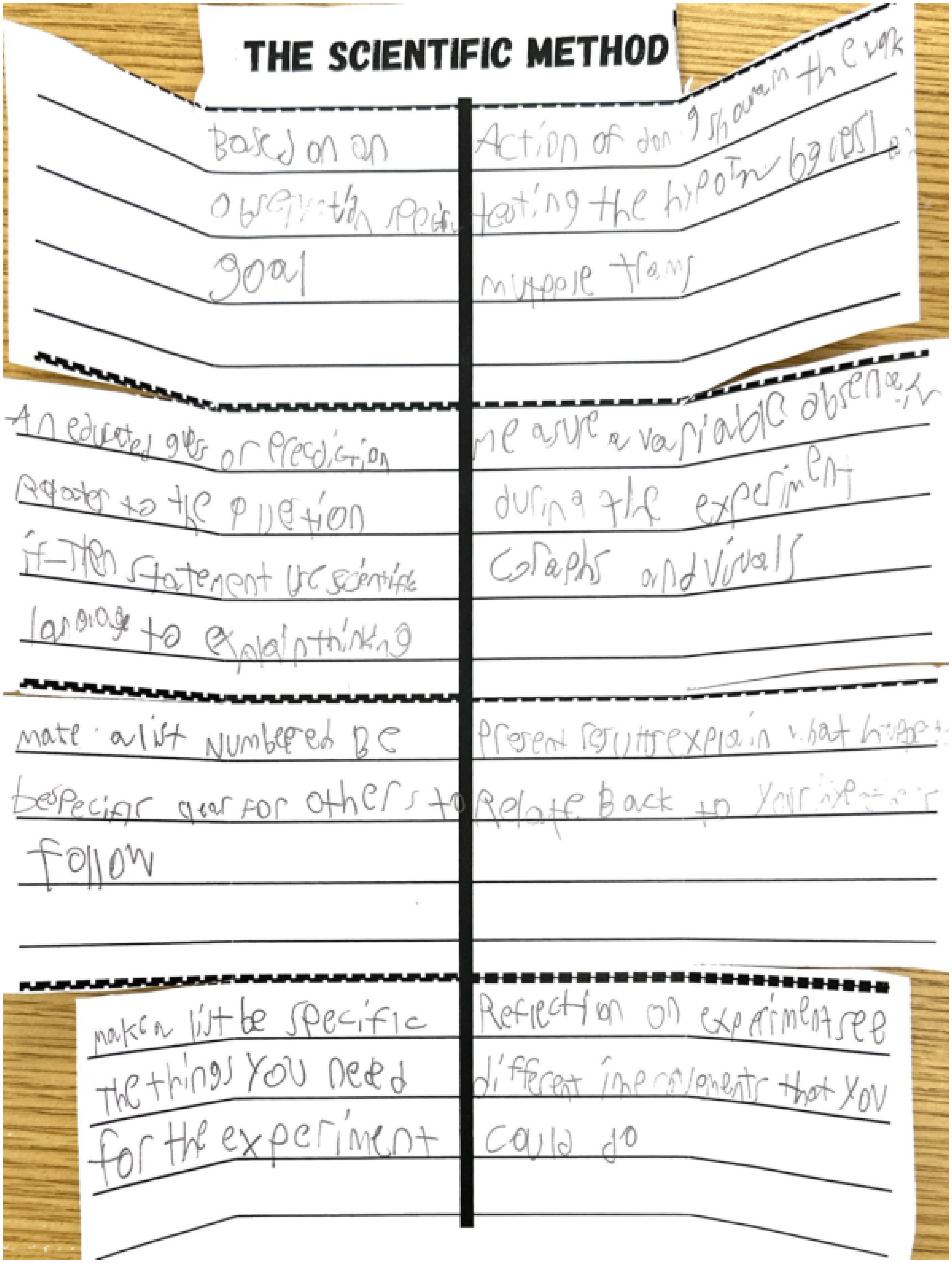


We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? Dissect animals rules good.

What is the scientific method and its steps?

How does this method help scientists?


THE SCIENTIFIC METHOD
Based on an
goal
Action of doing
testing the
An educated gues or prediction
to the question
if-Then statement
to
measure a variable
during the experiment
Graphs and visuals
make a list Numbered
follow
Present
Relate Back to Your
makea list be specific
The things You need
for the experiment
Reflection on experiment see
different
could do

Name Student #11 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the materal affec

HYPOTHESIS:

I think that the ______ will be folded more than ______.

PROCEDURE

MATERIALS

Recording sheet pensil
parchment paper
paper Envelope

EXPERIMENT NOTES

DATA COLLECTION

envelope III 3	~~IIII~~ IIII I 11	parchment paper

SUMMARIZE FINDINGS

I folded the paper into circle with the envelope. It took

REEVALUATE PROCESS

Name Student #11 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

Nalakai

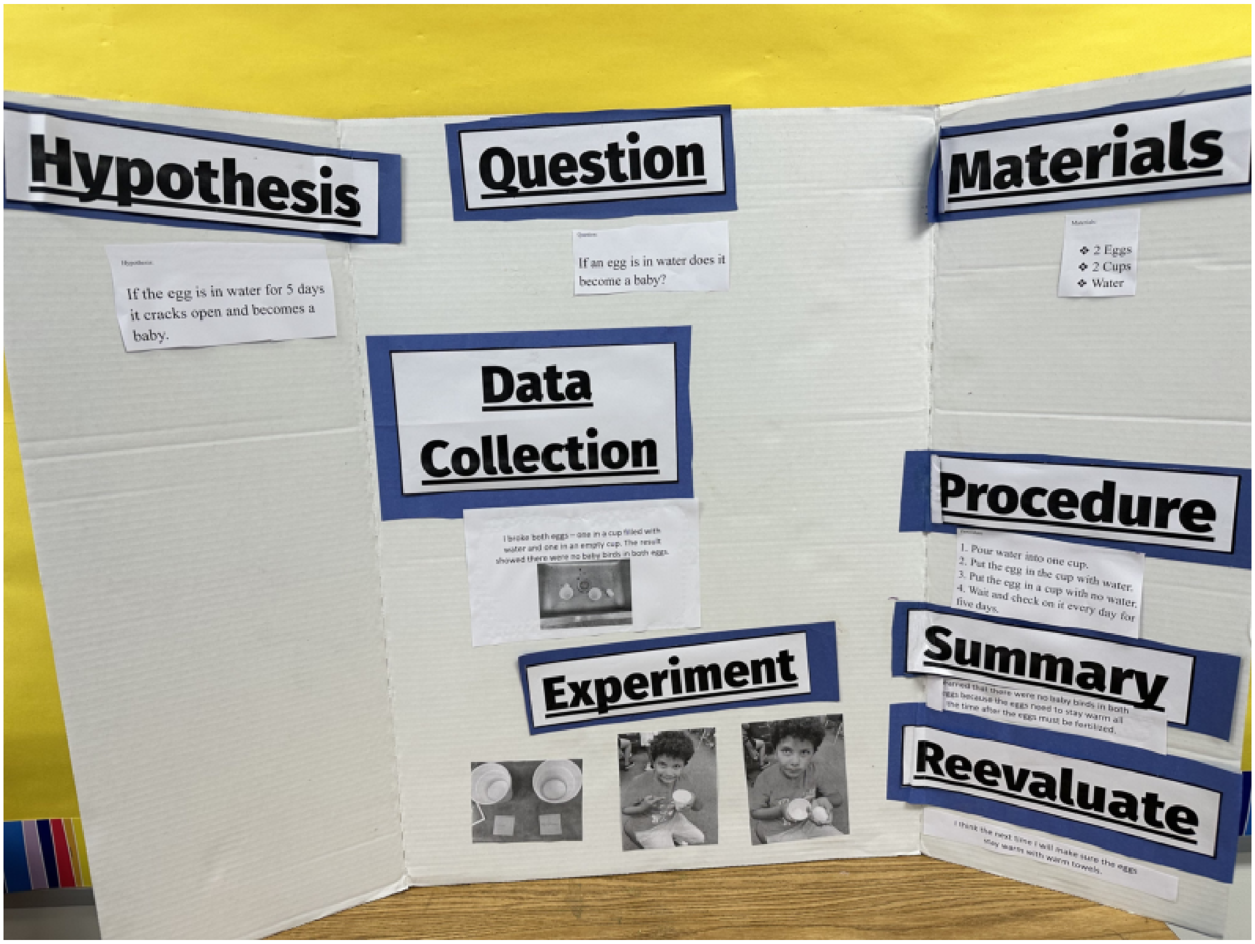
PROPOSED QUESTION

if egg in water does it become a baby?

WHY ARE YOU PICKING THIS TOPIC?

EXTRA NOTES

I



Hypothesis
Hypothesis
If the egg is in water for 5 days it cracks open and becomes a baby.
Question
Question
If an egg is in water does it become a baby?
Materials
Materials
2 Eggs
2 Cups
Water
Data Collection
I broke both eggs – one in a cup filled with water and one in an empty cup. The result showed there were no baby birds in both eggs.
Experiment
Procedure
1. Pour water into one cup.
2. Put the egg in the cup with water.
3. Put the egg in a cup with no water.
4. Wait and check on it every day for five days.
Summary
that there were no baby birds in both
because the eggs need to stay warm all
the time after the eggs must be fertilized.
Reevaluate
I think the next time I will make sure the eggs stay warm with warm towels.

Student #11

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #9 Score: 15/16

#11

ScoresMean: 27.3	
19	
22	
23	
27	
35Total: 164	
38	

Additional Comments: Educational. Eye contact neede, need quantitative data- checklist with each hour.

Name Student #11 Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? I soso hnti science becaue I ton't lik Scimce

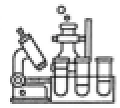
What is the scientific method and its steps?

1. hypothesis
2. question
3. materials
4. Data collection
5. summery
6. experiment
7. procedure
8. replicate

How does this method help scientists? help us learn

Name Student #12 Date 4/18/2023

SCIENTIFIC METHOD INTRODUCTION



We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? Yes, because I learn from experiments. and enjoy

What is the scientific method and its steps? learn to understand. different experiments. gather information.

How does this method help scientists? learn to better understand. Help to teach and learn.

Name Student #12 Date 4/20/2023

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

7

PROCEDURE

MATERIALS

EXPERIMENT NOTES

卌 || 7

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into squares. It took 7 folds before I could not do it anymore.

REEVALUATE PROCESS

Name Student #12 Date 4/24/2023

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you folda Piec of Paer?

HYPOTHESIS:

I think the Paper can be folded 5 times.

PROCEDURE

1 Grab a sheet of Pape

2 Fold the Paper

3 keep a tally for every fold

4 Write the numer of f...

MATERIALS

white copy Pap
Mini Post-it Note
pencil
Recording sheet

EXPERIMENT NOTES

卌 5	卌I 6

DATA COLLECTION

SUMMARIZE FINDINGS

I foled the paper into squares it took 5 folds before i could not do it anymore. My hypothesis was same.

REEVALUATE PROCESS

Would you fold it into rectangles diffently?

Name Student #12 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the material affect the amaunt of times a paper can be folded?

HYPOTHESIS:

I think that the streamer paper will be folded more then toilet paper.

PROCEDURE

MATERIALS

- streamer
- toilet paper
-

EXPERIMENT NOTES

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into
with the it took times,
with the it took times,
My hypothesis was

REEVALUATE PROCESS

Next time I will because

I am still curius about

Name Student #12 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

Which food dye goes into shaving cream faster?

WHY ARE YOU PICKING THIS TOPIC?

I think it will be fun to do the experiment.

EXTRA NOTES

Name Student #12 Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then ____. I think ____ because ____.

GROUP MEMBERS:

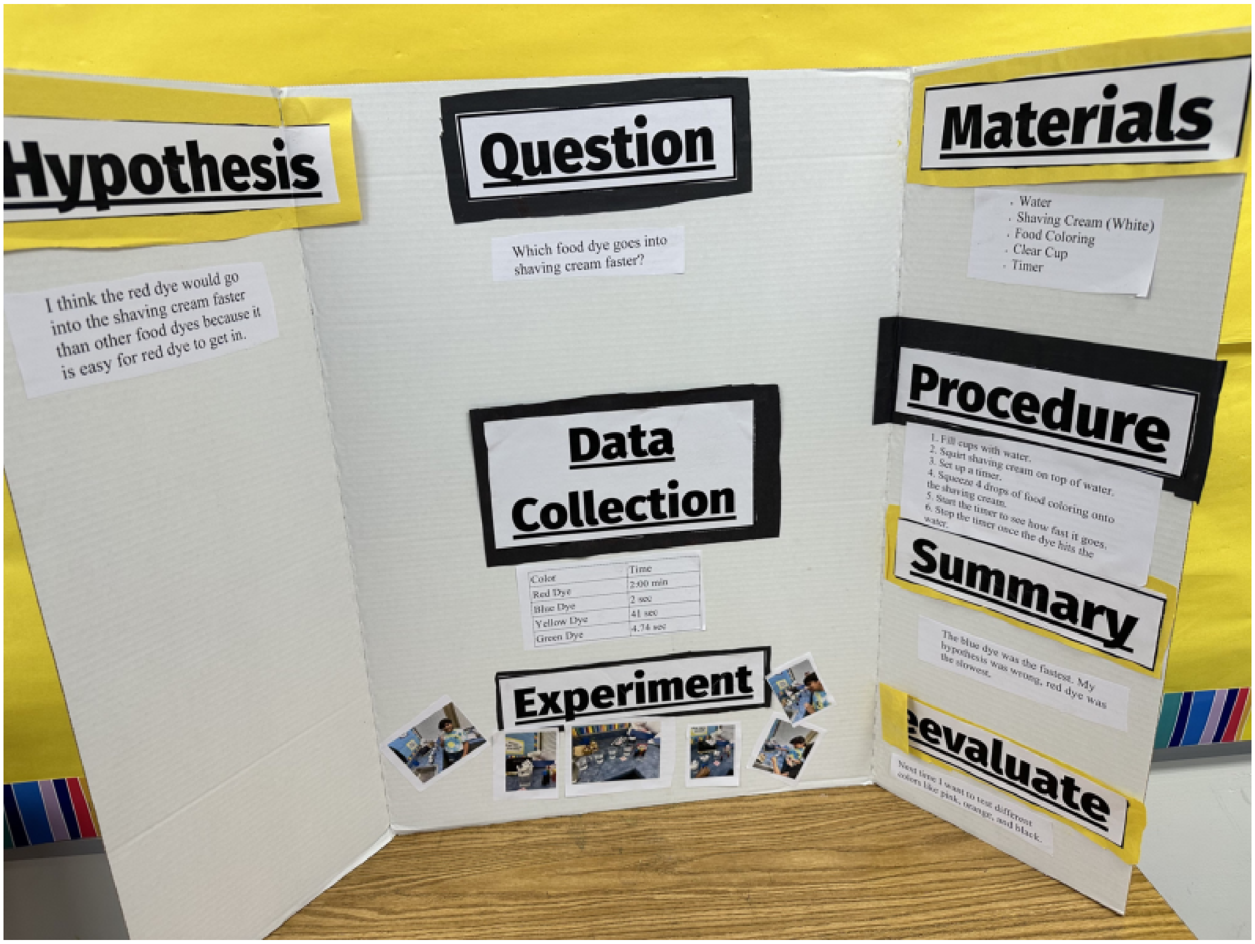
PROPOSED HYPOTHESIS

I think the red dye would go in the shaving cream faster than other food dyes.

EXPLAIN YOUR THINKING.

I think it is easy for red dye to get in.

EXTRA NOTES


Hypothesis
I think the red dye would go into the shaving cream faster than other food dyes because it is easy for red dye to get in.
Question
Which food dye goes into shaving cream faster?
Data Collection
Color | Time
Red Dye | 2:00 min
Blue Dye | 2 sec
Yellow Dye | 41 sec
Green Dye | 4.74 sec
Experiment
Materials
· Water
· Shaving Cream (White)
· Food Coloring
· Clear Cup
· Timer
Procedure
1. Fill cups with water.
2. Squirt shaving cream on top of water.
3. Set up a timer.
4. Squeeze 4 drops of food coloring onto the shaving cream.
5. Start the timer to see how fast it goes.
6. Stop the timer once the dye hits the water.
Summary
The blue dye was the fastest. My hypothesis was wrong, red dye was the slowest.
eevaluate
Next time I want to test different colors like pink, orange, and black.

Student #12

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #10 Score: 16

16/16

#12

Scores	Mean: 39.4
32	
33	
35	
48	
49	Total: 197

Additional Comments: Fun experiment. Well done.

Name [redacted] Student #12 Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not?

Yes because fun

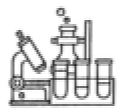
What is the scientific method and its steps?

Question, Hypothesis, Materials, Procedure, Data collection, summary, Reevaluate.

How does this method help scientists? helped which colors spread faster

Name Student #13 Date 4/18/23

SCIENTIFIC METHOD INTRODUCTION

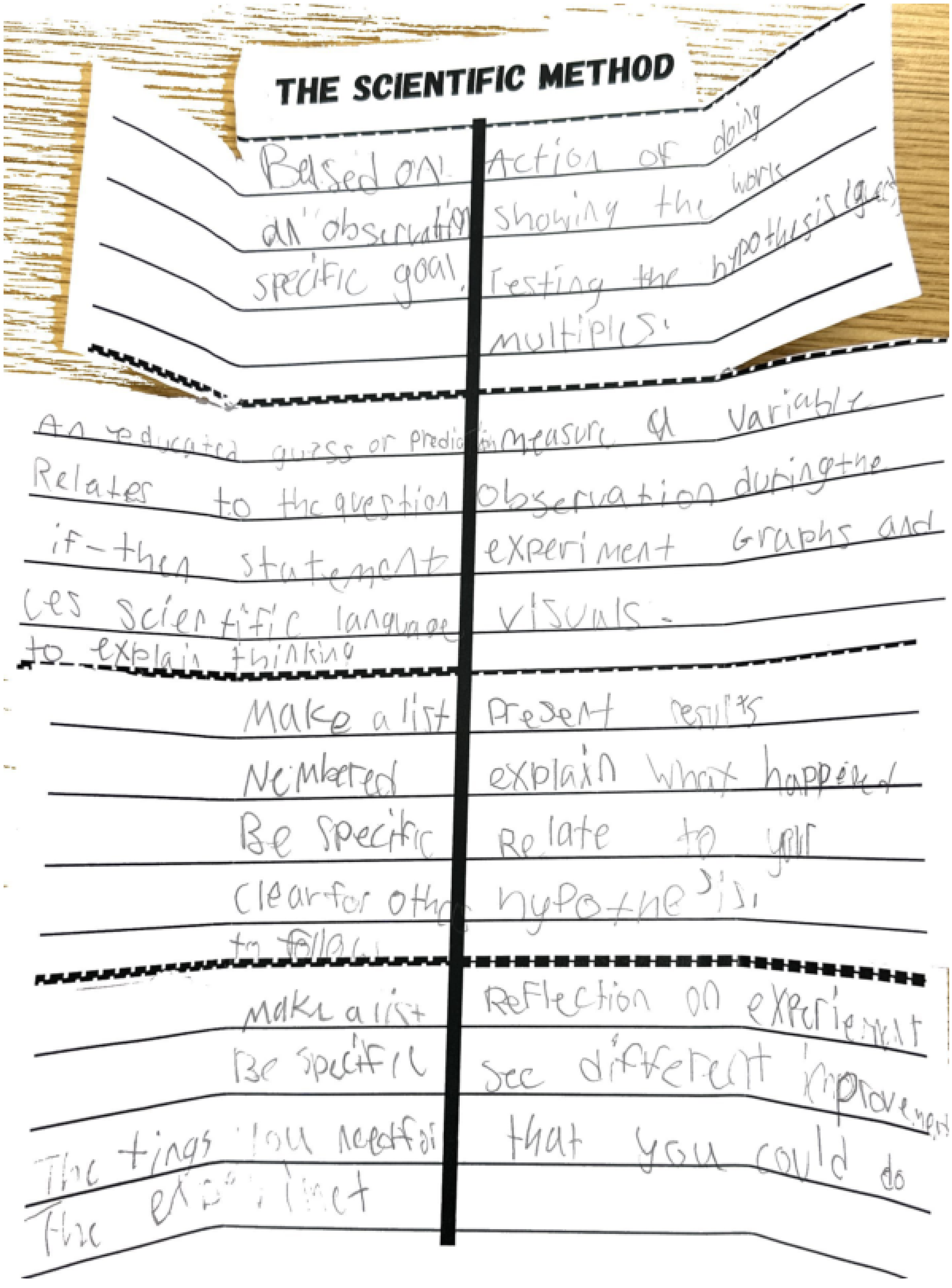


We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? yes, I Love Science and enjoy and help learn. Because make me smart and we talk about Animal.

What is the scientific method and its steps? how make Learn to School.

How does this method help scientists? how the make light for help can see if of light we can't see.


THE SCIENTIFIC METHOD
Based on an observation specific goal.
Action of doing showing the work Testing the hypothesis multiples.
An educated guess or prediction Relates to the question if-then statement uses scientific language to explain thinking
Measure a variable observation during the experiment Graphs and visuals.
Make a list Numbered Be specific clear for others to follow
Present results explain what happened Relate to your hypothesis.
make a list Be specific The tings you need for the experiment
Reflection on experiment see different improvement that you could do

Name: Student #13 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

I think the paper can be folded 6 times.

PROCEDURE

1. Grab a sheet of paper
2. fold the paper
3. Keep a tally for every fold
4. write the number of folds

MATERIALS

white copy paper
mini post-it note
pencill
recording sheet

EXPERIMENT NOTES

DATA COLLECTION

~~||||~~

SUMMARIZE FINDINGS

I folded the paper intr squares it took 5 fold before I could not do it anymore.

my hypothesis was ~~same~~ less than more than.

REEVALUATE PROCESS

Name Student #13 Date 4/3/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the material afect the amount of times a paper can be folded.

HYPOTHESIS:

I think that the wrapping will be folded more than streamer paper,

PROCEDURE

MATERIALS

Recording Sheet
Pencil
wrapping paper
streamer paper

EXPERIMENT NOTES

𝍸 𝍸 ||

h♥la

DATA COLLECTION

Trial 1 with wrapping paper 12	Trial 2 with streamer 82

SUMMARIZE FINDINGS

I folded the paper into rectangle with the wrapping it took 12 times. the streamer it 82 times my hypothesis was wrong

REEVALUATE PROCESS

Next time I will colorful paper Because I want be Smart I am sill curious about different

Name Student #13 Date 4/27/23

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

[redacted]

PROPOSED QUESTION

How long does it take for the sun to melt different sizes of choclate?

WHY ARE YOU PICKING THIS TOPIC?

Because want to see Smar. See the reachon have experience chocoate melting in pocked.

EXTRA NOTES

Chocolate.

Name Student #13 Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____, I think ____ because ____.

GROUP MEMBERS:

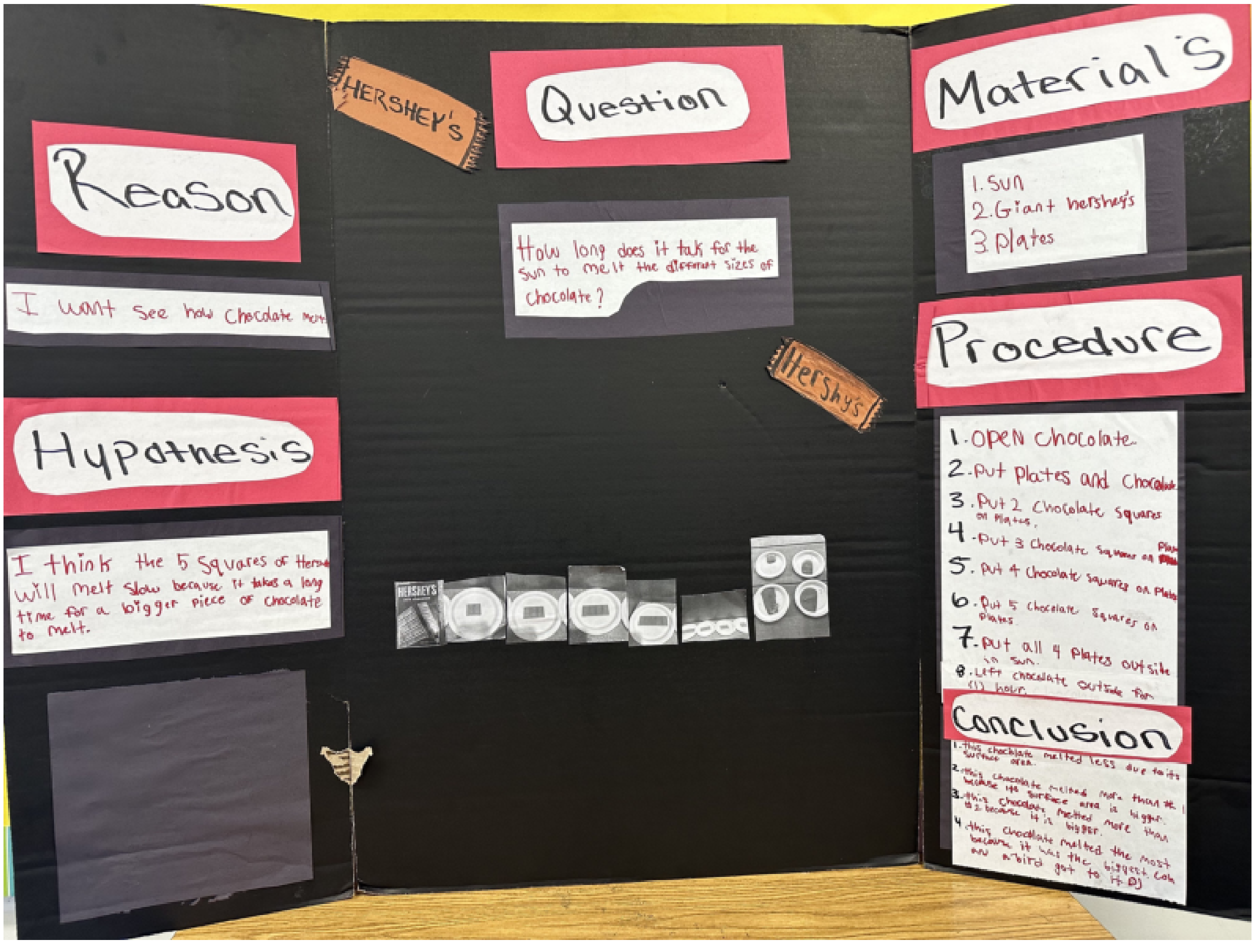
[redacted]

PROPOSED HYPOTHESIS

I think the kit kat will melt slow because it takes a long time

EXPLAIN YOUR THINKING.

EXTRA NOTES


HERSHEY'S
Question
How long does it tak for the sun to melt the different sizes of chocolate?
Hershy's
Material's
1. Sun
2. Giant hershey's
3. plates
Reason
I want see how chocolate melt
Hypothesis
I think the 5 squares of Hershey will melt slow because it takes a long time for a bigger piece of chocolate to melt.
Procedure
1. Open chocolate
2. Put plates and chocolate
3. Put 2 chocolate squares on plates.
4. Put 3 chocolate squares on plates
5. Put 4 chocolate squares on plate
6. Put 5 chocolate squares on plates
7. Put all 4 plates outside in sun.
8. Left chocolate outside for (1) hour.
Conclusion
1. this chocolate melted less due to its surface area.
4. this chocolate melted the most

Student #13

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/ or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #7 Score: 15

15/16

#13

ScoresMean: 30.3	
17	
27	
33	
34	
35Total: 182	
36	

Additional Comments: Yummy! No variables, identified/quantities data presented.

Name Student #13 Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? yes becuase is fun.

What is the scientific method and its steps? 1 question 2 hypothesis 3 Procedure 4 Materials 5 Summary 6 Reevaluate 7 experiment.

How does this method help scientists? I need Scientific method to explain what I leare.

Name **Student #14** Date 4/8/18

SCIENTIFIC METHOD INTRODUCTION

We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? yes

I like reading, writing and using a microscope and understand the inside of animal.

What is the scientific method and its steps? learn to understand, gather information different experiments understand.

How does this method help scientists? help to teach and lean Learn to better understand.

Name Student #14 Date 4/20/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can yoy fold a piece of paer

HYPOTHESIS:

8

PROCEDURE

MATERIALS

EXPERIMENT NOTES

8

DATA COLLECTION

SUMMARIZE FINDINGS

I folded the paper into squares. It took 8 folds before I could not do it anymore.

REEVALUATE PROCESS

Name [redacted] Date 4-24-23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

How many times can you fold a piece of paper?

HYPOTHESIS:

I think the paper can be folded 7 times.

PROCEDURE

1. Grab a sheet of paper. 2. Fold the paper 3. keep a tally for every fold write the number of folds.

MATERIALS

white copy paper mini post-it note pencil Recording sheet

EXPERIMENT NOTES

卌 卌 卌 ||||

DATA COLLECTION

SUMMARIZE FINDINGS

I fobed the paper into squares It took 6 folds before I coud not do it anymory my hypothesis was — it (less than same more than)

REEVALUATE PROCESS

make smaller folds.

Name Student #14 Date 5-2-23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Question: Does the materical affect times a paper or can folded?

HYPOTHESIS:

I THINK THAT THE wrapping paper WILL BE FOLDED MORE THAN streamer paper

PROCEDURE

MATERIALS

- PAW PATROL WRAPPING PAPER
- STREAMER PAPER

recording sheet
pencil

EXPERIMENT NOTES

50

DATA COLLECTION

Trial #1 with streamer	Trial #2 with paw patrol	
310	~~230~~ 240 ~~250~~ ~~260~~ ~~270~~ 280 290 ~~300~~ ~~310~~ ~~320~~ ~~330~~ ~~340~~ ~~350~~ ~~360~~ ~~370~~ ~~380~~ 390 400	

SUMMARIZE FINDINGS

I folded the paper into _shapes_ with the streamer ___ it took 310 _(#)_ times.
my hypothesis was.

REEVALUATE PROCESS

next time I will paper towel because I am still curious about ___.

Name Student #14 Date 4/28/23

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

PROPOSED QUESTION

which wheels are effective to move? Foil or bottle cap?

WHY ARE YOU PICKING THIS TOPIC?

I'm curious to see how the thRes of wheels work.

EXTRA NOTES

COLOR-SHIFTING SLime.

?

Name [redacted] Date 4/28/23

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then ____. I think ____ because ____.

GROUP MEMBERS:

PROPOSED HYPOTHESIS

I think bottle caps will be more effective because it will roll more fast.

EXPLAIN YOUR THINKING.

EXTRA NOTES

Name Student #14 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

which wheels are effective to more? foil or bottle cap?

HYPOTHESIS:

I think bottle caps will be more effective because it will roll more fast.

PROCEDURE

1. Get two water bottles.
2. put straws under the bottles with tapes
3. sisscor middle of the water cap/foil and put in to the straw as tires
4. attach the ballon to the car with straw.

MATERIALS

- plastic straws
- tape
- water bottles
- foil
- CAPS
- balloons
- rubber band
- paper clips

EXPERIMENT NOTES

I sisscor the caps and foil i tires on straws. I use wood ramp and the food tray to experiment their speed.

DATA COLLECTION

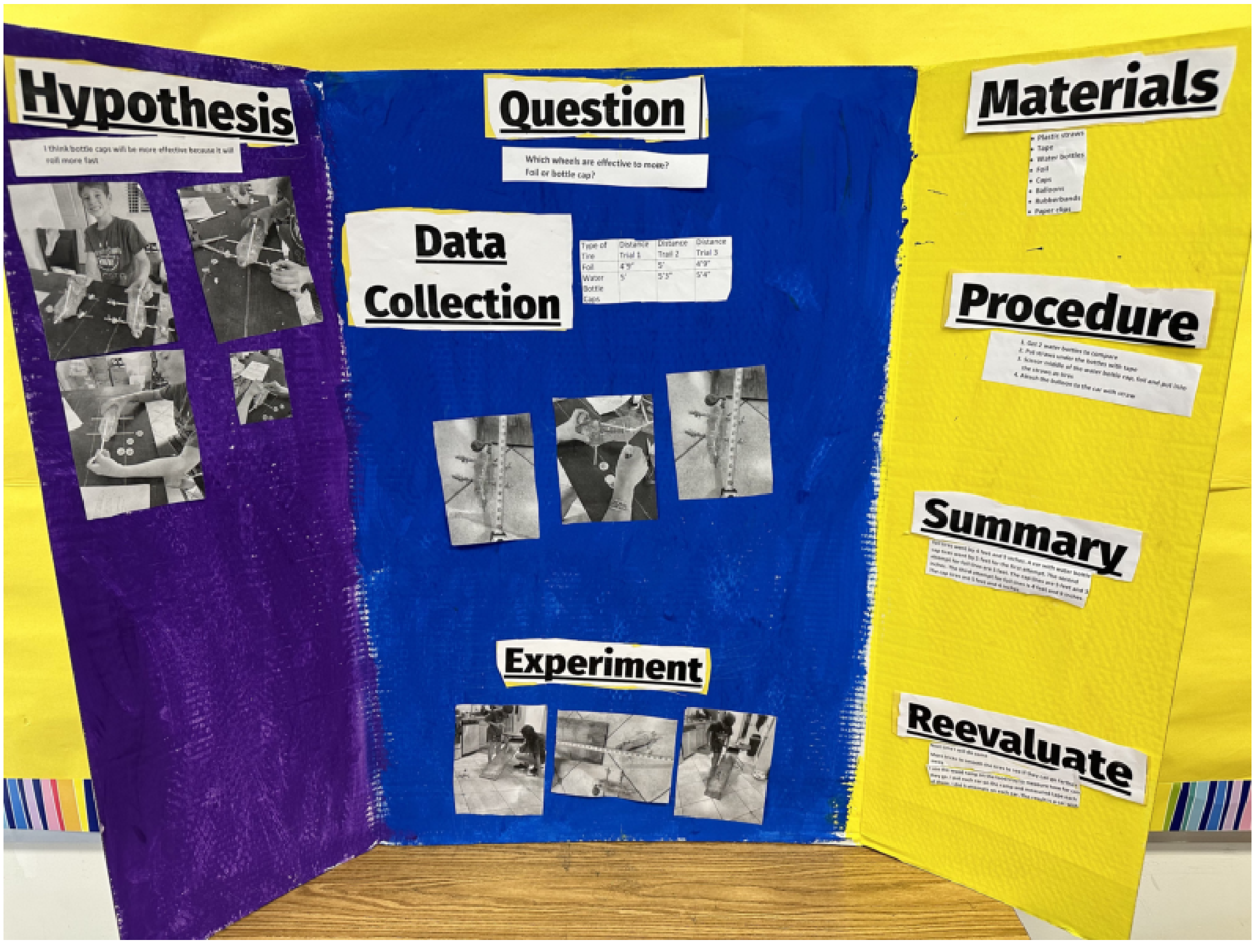
Foil tire	Water bottle caps
First try: 4 and 9 inches 4"9'	First try: 5 feet
Second try: 5 feet	Second try: 5 ft and 3 inches 5"3'
third try: 4"9'	third try: 5"4'

SUMMARIZE FINDINGS

I use the wood ramp on the food tray to measure how far can they go. I put each car on the ramp and measured each of them. The result is a car with foil tires went by 4 feet and 9 inches. A car with water bottle cap tires went by 5 feet.

REEVALUATE PROCESS

Next time I will do some more tricks to smooth the tires to see if can they go farther away.


Hypothesis
I think bottle caps will be more effective because it will roll more fast
Question
Which wheels are effective to more?
Foil or bottle cap?
Data Collection
Type of Tire
Distance Trial 1
Distance Trail 2
Distance Trial 3
Foil
4'9"
5'
4'9"
Water Bottle Caps
5'
5'3"
5'4"
Materials
Plastic straws
Tape
Water bottles
Foil
Caps
Balloons
Rubberbands
Paper clips
Procedure
1. Got 2 water bottles to compare
2. Put straws under the bottles with tape
3. Scissor middle of the water bottle cap, foil and put into the straws as tires
4. Attach the balloon to the car with straw
Summary
Experiment
Reevaluate

Student #14

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/ or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #5 Score: 16/16

#14

ScoresMean: 38.6	
29	
34	
38	
40	
41Total: 232	
50	

Additional Comments: Fun demo.

Well-presented, no variable identified and well communicated!

Name Student #14 Date may 30

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? Yes

It is cool. I Love to Learn different things.

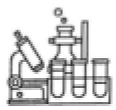
What is the scientific method and its steps? Question

Hypothesis Materials procedure Data collection summary reevaluate.

How does this method help scientists? to help us Learn more.

Name Student #15 Date 4/19/23

SCIENTIFIC METHOD INTRODUCTION



We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

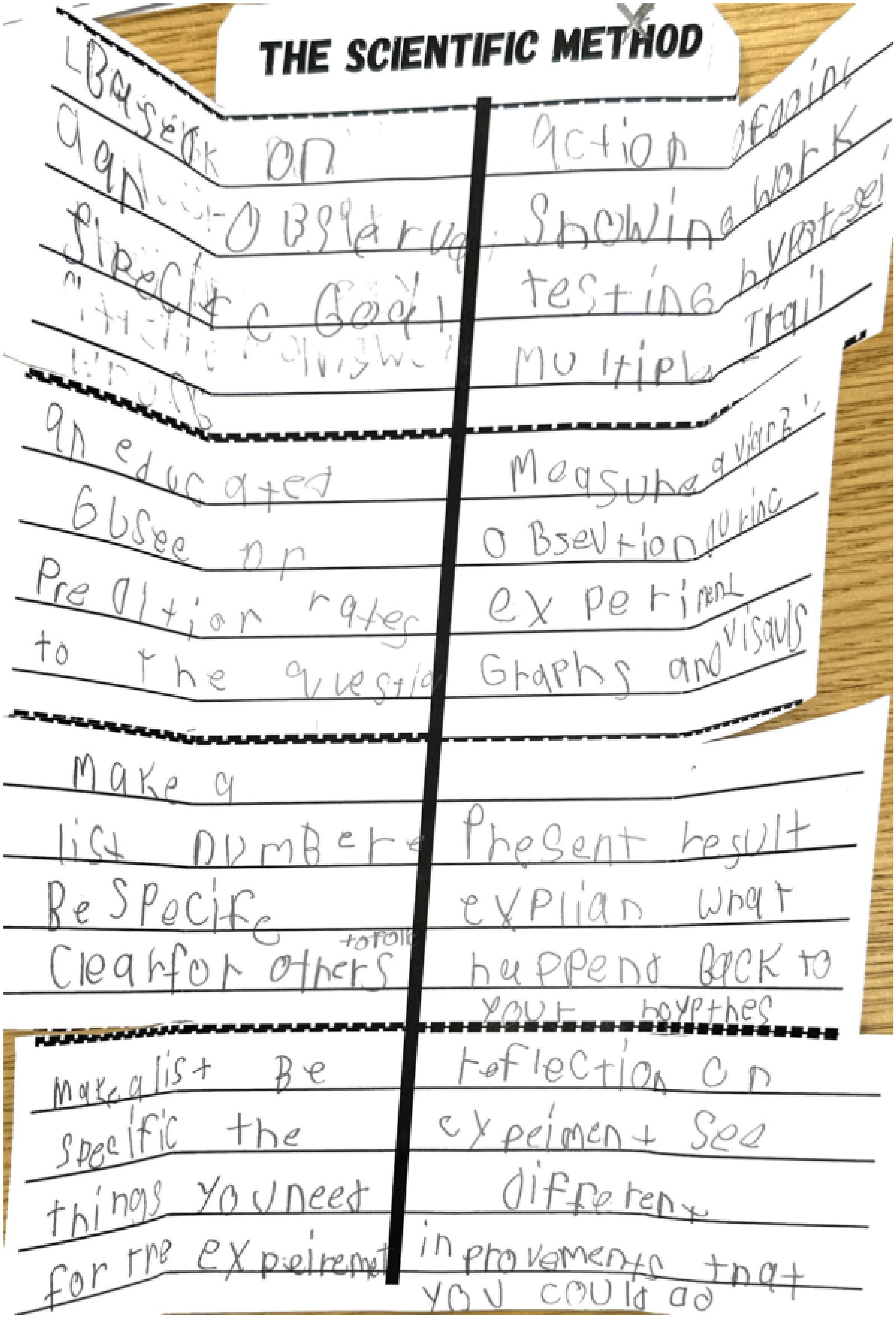
Do you enjoy learning about science? Why or why not?

IM Learn about
planet earth
nasa test rocket
planet Do have air?

What is the scientific method and its steps?

Smell, hear, taste, touch, see
to help people
know how
eat sleep

How does this method help scientists? taste, hear,
touch, see, smell, help
to sciene



THE SCIENTIFIC METHOD

Based on
an observation
specific goal
answer

action of going
showing work
testing hypotesei
multiple trail

an educated
Gbsee on
Predition rates
to the questio

Measure a vlerz
O Bsevtion during
experiment
Graphs and visauls

Make a
list numbere
Be Specific
Clear for others to follo

Present result
expliain what
happend back to
your hoypthes

make a list Be
specific the
things you neet
for the expeirement

reflection on
expeiment see
difreren
inprovements that
you could do

Name [redacted] Student #15 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

[redacted]

PROPOSED QUESTION

~~witch~~ Which Best Drink Prime or Gar[illegible]de

WHY ARE YOU PICKING THIS TOPIC?

it Popular Drink test Pepole Which Best Drink

EXTRA NOTES

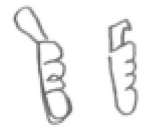
Which Prime Better favor or Gradoate Better favor

Student #15

Date

SCIENCE FAIR HYPOTHESIS PROPOSAL

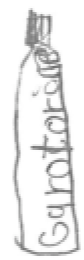
Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.



GROUP MEMBERS:

PROPOSED HYPOTHESIS

ORange < Prime / Garadoade



EXPLAIN YOUR THINKING.

Pepole Will Pick Prime Beacuse a engry Drink Pouplar on/usa

EXTRA NOTES

Name Student #15 Date 4/24/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

how many time can you fold a piec of paper?

HYPOTHESIS:

I think the paper can be fold 5 time

PROCEDURE

1. Grab a sheet of paper
2. foled the paper
3. Keep a tally for every fold
4. Write the number of fol

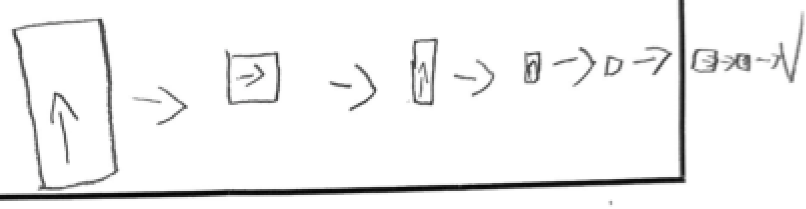
MATERIALS

1 White copy paper
2 mini post-it note
3 pencil
4 recoring sheet

EXPERIMENT NOTES

DATA COLLECTION

7



SUMMARIZE FINDINGS

I fold the paper into squares tookid fold before I could not do anymore than my hypotheits was 5 less

REEVALUATE PROCESS

Name Student #15 Date 5-3-23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Dose materiql af fcet

HYPOTHESIS:

MY hypothesis im think ~~will~~
13 Befoiret more ~~than~~

PROCEDURE

filter towel
Wrapping more
parchment paper

MATERIALS

recoraing
Sheet
Pencil

EXPERIMENT NOTES

DATA COLLECTION

trail 1 with	trail 2 with	Wrapping
Wrapping 201	paper Parchment + 78	201

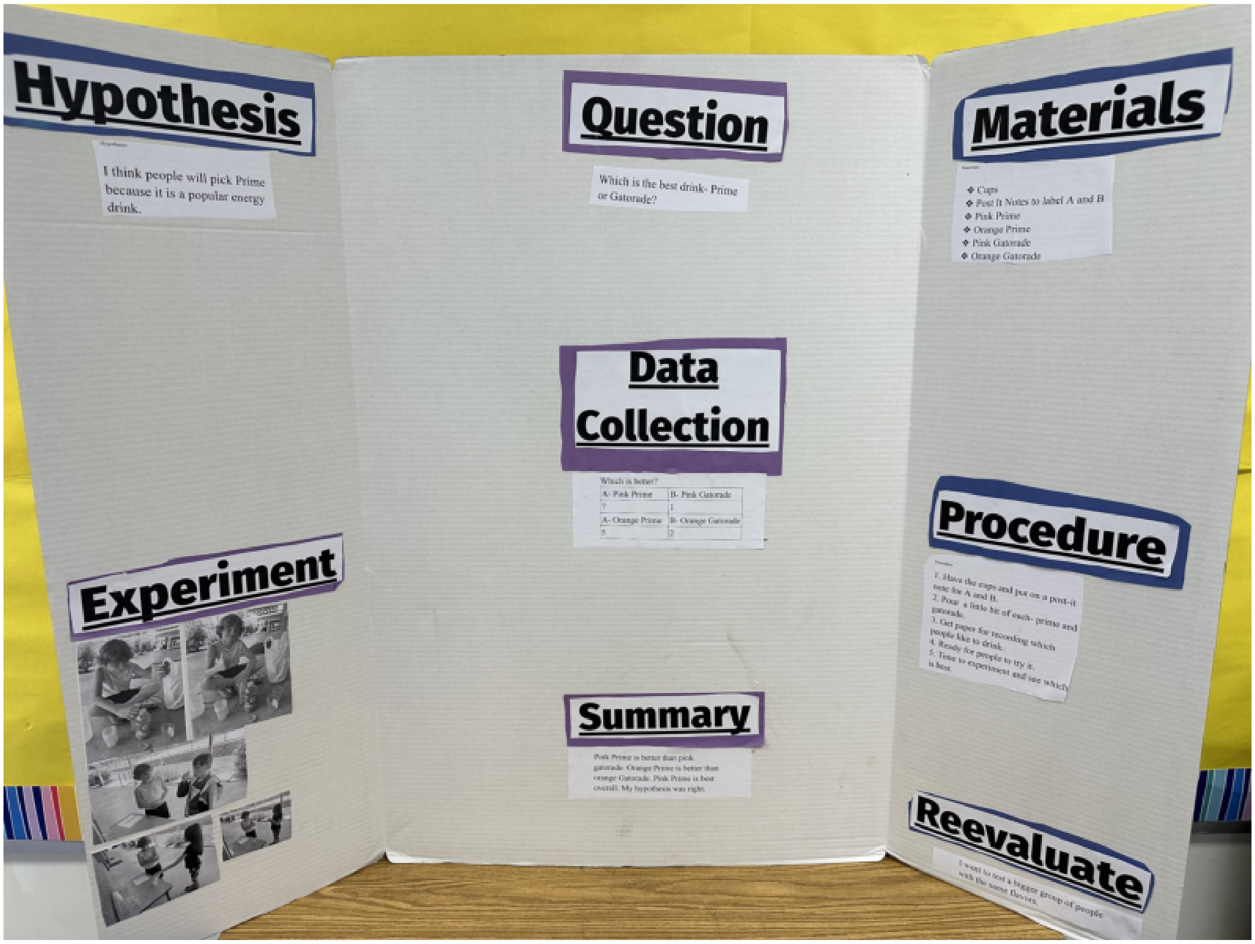
SUMMARIZE FINDINGS

I folew the paper into wraping 201 with te parchment paper it took 78 time with the wrapping it took a 201 time My hypothesis wrong

REEVALUATE PROCESS

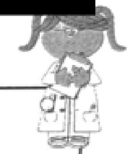
next time I will do diffdent beacuse experiment

I am still curious about experiment


Hypothesis
I think people will pick Prime because it is a popular energy drink.
Question
Which is the best drink- Prime or Gatorade?
Materials
❖ Cups
❖ Post It Notes to label A and B
❖ Pink Prime
❖ Orange Prime
❖ Pink Gatorade
❖ Orange Gatorade
Data Collection
Which is better?
A- Pink Prime | B- Pink Gatorade
7 | 1
A- Orange Prime | B- Orange Gatorade
5 | 2
Procedure
1. Have the cups and put on a post-it note for A and B.
2. Pour a little bit of each- prime and gatorade.
3. Get paper for recording which people like to drink.
4. Ready for people to try it.
5. Time to experiment and see which is best.
Experiment
Summary
Pink Prime is better than pink gatorade. Orange Prime is better than orange Gatorade. Pink Prime is best overall. My hypothesis was right.
Reevaluate

Student #15

Science Fair Rubric



Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/ or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #4 Score: 4

#15

ScoresMean: 37.7	
25	
34	
37	
39	
43Total: 226	
48	

Additional Comments: Live presentation was awesome. Bar graph could work we be adding a why and how much sugar flavor etc.

Name Student #15 Date 4/30/23

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? Why
Beqcuse test People
Which Drink enghy POPUlqi
Leqrn SomethinoDifferent.

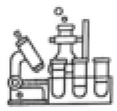
What is the scientific method and its steps? im think
Prime Beqcuse Prime
LOW, SUGqr More PePole
like

How does this method help scientists? Curious Beqcuse
IM very Curious qsk PePole
taste Drink then PeoPle Which
YOU LIke.

Student #16

Name [redacted] Date 4/19/23

SCIENTIFIC METHOD INTRODUCTION



We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? Yes

I want be genius than albert

What is the scientific method and its steps? if not follow rule

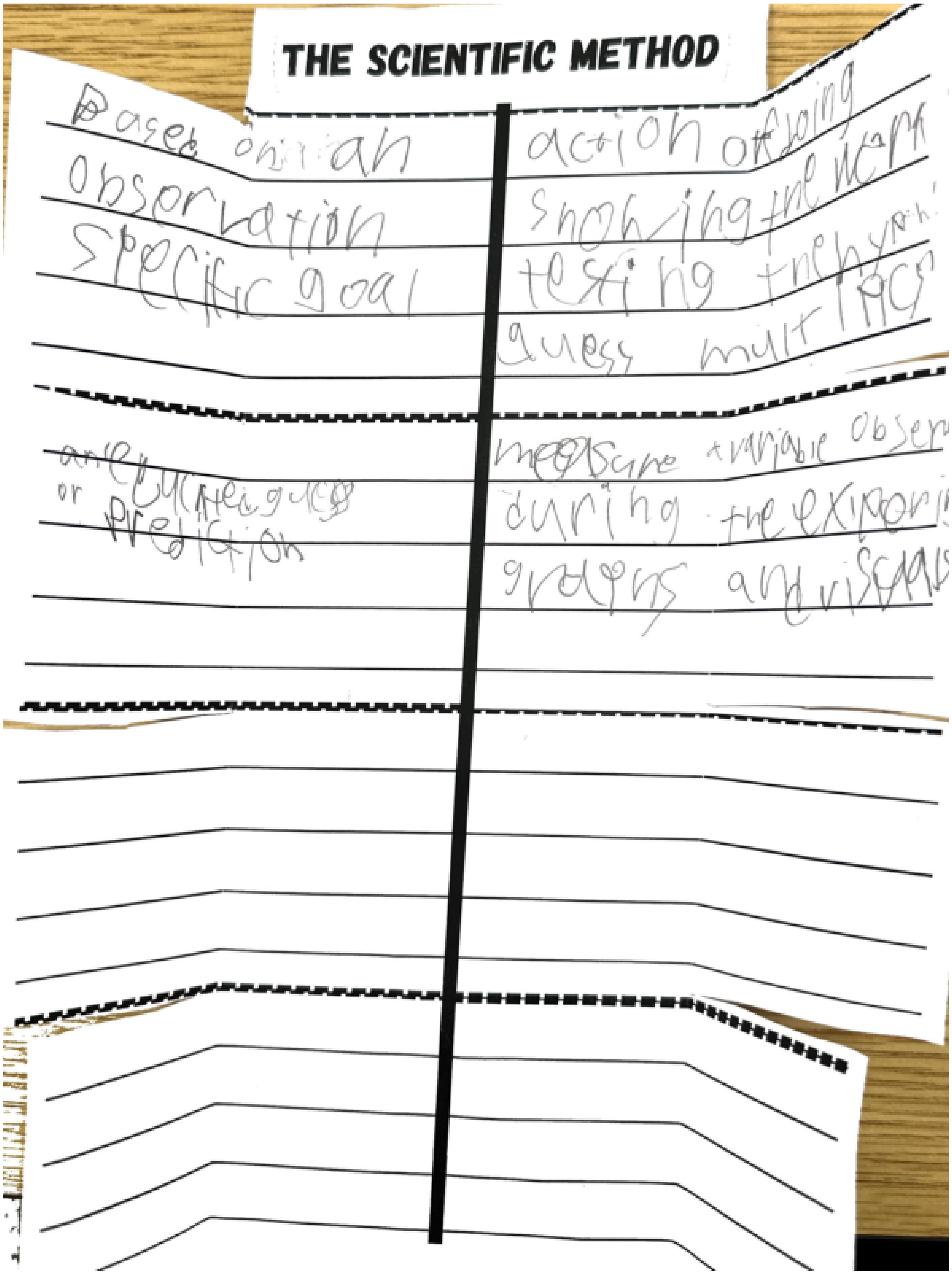
then will get hurt and some

thing can cause fire

How does this method help scientists? Learn and

be genius to be scientists

and look where animal live.


THE SCIENTIFIC METHOD
observation
specific goal
testing
guess
measure
during
prediction

Name Student #16 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

HYPOTHESIS:

came late

PR(

MATERIALS

White Copy paper mini post-it note

EXPERIMENT NOTES

DATA COLLECTION

𝍸 ||

Keep a tally for crew

SUMMARIZE FINDINGS

Sqaare
10
less than 10 ~~same~~ ~~more than~~

REEVALUATE PROCESS

Name Student #16 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Doo the material affec the amount of time a paper can beego

HYPOTHESIS:

I think that the pots well be towes more than 15

PROCEDURE

MATERIALS

recording shee t pencil a shiny paper paper bag 16

EXPERIMENT NOTES

DATA COLLECTION

1 trail with	2 trail with
pick bag 21	Shiny gift wrap 81

SUMMARIZE FINDINGS

I folded the paper into square with bag it took 21 times. With shiny giftwrap, it took 81 times

REEVALUATE PROCESS

Name Student #16 Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

[redacted]

PROPOSED QUESTION

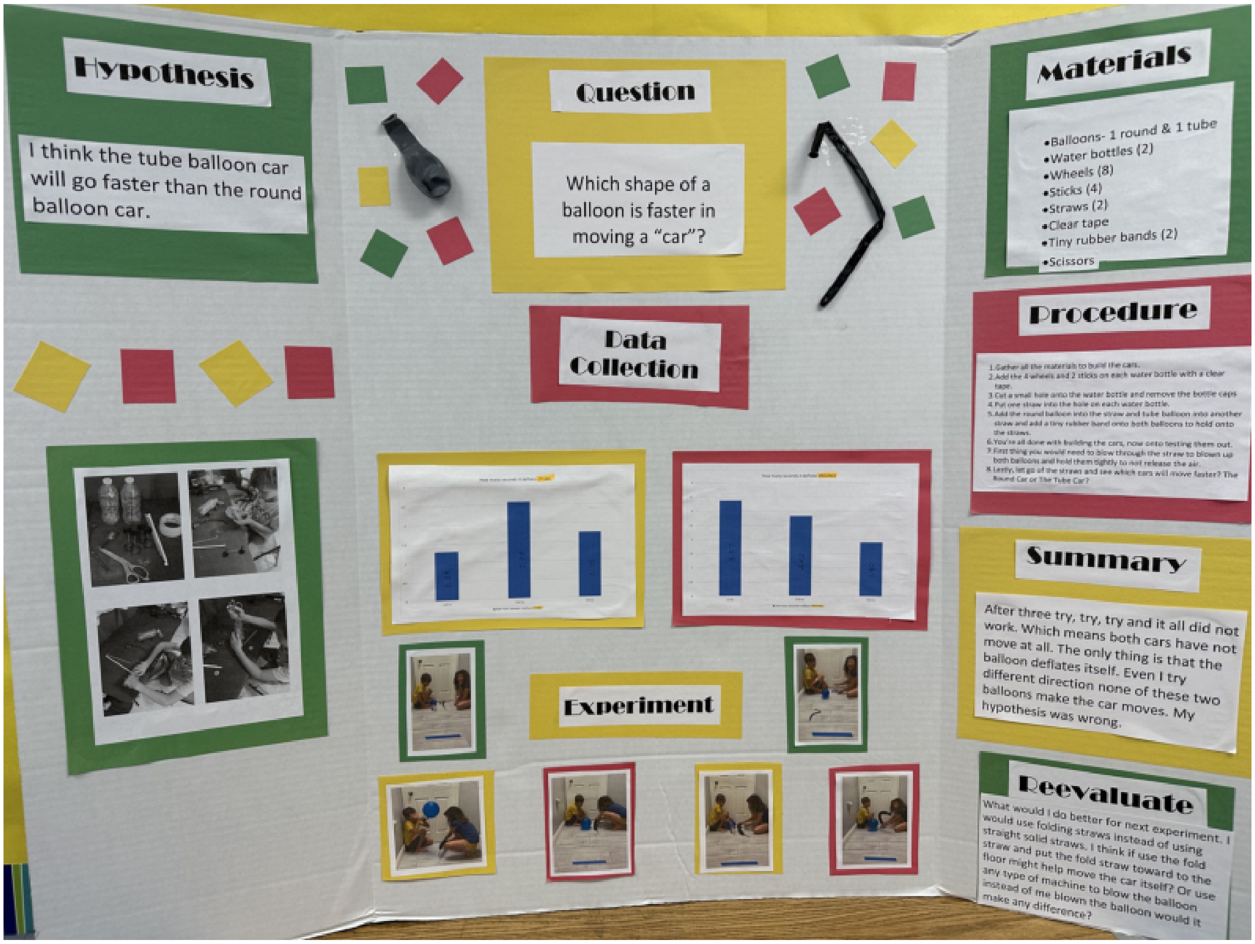
Which shape [illegible] car is more faster on moving car?

WHY ARE YOU PICKING THIS TOPIC?

because this is amazing

EXTRA NOTES

car with ballon blow then car will go mor



Hypothesis
I think the tube balloon car will go faster than the round balloon car.
Question
Which shape of a balloon is faster in moving a "car"?
Materials
•Balloons- 1 round & 1 tube
•Water bottles (2)
•Wheels (8)
•Sticks (4)
•Straws (2)
•Clear tape
•Tiny rubber bands (2)
•Scissors
Procedure
1.Gather all the materials to build the cars.
2.Add the 4 wheels and 2 sticks on each water bottle with a clear tape.
3.Cut a small hole onto the water bottle and remove the bottle caps
4.Put one straw into the hole on each water bottle.
5.Add the round balloon into the straw and tube balloon into another straw and add a tiny rubber band onto both balloons to hold onto the straws.
6.You're all done with building the cars, now onto testing them out.
7.First thing you would need to blow through the straw to blown up both balloons and hold them tightly to not release the air.
8.Lastly, let go of the straws and see which cars will move faster? The Round Car or The Tube Car?
Data Collection
Summary
After three try, try, try and it all did not work. Which means both cars have not move at all. The only thing is that the balloon deflates itself. Even I try different direction none of these two balloons make the car moves. My hypothesis was wrong.
Experiment
Reevaluate
What would I do better for next experiment. I would use folding straws instead of using straight solid straws. I think if use the fold straw and put the fold straw toward to the floor might help move the car itself? Or use any type of machine to blow the balloon instead of me blown the balloon would it make any difference?

Student #16

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #3 Score: 15

15/16

#16

ScoresMean: 39.2	
34	
35	
35	
36	
47Total: 235	
48	

Additional Comments: Well executed :) Could present them in person, explain about distances in conclusion.

Name Student #16 Date

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not?

yes because I Like [illegible]

What is the scientific method and its steps? I did make and experiment.

How does this method help scientists? helped to have a better thing like straws and wheels.

Name [redacted] Student #17 Date 4/18/23

SCIENTIFIC METHOD INTRODUCTION

We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? Yes why cuz I love to researching about Planet and animals to make me smart and get ready on my map test.

What is the scientific method and its steps? Science Plan is to have all five Taste, touch, hear, Smell, and see all get science formation to know better in all the world.

How does this method help scientists? Taste, hear, touch, Smell, and see help scientists to know the world better.

Student #17

Date

SCIENCE FAIR QUESTION PROPOSAL

GROUP MEMBERS:

[redacted]

PROPOSED QUESTION

Elephant toothPhase

WHY ARE YOU PICKING THIS TOPIC? Becaus It is cool and fun Project

Which toothPhase will make elephant toothPhase more cool and ? mystery

EXTRA NOTES

Student #17

Date 4/28/23

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then _____. I think ____ because ____.

GROUP MEMBERS:

[redacted]

PROPOSED HYPOTHESIS

which is the best toothphase to make my elephant toothphase explode so Big? Crest or Colgate

EXPLAIN YOUR THINKING.

I think Crest because its cool brand and have many good flavors to explode my elephant toothphase.

EXTRA NOTES

Name Student #17 Date 5/3/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the material affect the amant of times a paper can be folded?

HYPOTHESIS:

I think that the streamer paper will be folded more than wrapping paper

PROCEDURE

MATERIALS

Recording sheet
Pencil
wrapping paper
paper towel

EXPERIMENT NOTES

DATA COLLECTION

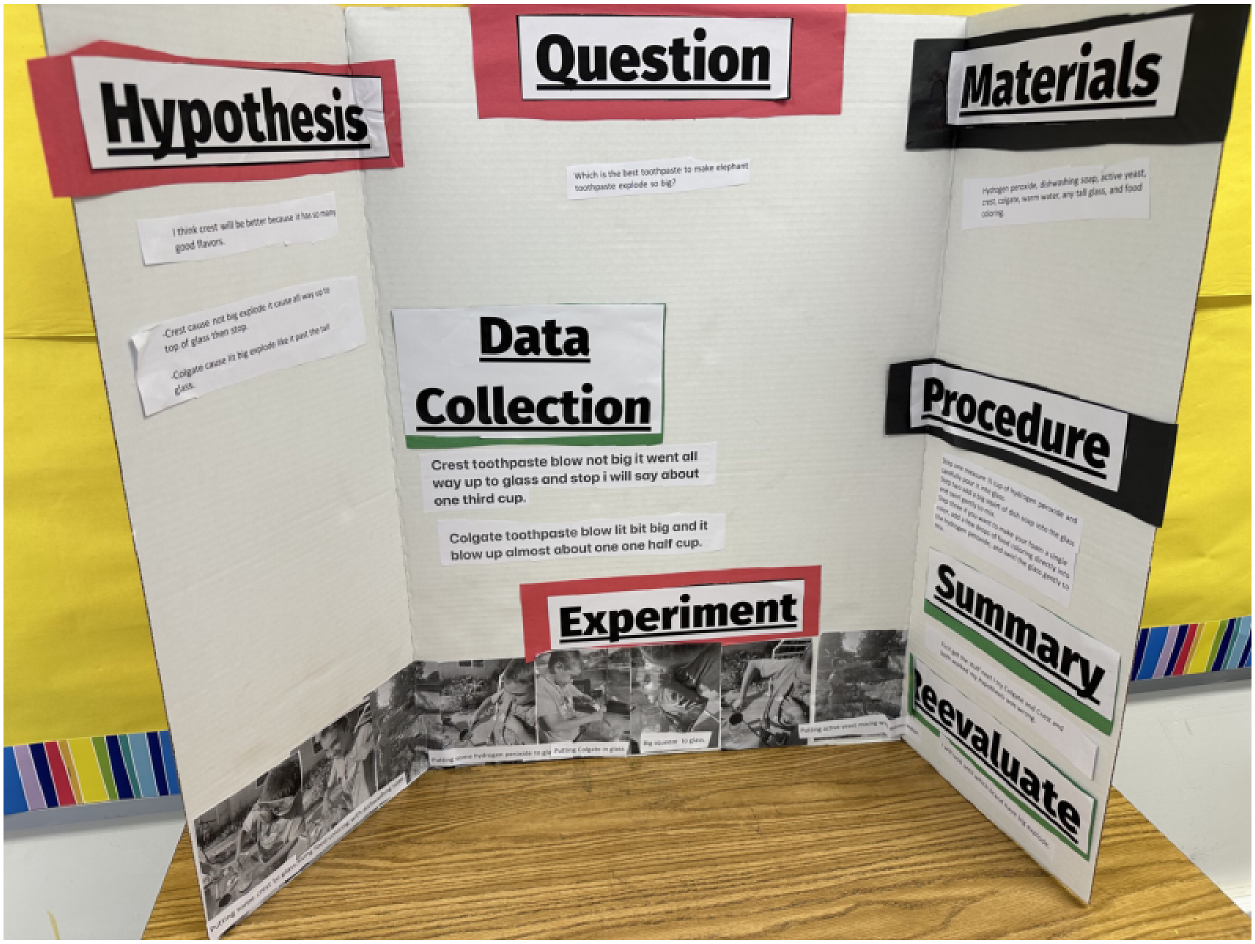
trail 1 with wrapping paper	trail 2 with paper towel	~~Stre~~ trail 3 with streamer paper
85	35	503

SUMMARIZE FINDINGS

I folded the paper into circle with the streamer paper it took 503 times. With the wrapping paper it took 85 times. My hypothesis was Right.

REEVALUATE PROCESS

Next time I will do diffrent kinds because I want to see who have the most folded. I am still curious about Streamer paper. Because is it easy to fold or hard?


Hypothesis
I think crest will be better because it has so many good flavors.
-Crest cause not big explode it cause all way up to top of glass then stop.
-Colgate cause lit big explode like it past the tall glass.
Question
Which is the best toothpaste to make elephant toothpaste explode so big?
Materials
Hydrogen peroxide, dishwashing soap, active yeast, crest, colgate, warm water, any tall glass, and food coloring.
Data Collection
Crest toothpaste blow not big it went all way up to glass and stop i will say about one third cup.
Colgate toothpaste blow lit bit big and it blow up almost about one one half cup.
Experiment
Procedure
Summary
Reevaluate

Student #17

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion, with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #2 Score 95% 15/16

#17

Scores	Mean: 35.8
30	
33	
36	
37	
43	Total: 179

Additional Comments: Live presentation :) Data needed to be visual.

Name [redacted] Date 5/30/23

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not? Yes, because Andrew.T is the goat teacher teaching me every thing about science.

What is the scientific method and its steps? Question mean want to Know something. Hypothesis mean guess. Materials mean thing needed. Data Collection mean measure how many cup. Procedure mean process. Experment mean try it. Summary mean Short explain. Reevaluate mean next time will do diffrent.

How does this method help scientists? Yes because Science really need those to understand and study hard with those method and method lead to teamwork.

Name Student #18 Date 4-18-23

SCIENTIFIC METHOD INTRODUCTION

We are starting a new unit about the Scientific Method, take some time to share what you know and get ready for some hands on learning!

Do you enjoy learning about science? Why or why not? I enJoy learn
make the science fair and The world of Star.
I love Make a glow-in-the-dark and Mixed, Science make
me all smart and idea like in the movie! I work very
hard in the Science! I am idea scientist.

What is the scientific method and its steps? IDea and World. I Guess
the Science are fun and best. Science plan is rules:
Gloove, Smell, and safe. how Make learn in the
science class.

How does this method help scientists? Scientists help for
Their inspirating and science fair for Their
iDea!!

Name Student #18 Date 4/24/23

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

how Many TiMes can you fold a piece of paper?

HYPOTHESIS:

I think the paper can be folded 2 times,

PROCEDURE

1. Grab a sheet of Paper
2. Fold the Paper
3. keep a tally for every fold.
4. write the number of folds

MATERIALS

white copy Paper
Mini post-it note
Pencil
Recording sheet

EXPERIMENT NOTES

DATA COLLECTION

||||| |||| 9

SUMMARIZE FINDINGS

I folded the paper into squares. It took 9 folds before I could not do it anymore. My hypothesis was more than.

REEVALUATE PROCESS

Name Student #18 Date 5/18/20[illegible]

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Does the material affect the amount of times a paper can be folded?

HYPOTHESIS:

I think that streamer paper will be folded more than colorful gift tissue paper.

PROCEDURE

- Colorful gift tissue paper
- streamer paper

MATERIALS

Recording sheet
Pencil

EXPERIMENT NOTES

4-26-23

I Got A!!!

DATA COLLECTION

Trail 1 with	Trail 2 with	
With colorful gift tissue paper	nine=9	200!!

SUMMARIZE FINDINGS

I folded the paper into rectangle. With the streamer paper it took 200 times! With the colorful gift tissue paper it took 9 times. My hypothesis was right.

REEVALUATE PROCESS

Next time I will different a colorful tissue paper because I got 200 on the streamer paper. I am still curious about my Test.

Name Student #18 Date

[redacted]

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Which Colors can You see best in a lava lamp?

HYPOTHESIS:

I Think Blue or Purple Will be the best Color to see the best.

PROCEDURE

First, I Pour little Water in the glass cup. Second, I Pour oil fill the cup up. Third, I add food coloring. Last, I add Alka-seltzer.
There are six cups, With Different Colors blue, red, Purple, orange, yellow, and green.

MATERIALS

Water, oil, food Colors, and Alka-Seltzer

EXPERIMENT NOTES

I add more food Coloring to make lava look Bright.

[redacted]

Name Student #18 Date

SCIENTIFIC METHOD RECORD SHEET

QUESTION:

Which Colors can You see best in a lava lamp?

HYPOTHESIS:

I Think Blue or Purple will be the best. Color to see the best.

PROCEDURE

First, I Pour little water in the glass cup. Second, I Pour oil fill the cup up. Third, I add food coloring. Last, I add Alka-seltzer.
There are six cups, with Different Colors blue, red, Purple, orange, yellow, and green.

MATERIALS

Water, oil, food Colors, and Alka-Seltzer

EXPERIMENT NOTES

I add more food Coloring to make lava look Bright.

DATA COLLECTION

Blue—Oil is blue.
Red— look like orange.
Purple— food color don't work. I Mixed Red and blue but it was too dark
Green- green is bright,
Yellow—Yellow is Most bright and see best.
Orange-look like red. I Mixed Red and Yellow.

SUMMARIZE FINDINGS

My Top Three:
1. orange
2. yellow
3. green

REEVALUATE PROCESS

I add Alka-Seltzer to my top three, and yellow is the best color to see in lava lamp. My hypothesis is wrong.

Name Student #18

Date 4-26-23

SCIENCE FAIR QUESTION PROPOSAL

~~GROUP~~ Alone MEMBERS: "Why Moon become red?"

[redacted]

PROPOSED QUESTION

"Why is Moon become White or red with shadow?"

It's called "Only Red Light Remains."

ORLR

WHY ARE YOU PICKING THIS TOPIC?

It was my idea in my brain and because I had a good Qusetion for: "Why Moon become red?" This one says "Science Behind Lunar Eclipse." I was Excited about, I'm right and Genine science!

SBLE

EXTRA NOTES

A lunar eclipsed is caused by the earth blocking sunlight from reaching the moon and causing a shadow across the lunar surface. The earth has to be perfectly positioned and alighed in between the sun and the moon during a lunar eclipse: the umbra is a full, dark shadow, and the penumbra is a partial outer shadow.

Name Student #18 Date 5/1/23

SCIENCE FAIR QUESTION PROPOSAL

Alone
~~GROUP~~ MEMBERS:

[redacted]

PROPOSED QUESTION

Which colors can you see best in a lava lamp?

WHY ARE YOU PICKING THIS TOPIC?

why I want experiment for winner.

EXTRA NOTES

lava lamp.

page 30 101 coolest science experiments book

Student #18

Name

Date 4-28-23

SCIENCE FAIR HYPOTHESIS PROPOSAL

Write your own hypothesis for your project:
If ____ then ____. I think ____ because ____.

Alone

~~GROUP~~ MEMBERS:

[redacted]

PROPOSED HYPOTHESIS What will happen?

I think Blue-Purple will be best.

EXPLAIN YOUR THINKING. Why do you think that?

I Guess It's bright.

EXTRA NOTES

Blue-Purple
Purple-pink
Green-Aqua

need:
- clear container / bottle
- vegetable oil
- water
- knife
- cup
- fizzing tablet
- Alka-Seltzer
- food coloring

Name Student #18 Date 5/8/2023

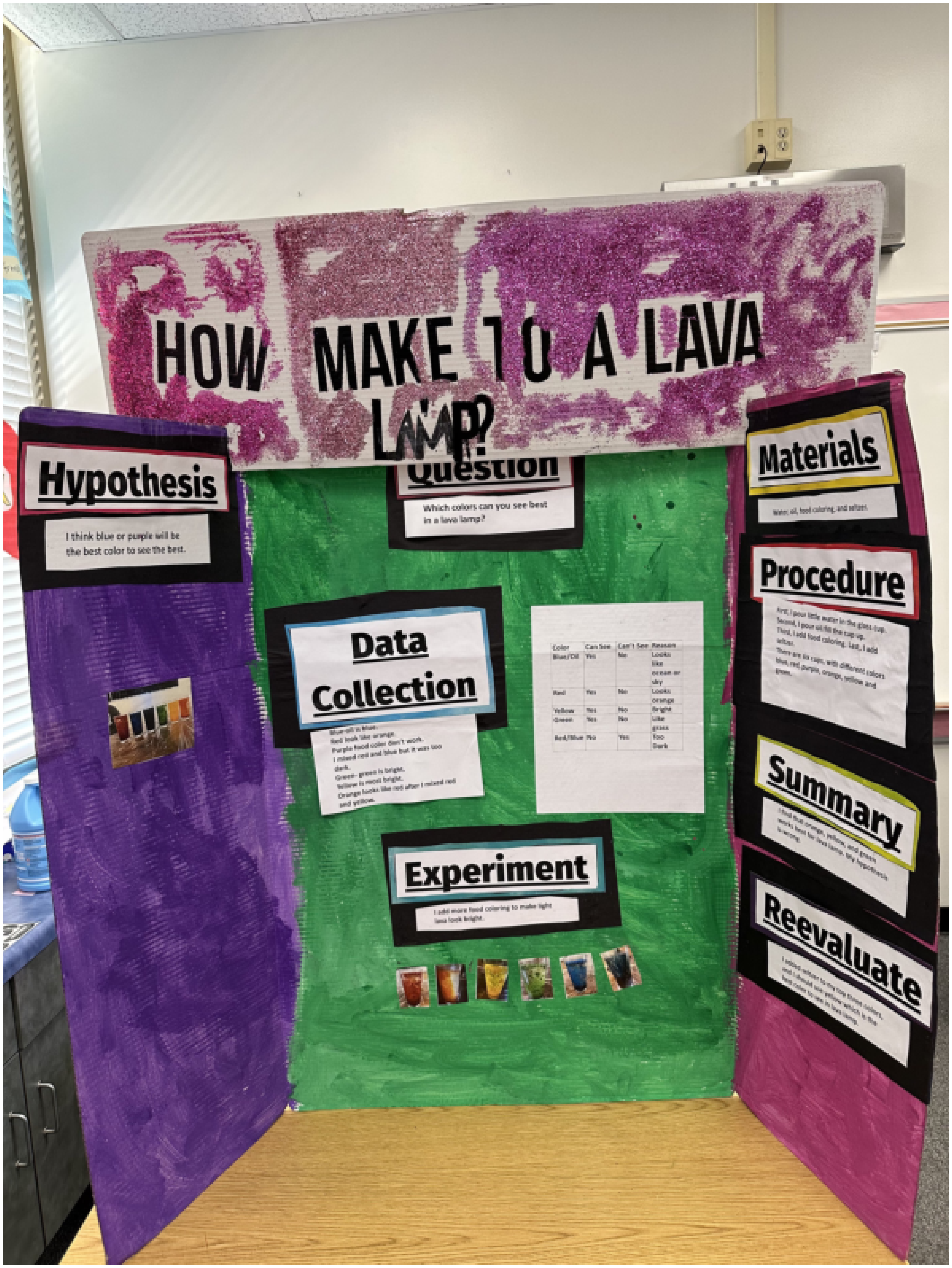
SCIENCE FAIR MATERIALS AND PROCEDURE PROPOSAL

List out the supplies needed for your experiment.
Write out your specific instructions.

MATERIALS LIST

1. Tall identical jars or bottles, such as empty, ceulr, plastic 1 liter or 2 liter bottles (2)
2. Knife
3. Cutting board
4. Timer or clock that shows seconds
5. water
6. Food coloring
7. Vegetable oil (enough to fill the jars nearly full)
8. An Alka-Selter tablet. Only one tablet is the activity, but having additional tablets can be fun if you wanted to repeat lava lamp action.
9. A way to make one jar hot and one cold, such as by using a large bowl filled with hot water and access to a refrigerator or freezer

PROCEDURE OUTLINE


HOW MAKE TO A LAVA LAMP?
Question
Which colors can you see best in a lava lamp?
Hypothesis
I think blue or purple will be the best color to see the best.
Materials
Procedure
Data Collection
Experiment
I add more food coloring to make light lava look bright.
Summary
Reevaluate

Student #18

Science Fair Rubric

Areas of Scoring	1	2	3	4
Question & Hypothesis	There is no question and/or hypothesis.	There is a question and/or hypothesis but they are unclear.	A question and hypothesis are both present and written clearly.	There is a clear written question and well thought out hypothesis.
Experiment & Procedures	A description of the experiment and procedures were not present.	There is a description of the experiment but it is unclear and only some steps are present.	There is a description of the experiment and steps of the procedure were present.	The experiment is directly tied to the question and step by step procedures were present with pictures and/or illustrations.
Data & Summary	No data or conclusion from the experiment is present. (Example: tables, graphs, notes, statement, etc.)	There is a conclusion but it is unclear and does not have data to support it.	There is a clear stated conclusion with some data to support it.	There is a clear stated conclusion that has tables, charts, notes and/or pictures to support it.
Trifold Presentation	There is no trifold to present the project.	A trifold is present but is incomplete and missing important information.	A trifold is present and contains all important information related to the project.	A trifold including all the steps with pictures and/or illustrations is present and is eye catching and easy to read.

Name Student #1 Score: 12/16

#18

Scores	Mean: 36.6
26	
35	
37	
38	
47	Total: 183

Additional Comments: Fun demonstration. COuld measure time to see how long to see clear?

Name [redacted] Date 5/30/23

SCIENTIFIC METHOD WRAP-UP

Now that we have had some practice and created our own projects with the scientific method, let's review what we have learned!

Do you enjoy learning about science? Why or why not?
I love learning endoy about my science fair lava lamp, and made a science easy by lava lamp.

What is the scientific method and its steps? I Guess. My lava lamp is super easy. I love it. I love make a lava lamp make see or can't see and Bright or Dark.

How does this method help scientists? because Isbella help my science fair about Qusetions. my teacher science, Andrew help me, too. he help me about picture of science, ASK make my title science, and practice my science.

Science Fair Judges Scores & Results

Judges Scores from Science Fair Day

Project # 13

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: No variables identified / quantities data presented

Total Points: 17

Judge's Signature: Maye

Project # 11

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: eye contact needed Need quantitative data - checklist w/ each hour

Total Points: 19

Judge's Signature: Mayes

Project # 7

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Could add bar graph

Total Points: 31

Judge's Signature: Maya

Project # 8

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read ~~read~~ graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Use table better

Total Points: 26

Judge's Signature:

1st: 14 2nd #9 3rd #15

Project # 3

Science Fair Judging Rubric

Science Fair Project Display	
Does the project have a testable question?	0 1 2 3 4 5
Rate the overall display of the project. (organization, effort and neatness)	0 1 2 3 4 5
Is there evidence that a well planned experiment was conducted?	0 1 2 3 4 5
Are the variables correctly identified?	0 1 2 3 4 5
Did the student measure and present quantitative data?	0 1 2 3 4 5
Is the data displayed in an easy to read graph and/or table?	0 1 2 3 4 5
Does the conclusion answer the original question?	0 1 2 3 4 5
Project presentation	
Rate the student's overall understanding of their project.	0 1 2 3 4 5
Rate the student's abilities to clearly communicate information about their project.	0 1 2 3 4 5
Can the student relate a purpose for doing the project?	0 1 2 3 4 5

Comments: No quantitative data w/ numbers, could be measured by time

Total Points: 25

Judge's Signature: Maya

Project # 15

Science Fair Judging Rubric

Science Fair Project Display	
Does the project have a testable question?	0 1 2 3 4 5
Rate the overall display of the project. (organization, effort and neatness)	0 1 2 3 4 5
Is there evidence that a well planned experiment was conducted?	0 1 2 3 4 5
Are the variables correctly identified?	0 1 2 3 4 5
Did the student measure and present quantitative data?	0 1 2 3 4 5
Is the data displayed in an easy to read graph and/or table?	0 1 2 3 4 5
Does the conclusion answer the original question?	0 1 2 3 4 5
Project presentation	
Rate the student's overall understanding of their project.	0 1 2 3 4 5
Rate the student's abilities to clearly communicate information about their project.	0 1 2 3 4 5
Can the student relate a purpose for doing the project?	0 1 2 3 4 5

Comments: bar graph could work would be add why? much sugar? flavor etc.

Total Points: 37

Judge's Signature: Maya

Project # 5

Science Fair Judging Rubric

Science Fair Project Display	
Does the project have a testable question?	0 1 2 3 4 5
Rate the overall display of the project. (organization, effort and neatness)	0 1 2 3 4 5
Is there evidence that a well planned experiment was conducted?	0 1 2 3 4 5
Are the variables correctly identified?	0 1 2 3 4 5
Did the student measure and present quantitative data?	0 1 2 3 4 5
Is the data displayed in an easy to read graph and/or table?	0 1 2 3 4 5
Does the conclusion answer the original question?	0 1 2 3 4 5
Project presentation	
Rate the student's overall understanding of their project.	0 1 2 3 4 5
Rate the student's abilities to clearly communicate information about their project.	0 1 2 3 4 5
Can the student relate a purpose for doing the project?	0 1 2 3 4 5

Comments: any reason why chocolate is heavy? graph would be more clear add math calculation

Total Points: 34

Judge's Signature: Maya

Project # 6

Science Fair Judging Rubric

Science Fair Project Display	
Does the project have a testable question?	0 1 2 3 4 5
Rate the overall display of the project. (organization, effort and neatness)	0 1 2 3 4 5
Is there evidence that a well planned experiment was conducted?	0 1 2 3 4 5
Are the variables correctly identified?	0 1 2 3 4 5
Did the student measure and present quantitative data?	0 1 2 3 4 5
Is the data displayed in an easy to read graph and/or table?	0 1 2 3 4 5
Does the conclusion answer the original question?	0 1 2 3 4 5
Project presentation	
Rate the student's overall understanding of their project.	0 1 2 3 4 5
Rate the student's abilities to clearly communicate information about their project.	0 1 2 3 4 5
Can the student relate a purpose for doing the project?	0 1 2 3 4 5

Comments: bar graph would be a good idea

Total Points: 36

Judge's Signature: Maya

Project # 9.

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Could research why it attract? ~~how~~ how much sugar?

Total Points: 46

Judge's Signature: Maya

Project # 8

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: could measure how much water/liquid to add each time, no math table/graph

Total Points: 23

Judge's Signature: Maya

Project # 14

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: well-presented no variable identified, well-communicated!!

Total Points: 42

Judge's Signature: Maya

Project # 16

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: could present them in person, explain about distances in conclusion

Total Points: 36

Judge's Signature: Maya

Project # 10

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: No table/ graph presented,

Total Points: 28

Judge's Signature: Maya

Project # 18

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Could measure time to see how long to see clear?

Total Points: 26

Judge's Signature: Maya

Project # 4

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: try to communicate instead of look, could measure how much to pour

Total Points: 24

Judge's Signature: Maya

Project # 12

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Well done.

Total Points: 33

Judge's Signature: Maya

RJ

Project # 9

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 34

Judge's Signature:

Project # 8

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 30

Judge's Signature:

Project # 13

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 27

Judge's Signature:

Project # 11

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 23

Judge's Signature:

1st: 17 (34) 2nd: 16 (35) 3rd: 9 & 14 (34)

Project # 14

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: **Total Points:** 34

Judge's Signature:

Project #

Project # 16

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: **Total Points:** 35

Judge's Signature:

Project #

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: **Total Points:** 26

Judge's Signature:

Project # 7

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: **Total Points:** 27

Judge's Signature:

Project # 17

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 36

Judge's Signature :

Project # 6

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 24

Judge's Signature :

Project # 5

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 26

Judge's Signature :

Project # 10

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 33

Judge's Signature :

Project # 2

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 28

Judge's Signature :

Project # 4

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 32

Judge's Signature :

Project # 3

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 30

Judge's Signature :

Project # 15

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 25

Judge's Signature :

Project # 5

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Total Points: 35

Presentation skills - practice more

Judge's Signature:

Project # 6

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Total Points: 33

Judge's Signature:

Project # 10

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Total Points: 43

Awesome question to continue research

Judge's Signature:

Project # 18

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Total Points: 35

fun demonstration

Judge's Signature:

1st: 12 & 16 (48) 2nd: 10 & 15 (43) 3rd: 14 & 9 (40)

Project # 2

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Presentation skill practice
suggest to create graph for data

Total Points: 31

Judge's Signature:

Project # 4

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Presentation skill practice

Total Points: 28

Judge's Signature:

Project # 3

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: presentation skills - practice

Total Points: 31

Judge's Signature:

Project # 15

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: LIVE presentation was awesome

Total Points: 43

Judge's Signature:

Project # 17

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Live Presentation !! ~~Graph~~ data needed to be visual

Total Points: 33

Judge's Signature:

Project # 16

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: Well executed !!

Total Points: 48

Judge's Signature:

Project # 7

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 35

Judge's Signature:

Project # 1

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 36

Judge's Signature:

Project # 14

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : fun demo.

Total Points: 40

Judge's Signature :

Project # 11

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : educational

Total Points: 38

Judge's Signature :

Project # 12

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Fun experiment

Total Points: 48

Judge's Signature :

Project # 13

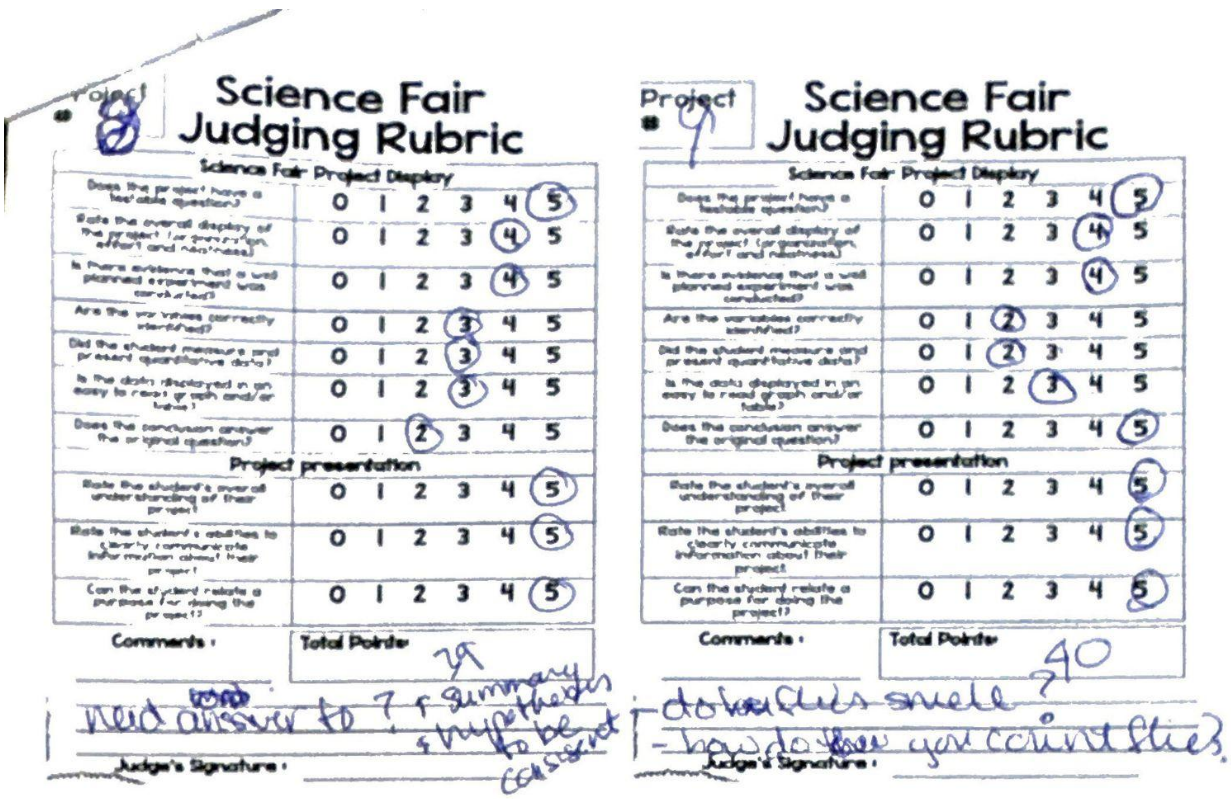
Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Yummy.

Total Points: 33

Judge's Signature :



Project # 8

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: need ~~word~~ answer to ? & summary & hypothesis to be consistent

Total Points: 39

Judge's Signature:

Project # 9

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: - do ~~...~~ flies smell? - how do ~~...~~ you count flies?

Total Points: 40

Judge's Signature:

Project # 5

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 39

Judge's Signature :

Project # 6

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 39

Judge's Signature :

Project # 10

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 38

Judge's Signature :

Project # 18

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 37

Judge's Signature :

1st: 5 & 6 & 3 & 15 (39) 2nd: 10 & 4 & 14 (38) 3rd: 18 & 17 & 2 (37)

Project # 17

Project # 2 — Science Fair Judging Rubric

Science Fair Project Display	0 1 2 3 4 5
Does the project have a testable question?	4
Rate the overall display of the project. (organization, effort and neatness)	4
Is there evidence that a well planned experiment was conducted?	3
Are the variables correctly identified?	4
Did the student measure and present quantitative data?	4
Is the data displayed in an easy to read graph and/or table?	2
Does the conclusion answer the original question?	4
Project presentation	
Rate the student's overall understanding of their project.	4
Rate the student's abilities to clearly communicate information about their project.	4
Can the student relate a purpose for doing the project?	4

Comments:

Total Points: 37

Judge's Signature:

Project # 4 — Science Fair Judging Rubric

Science Fair Project Display	0 1 2 3 4 5
Does the project have a testable question?	4
Rate the overall display of the project. (organization, effort and neatness)	3
Is there evidence that a well planned experiment was conducted?	4
Are the variables correctly identified?	5
Did the student measure and present quantitative data?	4
Is the data displayed in an easy to read graph and/or table?	4
Does the conclusion answer the original question?	4
Project presentation	
Rate the student's overall understanding of their project.	3
Rate the student's abilities to clearly communicate information about their project.	4
Can the student relate a purpose for doing the project?	3

Comments:

Total Points: 38

Judge's Signature:

Project # 3 — Science Fair Judging Rubric

Science Fair Project Display	0 1 2 3 4 5
Does the project have a testable question?	4
Rate the overall display of the project. (organization, effort and neatness)	4
Is there evidence that a well planned experiment was conducted?	4
Are the variables correctly identified?	5
Did the student measure and present quantitative data?	3
Is the data displayed in an easy to read graph and/or table?	4
Does the conclusion answer the original question?	4
Project presentation	
Rate the student's overall understanding of their project.	3
Rate the student's abilities to clearly communicate information about their project.	4
Can the student relate a purpose for doing the project?	4

Comments:

Total Points: 39

Judge's Signature:

Project # 15 — Science Fair Judging Rubric

Science Fair Project Display	0 1 2 3 4 5
Does the project have a testable question?	4
Rate the overall display of the project. (organization, effort and neatness)	4
Is there evidence that a well planned experiment was conducted?	4
Are the variables correctly identified?	3
Did the student measure and present quantitative data?	4
Is the data displayed in an easy to read graph and/or table?	4
Does the conclusion answer the original question?	4
Project presentation	
Rate the student's overall understanding of their project.	4
Rate the student's abilities to clearly communicate information about their project.	4
Can the student relate a purpose for doing the project?	4

Comments:

Total Points: 39

Judge's Signature:

Project # 17 — Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : **Total Points:** 37

Judge's Signature :

Project # 7 — Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : **Total Points:** 35

Judge's Signature :

Project # 1 — Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : **Total Points:** 34

Judge's Signature :

Project # 16 — Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : **Total Points:** 34

Judge's Signature :

Project # 14

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 38

Judge's Signature:

Project # 11

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 27

Judge's Signature:

Project # 12

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 32

Judge's Signature:

Project # 13

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 36

Judge's Signature:

Project # 8

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 34

Judge's Signature :

Project # 9

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 36

Judge's Signature :

Joy

Project # 5

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 37

Judge's Signature:

Project # 6

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: ~~35~~ 34

Judge's Signature:

Project # 10

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 37

Judge's Signature:

Project # 18

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 47

Judge's Signature:

1st: 14 (50) 2nd: 12 (49) 3rd: 15 & 9 (48) ject

Project # 2

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 31

Judge's Signature :

Project # 4

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 34

Judge's Signature :

Project # 7

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 35

Judge's Signature :

Project # 15

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : Total Points: 48

Judge's Signature :

Project # 17

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 43

Judge's Signature :

Project # 7

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 46

Judge's Signature :

Project # 1

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 41

Judge's Signature :

Project # 16

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 47

Judge's Signature :

Project # 8

Project # 14

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : **Total Points:** 50

Judge's Signature : ____________

Project # 11

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : **Total Points:** 35

Judge's Signature : ____________

Project # 12

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : **Total Points:** 49

Judge's Signature : ____________

Project # 13

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments : **Total Points:** 34

Judge's Signature : ____________

Project # 8

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: ~~48~~ 44

Judge's Signature :

Project # 9

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 48

Judge's Signature :

Smith

Project # 9

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 37

Judge's Signature:

Project # 8

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 26

Judge's Signature:

Project # 13

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 35

Judge's Signature:

Project # 12

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 35

Judge's Signature:

1st: #18 (38) 2nd: 9 (37) 3rd: 13 & 12 & 16 && 4 (35)

Project # 11

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 22

Judge's Signature:

Project # 14

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 29

Judge's Signature:

Project # 16

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 35

Judge's Signature:

Project # 1

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments:

Total Points: 25

Judge's Signature:

Project # 7

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 27

Judge's Signature :

Project # 17

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 30

Judge's Signature :

Project # 15

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 34

Judge's Signature :

Project # 3

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 29

Judge's Signature :

Project # 4

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: ______ Total Points: 35

Judge's Signature: ______

Project # 2

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: ______ Total Points: 30

Judge's Signature: ______

Project # 18

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: ______ Total Points: 38

Judge's Signature: ______

Project # 10

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments: ______ Total Points: 32

Judge's Signature: ______

Project # 6

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 33

Judge's Signature :

Project # 5

Science Fair Judging Rubric

Science Fair Project Display						
Does the project have a testable question?	0	1	2	3	4	5
Rate the overall display of the project. (organization, effort and neatness)	0	1	2	3	4	5
Is there evidence that a well planned experiment was conducted?	0	1	2	3	4	5
Are the variables correctly identified?	0	1	2	3	4	5
Did the student measure and present quantitative data?	0	1	2	3	4	5
Is the data displayed in an easy to read graph and/or table?	0	1	2	3	4	5
Does the conclusion answer the original question?	0	1	2	3	4	5
Project presentation						
Rate the student's overall understanding of their project.	0	1	2	3	4	5
Rate the student's abilities to clearly communicate information about their project.	0	1	2	3	4	5
Can the student relate a purpose for doing the project?	0	1	2	3	4	5

Comments :

Total Points: 31

Judge's Signature :

Student Rankings Based on Scores

Student Name (highest score order)	Average Score
Student #12*	39.4
Student #16	39.2
Student #9	39.2
Student #14	38.6
Student #15	37.7
Student #18*	36.6
Student #17*	35.8
Student #10	35.5
Student #1**	34
Student #5	33.6
Student #7	33.5
Student #6	33.2
Student #8	32.7
Student #4	31.8
Student #3	31.5
Student #2	30.5
Student #13	30.3
Student #11	27.3

If have a * or ** means they are missing a score from a judge or more

Student Name (highest score order)	Total Score
Student #16	235
Student #9	235
Student #14	232
Student #15	226
Student #10	213
Student #5	202
Student #7	201
Student #6	199
Student #12*	197
Student #8	196
Student #4	191
Student #3	189
Student #2	183
Student #18*	183
Student #13	182
Student #17*	179
Student #11	164
Student #1**	136

If have a * or ** means they are missing a score from a judge or more