

## TITLE/ABSTRACT CHECK

## Abstract Review

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**Aaron Brown**

Grade-4 Project Number-

**Title: Does Color Matter**[View Project Poster/Presentation](#)

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**Margaret GiaQuinta**

Grade-0 Project Number-

**Title: What dog treats do dogs prefer?**[View Project Poster/Presentation](#)

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Fort Wayne

**Alice Kauffman**

Grade-7 Project Number-

**Title: Through Dogs' Ears**[View Project Poster/Presentation](#)

-- Would high-pitched noises and familiar noises get a big reaction from dogs? After doing some research, a hypothesis has been developed. If you played certain noises of different pitches and categories to a group of dogs, then the older dogs should react the same way as younger dogs. They will most likely react more to animal noises and familiar sounds than to low-pitched and unfamiliar sounds. Each step must be followed precisely for each dog. If the steps are not the same for every single one, then more variables are added to the mix. An essential to keep in mind is that certain sounds may rile the dog up more, so waiting 1-5 minutes between each sound test will help them calm down. Many materials are optional, like dog treats which are just a small reward dogs love. The dogs' ages ranged from zero to eight years old. Animal noises had the biggest count of tail wags, showing their excitement. Familiar noises had a bigger impact on barking because the dogs knew the sound. Unfamiliar noises had many head-tilts and whines because they were confused or scared of the noise. In conclusion, the hypothesis was mostly correct. It was true that higher sounds do make them more alert than lower or quieter sounds. For the sounds made by animals, the dogs reacted between 2-25 times, whether it was movement, whining, or touching the device the sound came from. Familiar noises got a big reaction too.

Fort Wayne

**Zainab Yussuf**

Grade-3 Project Number-

**Title: Does the type of sugar affect how quickly yeast rises?**[View Project Poster/Presentation](#)

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Fort Wayne

**Peter Lassus**

Grade-6 Project Number-

**Title: Reaction**[View Project Poster/Presentation](#)

--I wanted to find out what makes my reaction time the quickest. I tried after the participants, waked up in the morning, after eating a meal, after sitting and watching TV for 10 minutes, after listening to peaceful music for 10 minutes, after spending 10 minutes solving Sudoku puzzles, and after riding exercise bike for 10 minutes. After I did all of my tests I look at my research and decided it was inconclusive. I also decided that your reaction time might be personal to what you like to do or how hard you were trying to do something.

Fort Wayne

Bethany Perkins

Grade-10 Project Number- 345

Title: Virtual or In-Person Schooling? Factors in High School Student Decisions in a

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--The purpose of this study is to determine the priorities and factors that affect teenage decision making, and how this decision-making process has been affected by the pandemic. With this information and insight into the High School psyche during this unique and difficult time, schools can understand and adjust their responses to future circumstances and crises. For this study, a survey was created using Google Forms to distribute a series of questions relating to the student's decision, what affected this decision, how they view and interpret the danger of COVID-19, and how they view the effectiveness of this year's schooling options. The questions were specific to whether the student chose in-person schooling or the online option, Real-Time. Once the survey was created, collaboration with the school administrator allowed for modifications and the distribution of the survey via email to students in Homestead High School. Once data was collected, both the Google Form summaries provided, and specific data interpretation created using Microsoft Excel were used to organize and analyze the data. The impact socialization played in the decision progress is seen as 33% of in person students stated a desire to work with and collaborate with other students as their main reason for attending in person school. 74.4% included the lack of social interaction as a hesitation against Real-Time schooling. Only 47.8% included a fear of contracting COVID-19 in their hesitations for in person schooling, while 34.9% said they had no hesitations. 72.7% also stated that mandatory return to online school due to a shortage of teachers and subs not under quarantine had no impact on their schooling decision for second semester. 59.1% stated that there are no factors that would convince them to participate in Real-Time schooling while in person is an option. 82% said their educational needs are being met, while 80.2% said their mental health and social needs are being met. While 23.2% of Real-Time students stated a fear of contracting COVID-19 as their main reason for choosing online school, 35.5% said it was a preference to online schooling. 60% of students included a lack of social interaction in their hesitations regarding online schooling, and 58.8% included the risk of contracting COVID-19 in their hesitations regarding in person schooling.

Fort Wayne

**Maddox Carsten**

Grade-6 Project Number-

**Title: Can cola, tea, and coffee stain your teeth?**[View Project Poster/Presentation](#)

--My hypothesis was "I believe that coffee, tea, and cola can change the color of your teeth if you drink them everyday and not brush your teeth over time." My data did support my hypothesis because all of the eggs changed in color over the five days. Each day they looked a little different and darker in color.

**Brandtly Hike**

Grade-6 Project Number-

**Title: The Battle of the Masks**[View Project Poster/Presentation](#)

--Does the mask you chose to wear have great consequences? That was one question that the experiment conducted was meant to answer. The question that the experiment was primarily meant to answer was, "does wearing a standard cloth mask affect the spread of Covid-19 more or less than a gaiter style mask?" A fact that is thrilling to report is that this experiment gave a great amount of insight, and the answer to the question that was previously stated. This experiment was inconceivably useful in providing information about the mask itself.

**Dawson Shovek**

Grade-7 Project Number-

**Title: How Do Different Brands of Cigarettes Affect Lung Health**[View Project Poster/Presentation](#)

-- My purpose for doing this experiment was to find out how different brands of cigarettes affect the lungs. The mucus in your lungs enlarge in size and number when you smoke. This is very important when smoking can cause severe diseases like diabetes, lung cancer, and destroy tiny air sacs in your lungs which are called Alveoli. 1.Wrap several pieces of cotton around the filter end of the cigarette 2. Insert the filter end of the cigarette with the cotton into the neck of the bottle 3. Secure the Cigarette with tape leaving no gaps 4. Light the cigarette 5. Gently squeeze the bottle. The bottle will act as a lung drawing air in through the cigarette and filter. 6 Continue squeezing the bottle until the cigarette is smoked down. 7 Observe the contents of the bottle. 8 Remove the cotton and the butt of the cigarette. Observe stains on cotton and filter. I thought that the bottle was going to get more dirty the stronger the cigarette. That's exactly what happened. Another thing I predicted was that the bottle would not start to get dirty until the cigarette has been in for a whole minute, but I was wrong. The thing I had realized was that it doesn't matter how long the cigarette stays in for. All that matters is that the cigarette with the stronger chemicals which was menthol was the cigarette that caused the most damage to the lungs. The Cotton that served as the alveoli was super dirty. In conclusion, my science project was to find out how cigarettes affect our lungs, so my experiment did help but most of my work was doing research. It turns out that it doesn't matter how long the cigarette was being inhaled it matters what type of brand you use. Another thing I stated in my hypothesis was that I thought that the cigarette was going to get the cotton dirty right away. It turns out that I was wrong. Instead it takes about 1:30 seconds for the cotton to start getting dirty.

Fort Wayne

**Caitlin Westhoff**

Grade-7 Project Number-

**Title: Which Toothpaste Removes the Most Stains**[View Project Poster/Presentation](#)

-- I wanted to find out which toothpaste removes the most stains. I got five kinds of toothpaste to test and used Welch's grape juice as my stain. I would brush them for two minutes just like you would your teeth. I did this project because I wanted to elaborate on my project last year, where I figured out which drink stains your teeth the most. Crest 3D White and Colgate Total tied for first because they both had the same amount of stain removed. Overall I liked this project because it told me that some

toothpastes actually remove stains, while some don't live up to the expectations they are given.

Fort Wayne

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Blane Wilson

Grade-4 Project Number-

**Title: Masks, Do they work?**

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**Ava Baker**

Grade-5 Project Number-

**Title: Resin Revolution**

[View Project Poster/Presentation](#)

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Fort Wayne

**Aubrey Ealing**

Grade-4 Project Number-

**Title: Sugary Science**

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Fort Wayne

**Samuel Evans**

Grade-4 Project Number-

**Title: Dissolving Green Skittles**

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Fort Wayne

**Isaac Maurer**

Grade-8 Project Number-

**Title: Burning Calories**

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-- The purpose of the experiment "Burning Calories" is to determine if increasing the amount of insulation on a calorimeter will increase the accuracy of that calorimeter. The hypothesis is that increasing the insulation on a calorimeter will increase its accuracy. The null hypothesis is that increasing the insulation on a calorimeter will not affect its accuracy. This experiment uses a calorimeter constructed from aluminum foil and an aluminum soda can. When a piece of food was burned under the calorimeter, the change in temperature was measured. The control contained no insulation, while further trials used increasing layers of foam. When the change in temperature was used to calculate the calories burned, the results showed 1510 calories for the control, 1052 calories with one layer of insulation, 900 calories with two layers, and 964 calories with three layers. Based on the packaging, the food samples should each have contained 2875 calories, meaning the percent error was 47.47%, 63.40%, 69.39%, and 66.47% respectively. These data seem to disprove the hypothesis and support the null hypothesis. However, further study with more accurate equipment is necessary.

Fort Wayne

**Jeremiah Maurer**

Grade-2 Project Number-

**Title: Burning Violet**

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**Olivia Minnich**

Grade-6 Project Number-

**Title: For the Love of Dough**

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--I wanted to know what kind of leavening would be best used for rising dough. I thought that the yeast would be the best leavening for rising and baking the dough. I made dough with Rapid Rise Yeast, Active Rise Yeast, Baking Soda, and Baking Powder. Next, I let the dough sit and rise for 95 minutes. I measured the height and width of the dough in the beginning, middle, and end. Then I baked the dough.

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**Katie Samons**

Grade-4 Project Number-

**Title: What Household Item Takes off Labels the Best?**

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Ashton Shadobolt

Grade-5 Project Number-

**Title: Freezing Fluids**[View Project Poster/Presentation](#)

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**Christian Brell**

Grade-7 Project Number-

**Title: Which wood kindles a fire the longest?**[View Project Poster/Presentation](#)

--I picked three woods Pine, Poplar, and Red Oak. I burned them each for three minutes under an consistent flame at 750 degrees. Then I turned the flame off, and timed it to see which one burned the longest. At the end Poplar had the longest average burn time. Poplar also took the least time to catch fire.

Fort Wayne

**Gigi Colone**

Grade-4 Project Number-

**Title: What Type of Sponge Holds the Most Water?**[View Project Poster/Presentation](#)

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Fort Wayne

**Olivia Didion**

Grade-7 Project Number-

**Title: The Tumbler Ice Meltdown**[View Project Poster/Presentation](#)

--Many companies have released versions of the 20 oz tumbler, but which tumbler will keep ice the longest? This project looks at 5 tumblers (manipulated variables) of various price ranges and hype. The same weight of ice (controlled variable) was tested in each tumbler at the same time for the same duration of times (controlled variables). I tested the amount of liquid water in the tumblers after 8 hours and again after 12 hours (responding variable). My hypothesis was that if I used the Yeti tumbler, then it will maintain water in the frozen state longer than Aloufea, RTIC, Green Steel Beast, or Arctic tumblers. The experimental results showed that the Yeti was marginally superior at maintaining water in the frozen state over 3 of the 4 other tumblers. However, it showed no superior advantage over the Green Steel Beast tumbler.

Fort Wayne

**Kyliana Drew**

Grade-7 Project Number-

**Title: What is Clean Water?**[View Project Poster/Presentation](#)

--What is clean water? I wanted to find out what is in our water. How do these elements affect us, and is there a way to clean water without chemicals? I took tap water and fresh river water and used a precise test for Bacteria, Nitrite, Nitrate, Chlorine, Copper, Lead, and a 3-Way test (including pH, alkalinity, and hardness). A second test was used to identify a wider range of elements, even though it was not as precise. I started by using a coffee filter to remove any debris. I then boiled it for 27 minutes and tested it. I placed organic cilantro in a tea strainer and let it sit for 4 minutes, this water was then tested. I compared the test results and found that fluoride and hardness were still high. Therefore, the water was boiled for an additional 10 minutes and tested once again. While I was comparing I also noticed our river water was close to our chemically clean water. I was correct about my hypothesis. Using my natural filtration plan I was able to get cleaner water than Fort Wayne's tap water. During my project I noticed that when I boiled the water the alkalinity, hardness, and fluoride were affected. I also saw the cilantro impacted the pH and alkalinity. I learned that boiling water can have a bigger effect on water than just removing salt and germs. Cilantro was also very surprising to me. We grow our own cilantro and use it in a lot of our meals. I was surprised to find it actually can help you get clean drinking water. When I was looking for my tests I looked for good reviews and what other people said about their product. I narrowed it down to two different tests. I contacted both and got a response from Varify. They recommended I use their bacteria test and use Health Metric's strips for better accuracy. While doing my test I however realized I needed more variety so I used Varify's 16-in-1 test. My results are based on reader's interpretation. Therefore, there could always be reader's error. When one was hard to read I would have to pick one or the other. When it came to this point I would choose the higher one to make sure I was not making it lower than what it really was. From my project I learned that clean water is many things. Clean water is minerals, metals, acid, and other things. H<sub>2</sub>O might be water but there is a lot more to it. I learned about the different standards our treatment plants all over the U.S. follow. I also learned how to create clean water when in an emergency. I hope to next year using the knowledge I have gained to help with the Flint, Michigan water issue. EPA or Environmental Protection Agency is in charge of safe drinking water standards and MCL or Maximum Contaminant Level. This is for the U.S. only. Nitrite and Nitrate are from fertilizers and animal wastes. Lead, copper, fluoride, mercury, aluminum, and iron are heavy metals. Chlorine is a water disinfectant. The measure of acid in water is pH. Alkalinity, sulfate, zinc, and hardness are minerals. Magnesium is a alkaline metal and is found in minerals. Free chlorine is chlorine yet to come. Overall, I really enjoyed learning about water and how to make it using natural resources. I would recommend to anyone who is interested in learning about what is in our drinking water to do this.

Fort Wayne

**Hudson Hale**

Grade-5 Project Number-

Title: Which flushable wipe biodegrades fastest?

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Fort Wayne

#### Dawson Hill

Grade-6 Project Number-

**Title: Does temperature affect how high a bouncy ball will bounce?**

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#### Jackson Keirns

Grade-6 Project Number-

**Title: Does the flavor of ice cream affect how quickly it melts?**

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#### Olivia Love

Grade-4 Project Number-

**Title: What Filters Water?**

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#### Nova Nang

Grade-3 Project Number-

**Title: Making Crystals**

[View Project Poster/Presentation](#)

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#### Stephanie Onion

Grade-8 Project Number-

**Title: Soil Solutions**

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--For my project I wanted to see what substance would hold the most water. Farmers are currently trying to find ways to save water. Farmers use a majority of our freshwater which costs them money and it isn't good for the environment. If farmers saved as much rainwater as possible then farmers could save money and the environment. The four substances that I chose were soil, sand, rocks, and coconut fiber. I thought that the sand would hold the most because it is fairly dense and they use sandbags during natural disasters to soak up the water. I would put a layer of the substance down and then a thicker layer of soil. I then added water and after two hours I measured how much water was not soaked up in the pot. I concluded that the sand did hold the most water and that my hypothesis was supported. If I were to do this project again I would try to do larger samples and also try to replicate rainfall right now. I dumped all of the water in at once and I think that if I had it constantly "raining" then I would maybe get more accurate results. If I did a continuation of my project then I could try different types and different ratios of sand to soil. I could also try different soils or mixtures of things like top soil and peat moss. I think that I could also find different ways farmers could collect the extra rainwater that was not soaked up.

Huntertown

#### Madeline Phuong

Grade-10 Project Number- 344

**Title: Effect of OMRI-Certified Monterey B.t. Easy-to-Mix Liquid Concentrate Bio-insecticide on Daphnia magna Swimming Behavior**

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-- Daphnia magna is a large, invertebrate water flea species in fresh and brackish waterbodies. The Bacillus thuringiensis (B.t.) strain is a soil bacterium that produces toxic proteins which affect targeted insect larvae. It is globally used as a natural insecticide. Based on previous studies and insecticide manufacturer Monterey's claims, D. magna exposed to B.t. bio-insecticide for 48 hours should not experience statistically significant behavioral changes as measured by somersaults and quadrant switches over two minutes and should not exhibit behavioral changes when transferred back to springwater for the 96-hour post-exposure. B.t. bio-insecticide should also not cause statistically significant change in dissolved oxygen (DO) levels. The behavior of 45 adult D. magna was analyzed using a LEICA EZ4 W stereoscope, with 38 D. magna remaining after the post-exposure period. As shown by the p-values of 0.00724 ( $p \leq 0.05$ ) and 0.0102 ( $p \leq 0.05$ ) when comparing somersaults and quadrant switches from springwater to solution exposure, the presence of bio-insecticide caused statistically significant behavioral change. However, after they were subsequently transferred to springwater post-exposure for 96 hours, the behavioral changes were resolved ( $p > 0.05$ ). In addition, at 24 and 48 hours, the DO levels of 50% dilution and solution dropped below the lowest observable effective DO concentration of 2 mg/L. The role of D. magna as a consumer and provider in freshwater ecosystems would be negatively impacted, as energy would be expended by abnormal swimming behavior. Additional research is needed to determine the extent that B.t. bio-insecticide affects aquatic micro-organisms at varying concentrations.

Fort Wayne

[Kinsey Presser](#)

Grade-4 Project Number-

Title: Crystals

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Fort Wayne

**Gracelyn Schafer**

Grade-4 Project Number-

Title: Magnet Battle

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Fort Wayne

**Colin Thompson**

Grade-7 Project Number-

Title: Does Temperature Affect the Rate of Butterfly Development.

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--The purpose of this project is to find out if temperature affects the development of a butterfly. For this project you need a Heat lamp, Caterpillars, Caterpillar cage, Butterfly Cage, Ruler, Caterpillar food, and Butterfly food. I will get three sets of caterpillars. Put one set in a garage and keep it at around sixty degrees fahrenheit. Put another set in a room around room temperature like 72 degrees fahrenheit. This was my control. Put another in a room under a heat lamp at around 85 degrees fahrenheit. Each day at around the same time measure them and see which one is developing the quickest. Write down how long they are and which state they are in like in a cocoon or butterflies. Keep measuring and seeing how fast they develop until all of them are butterflies. My results showed that when a caterpillar is put in warmer temperatures it will develop much more quickly than if it is put in colder temperatures. The data was analyzed and the conclusion was drawn that when the butterflies were put in warmer temperatures they will develop faster than those in the control group.

Fort Wayne

**Jason Zhang**

Grade-4 Project Number-

Title: Science of "Salt Growing"

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Fort Wayne

**Sam Ziegler**

Grade-3 Project Number-

Title: Which materials filter color out of water the best?

[View Project Poster/Presentation](#)

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Fort Wayne

**Langstyn Bowlby**

Grade-4 Project Number-

Title: Which Store Brand Towel is Stronger?

[View Project Poster/Presentation](#)

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**Asher Davis**

Grade-1 Project Number-

Title: On what surface will a toy car go the furthest?

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Fort Wayne

**Paxton Geary**

Grade-2 Project Number-

Title: Catapult Launcher

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**Evan Gemmer**

Grade-2 Project Number-

Title: Which Lego bridge is the strongest?

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[Overview](#)[HSEF \(State Science Fair\)](#)[Login](#)[Rules](#)**Asher Gotsch**

Grade-4 Project Number-

**Title: Nerf Dart Buster**[View Project Poster/Presentation](#)

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**Laura Hartmus**

Grade-11 Project Number- 373

**Title: Measuring the Speed of Light: Optimization of a Classic Experiment**[View Project Poster/Presentation](#)

--The classic physics experiment of using a microwave oven to measure the speed of light is very beneficial for learning about various topics concerning waves. It is a concept that sparks the imagination; however, the experiment is often presented in a manner that produces results that are not easily measurable. This can result in frustration upon the part of the person conducting the experiment, reducing interest in pursuing a result that is meaningful. Due to this, it is necessary to engineer a better experiment. The first stage of the process followed procedures found on the internet for the experiment utilizing the following materials: egg white, chocolate chips, marshmallows, and a chocolate bar. These materials were then evaluated against the engineering goals of measurable, accurate, and affordable. The second stage was to form a new process for the experiment which consisted of placing 10 chocolate bars in a single layer on a piece of sturdy cardboard which provided a large test area that increased the possibility of measurable results. The last stage was to test the process in three different microwaves of varying wattages at four different heights. Heights toward the middle of the microwave produced the most consistent measurable results with multiple hot spots completely within the test area, often with accuracy within less than +/-10% when compared to the accepted value of the speed of light. The twelve tests completed cost an average of \$5.08 each. As a result, this new process was found to provide measurable, accurate, and affordable results.

Roanoke

**Benjamin Joseph**

Grade-4 Project Number-

**Title: Will different materials and surfaces affect Wi-Fi signal strength**[View Project Poster/Presentation](#)

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**Lucas Till**

Grade-4 Project Number-

**Title: Solar Powered Charger**[View Project Poster/Presentation](#)

--My project is about discovering how solar power can be used to charge your toys. My hypothesis is I think solar panels can generate enough electricity to power a RC car. I think it may take a little longer than a wall outlet. Some variables that might affect my outcome are the age of the solar panels, the amount of sunlight and the angle at which the sun hits the solar panels. The materials I used were an RC car, solar lawn lamp light, multimeter, soldering kit, and USB cable. To do this experiment, I disassembled my lamps and de-soldered the solar panels of the lamps. I took measurement off of one solar panel and tested the positive and negative voltage amp output from the solar panels. I calculated different designs and soldered 8 panels together, configured as a 2x4 series and parallel. I hot glued the panels to a board, and sanded and painted them. Lastly, I soldered in a circuit board from one of the lamps and a USB cord to plug in things to charge. In conclusion, my hypothesis was correct, I was able to power my RC car with my solar panels.

Fort Wayne

**Ian Wall**

Grade-5 Project Number-

**Title: DIY Water Filter**[View Project Poster/Presentation](#)

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**Reese Wathen**

Grade-5 Project Number-

**Title: Radical Rotor**[View Project Poster/Presentation](#)

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**Braxton Davis**

Grade-5 Project Number-

**Title: Does the angle of the swing affect how far a baseball goes?**[View Project Poster/Presentation](#)

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Julia Carter

Grade-5 Project Number-

**Title: Which Disinfectant Works Best**[View Project Poster/Presentation](#)

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Fort Wayne

**Addison Phillips**

Grade-5 Project Number-

**Title: Bad News Bacteria**[View Project Poster/Presentation](#)

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**Ava Phillips**

Grade-2 Project Number-

**Title: Amazing Apples**[View Project Poster/Presentation](#)

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**Alyssa Tiffany**

Grade-1 Project Number-

**Title: Germs**[View Project Poster/Presentation](#)

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**Branson Birkey**

Grade-6 Project Number-

**Title: Satellite Simulation: Understanding Factors that Impact Velocity**[View Project Poster/Presentation](#)

--There are many unique uses for satellites which result in different design configurations and orbital properties. I want to gain a better understanding of how these affect the performance of satellites. In my project I am analyzing the effects of varying orbital properties of satellites and measuring their resulting velocity. Using the computer simulation software, Freeflyer, I tested how certain Keplerian elements such as Semi-Major Axis (altitude), orbit type, and eccentricity affect the satellite's velocity. I hypothesized that the satellite with the smallest Semi-Major Axis will have the highest velocity. I think a satellite that is closer to Earth must go faster to maintain its altitude. I think that the satellites will get slower the farther away they are orbiting the Earth. Regarding orbits, I think that either the sun-synchronous or the circular orbit will make the satellite have the highest velocity. Then I think that the Molniya orbit will have the third fastest orbit because the Geosynchronous orbit takes 23 hours and 56 minutes (a precise day) while the Molniya orbit only takes 12 hours to complete its orbit. Another prediction that I have is that the Molniya orbit will show the greatest velocity change throughout one orbit. Additionally, I think that the satellite with the lowest eccentricity will make the satellite have the highest velocity. The reason I think this is because, just like in all my other hypothesis, it is closer to Earth so it must go faster to maintain its altitude. After creating, coding, and running my various computer simulations it appears that the distance from Earth has the greatest impact on a satellite's velocity. My results appear to support my hypothesis that distance from and orbiting body has the greatest impact on velocity. However, my hypothesis on orbit types and eccentricity were incorrect. My original thinking was that the closest consistent distance of an orbit from the earth would generate the highest satellite velocity but based on my simulation's velocity was directly tied to distance. Therefore, as an orbit got closer to earth the velocity increased. A higher eccentricity resulted in a higher peak velocity but also have the greatest variation in velocity throughout its orbital period. Understanding this information is critical to ensure satellites maintain orbital velocity and function properly. This information helps companies plan missions. NASA even uses this kind of technology to send people to the Moon and eventually Mars.

FORT WAYNE

**Alexander Block**

Grade-6 Project Number-

**Title: The Effect of Mass on the Distance Traveled of a Projectile**[View Project Poster/Presentation](#)

--In order to identify if mass affected the flight of a catapulted object, I tested six different projectiles of various mass. There were three trials in which the distance traveled was measured. The lighter the mass of a projectile, the further distance it traveled.

Fort Wayne

**Alexander Dreibelbis**

Grade-5 Project Number-

**Title: Conductors of Sound**[View Project Poster/Presentation](#)

[Mylie Fulwider](#)

Grade-6 Project Number-

**Title: "Sound Kaleidoscope" The Physical Evidence of Sound Waves Traveling Through Different Solids**[View Project Poster/Presentation](#)

--We can't see sound, but we know sound is made up of vibrations. In mid-August my dad showed me a video of someone who put a thin metal sheet on top of a speaker and poured a small amount of salt on the metal sheet. Then the salt started to move around and made a geometrical pattern. After watching the video I decided I wanted to do this for my science fair project. My question was, will the same pattern be made with different materials at the same frequency. My hypothesis was that different instruments played at the same frequency make different sounds, so I think that different materials will make different geometrical patterns at the same frequency. To do this project you need to first cut 4 wooden dowels to be 15 in long. Next, nail the 4 x 15" dowels to the corners of a wooden platform. Place the platform over the speaker. Then place a cookie sheet on the platform. Pour about ½ cup of sugar on the cookie sheet. Plug a computer into the speaker as well as a D/A (digital to analog) converter. Send a signal through the computer at 120 Hz and use the D/A converter to turn up the volume. Watch closely as the sugar moves around, and take a picture. Repeat the process until you have tested all materials (flour, salt, oats, sand, fine dirt, and cornstarch). In the end the only material that made a full pattern was the flour it made a cool weaving pattern. The sugar started to make a pattern but the pattern was not completed. The salt and the oats spread out a lot. The sand and the dirt spread out a little, and the corn starch did not move at all.

Fort Wayne

**Andrew Lassus**

Grade-3 Project Number-

**Title: Jumping Coins**[View Project Poster/Presentation](#)

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Fort Wayne

**Hambleton Longardner**

Grade-5 Project Number-

**Title: Physics of Sledding**[View Project Poster/Presentation](#)

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Hoagland

**Caleb Neely**

Grade-5 Project Number-

**Title: Comparisons of Submarines**[View Project Poster/Presentation](#)

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**Simeon Perkins**

Grade-4 Project Number-

**Title: Using Lasers to Study how Light Moves Through Crystals**[View Project Poster/Presentation](#)

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Fort Wayne

**Jarrett Ragan**

Grade-0 Project Number-

**Title: Sink or Float**[View Project Poster/Presentation](#)

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**Lucas Swift**

Grade-7 Project Number-

**Title: Remarkable Rockets**[View Project Poster/Presentation](#)

--Rockets are designed to flow efficiently and smoothly through the air with as little drag as possible. The question that this experiment will answer is which type of nose cone (Ogival, Parabolic, Conical) will allow a rocket to fly the highest and farthest. Ogival cones perform better at higher speeds, Parabolic cones perform better at lower speeds, and Conical cones are not normally used in rockets. If three different nose cones are tested 10 times each with the same amount of water and compression and the height is measured in feet, and the speed is measured in mph, then the parabolic nose cone will go the highest and the fastest. Materials for this experiment: 3 3D printed nose cones (Ogival, Parabolic, Conical) 3 2-liter bottles, 1 altimeter, one launch stand, one bike pump, zip ties, and glue. First, the nose cones are glued to the bottles, then the altimeter is attached, then the bottles are filled with water, then they are put on the launch stand, then pressurized, then launched, then the data is recorded. The parabolic nose cone had the most consistent altitudes and the highest average speed. The Ogival nose cone had the highest average altitude, but the

Conical nose cone had the most consistent speeds. The Hypothesis was partially accepted. The Parabolic nose cone had the highest average speed, but not the highest average altitude. The Ogival nose cone had the Highest average altitude.

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**Courtney Westrick**

Grade-5 Project Number-

**Title: Gravity**

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**Gabby Colone**

Grade-4 Project Number-

**Title: What Type of Planting Mix Will the Seed Grow Fastest in?**

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**Sydney Inniger**

Grade-7 Project Number-

**Title: The Importance of Water to Plants**

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-- In this project, different water amounts were given to three groups of plants to find which water amount helped the plants grow. Recommended watering amounts for a lima bean are evenly moist. If an experiment is done, and it is measured by the leaf's width, the number of leaves, and the plant's overall height. The prediction made from research predicts 50 milliliters of water a week will grow a healthy plant. The materials needed to conduct this experiment are 18 plastic containers, water, a plant light, and bush lima beans seeds. After the seeds have sprouted and are at a height of 7 centimeters, split them equally into groups. The amounts of water each group will get 20 milliliters, 50 milliliters, and 70 milliliters of water per week. When measuring the groups of plants the plant watered 20ML had ups and downs but ended with the tallest overall height and largest leaf width though it declined from the start going from 7cm to 6½. The plant watered 70 ML stayed on the bottom of all the charts. The plant watered 50ML was on the top of the leaf amount chart. A conclusion has been made based on the data obtained from the project. The plant watered 20ML was on top of two charts and the plant watered 50ML only thrived in leaf amount gaining 16 leaves in the duration of the project. Over the experiment, the plant watered 50ML gained 16 leaves.

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**Caya Nelson**

Grade-6 Project Number-

**Title: The Effect of Different Light Wave Colors on Plant Growth**

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--In this experiment I wanted to figure out what light color is best for growing green bean plants in a greenhouse. I thought that the yellow light would be the best because that is a close color to the sun. I tested this by getting mini greenhouses and growing 24 plants in each section. Each section had a different color of light. I let them grow for about 1 1/2 weeks and then I measured the plants to see what color grew the most. The results showed that purple grew the tallest but clear had the most seeds germinate. My research showed that blue and red were important colors to the growth of plants.

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**Simon Sweigert**

Grade-7 Project Number-

**Title: Does Singing or Yelling affect plant growth?**

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-- My purpose for doing my experiments was to see if plants would grow faster if plants would grow faster if you sang to them or yelled at them. Nine plant cuttings and babies were bought in advance. There were three different species of plants. These included pothos cuttings (Epipremnum aureum), spider plant babies (Chlorophytum comosum), and velvet plant cuttings ( Gynura aurantiaca). These were all weighed in advance. There were three plates each marked with yelling, singing, or nothing, then, nine shot glasses were filled with water. Three shot glasses were placed on each plate. Then one plant of each species was placed inside of the shot glasses. Then the plates along with the plants were placed on a long windowsill. Each plate was interacted with according to the plate's name (singing, yelling, nothing) for a month. After the month was over, the plant's weight was measured again and recorded, Then you subtract the original weight from the new weight. The experimental group showed that plants that were sung to grew greatly exceeded the growth of plants that were yelled at or left alone (control).

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**Cambri Wilson**

Grade-1 Project Number-

**Title: Keeping Flowers Longer at Home**

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HSEF 2020  
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