Vancouver Island Regional Science Fair - 2022 Project list - by Category / Project

#	Project Title	Project type	Keywords	Gr.	Division	Category	Project Summary	Lang	First Name	Gender
1	Does the 5 Second Rule Really Work?	**Experiment**	occupational hygiene, scientific method, environment	5	Health Sciences	Elementary	My project tests if the 5 second rule really works. My hypothesis was that it would not work, and that if food was dropped on the ground that it would collect bacteria on it. For my experiment, I prepared 5 Petri dishes with bacterial agar in them. I then proceeded to test 5 different areas of my home, with a swab for 5 seconds, and then swabbed the Petri dishes. I swabbed one with a clean swab for the control. The results were very interesting!	en	Dakota	Female
2	What temperature do radishes prefer?	**Experiment**	agriculture / agrology, biology, scientific method, environmen	5	Life Sciences	Elementary	I wanted to know whether radish seeds would thrive in cold, room temperature or hot water. I planted 4 radish seeds per cup (in same amount of soil) and watered one with cold, another with room temp and another with hot and measured their growth over 11 days. I found that the radish seeds grew best with room temperature water.	en	Emily	Female
3	Rotten Veggies	**Experiment**	agriculture / agrology, sustainability, waste management	5	Earth and Environmental Science	Elementary	My project was testing how the humidity, temperature and vegetable type affect how long vegetables stay fresh. I started with 3 pieces each of three different vegetables (tomato, celery and cauliflower) on day 0. Each type of vegetable was placed in 3 different environments (counter, humid fridge drawer and dry fridge drawer). I observed the vegetables every 3 days from day 0- day 27 and documented findings in a log book and by taking photos. I then rated the freshness and compared the freshness of the three different vegetables in three different environments.	en	Nathan	Male
4	Rocktastic	**Experiment**	geoscience, scientific method, environment, pollution	5	Earth and Environmental Science	Elementary	I experimented with using various liquids and acids, including muriatic acid, to dissolve calcite and and minerals from rocks to expose gold and quartz.	en	Julie	Female
5	Launch N Fly	**Experiment**	mathematics, physics, science / technology innovation, engineering	5	Physical and Mathematical Sciences	Elementary	Big Question: Can a catapult assisted takeoff help an airplane fly farther and can it make the flight more accurate?	en	Levi	Male
6 Participation uncertain	Plant Robot	**Innovation**	agriculture / agrology, commercial potential / entrepreneurship, science / technology innovation	7	Biotechnology	Intermediate	My project is creating a robot that will be seeding plants, it will be planting them. This is so that farming is easier and more accessible around the world.	en	Apollin	Female
7	Chew On This	**Experiment**	scientific method, chemistry, environment	6	Biotechnology	Intermediate	To answer what type of bubblegum blows the biggest bubble, I blindly tested seven types of bubblegum controlling for mass and time chewed. We measured the average diameter of five bubbles blown per gum. My hypothesis was that the softest gum would make the biggest bubbles. I rated each gum's softness using a softness scale. Hubba Bubba was the softest gum and also made the biggest bubbles. I learned that chewing gum longer removes sugar which should create bigger bubbles. I tested this by chewing Hubba Bubba over different periods of time. My results partly supported this learning.	en	Tess	Female
8	Life Heat Mk.2: The Self-Heating Lifejacket	**Innovation**	biology, chemistry, ocean science, commercial potential / entrepreneurship, science / technology innovation	7	Health Sciences	Intermediate	Our STEAM innovation is a self-heating lifejacket developed to prevent hypothermia in workplaces and recreational settings. As avid ocean sailors, we were motivated to design a practical and effective solution to a real-world problem. Over the past year we conducted several experiments testing how calcium chloride creates an exothermic reaction (heat producing) when mixed with water in different conditions. We integrated several textile technologies and tested these combinations to inform and improve our innovation using the design cycle. Our final prototype is an ocean-tested and cost-effective solution to help prevent injury and death that has both commercial and human benefit.	en	Liam || Tuck	Male || Male
9	What colours do dogs see best?	**Experiment**	biology	7	Health Sciences	Intermediate	For my science fair project, I decided to test what colours do dogs see best. When it comes to dogs I have always wondered if they see colours one reason is that I love my dog and I love buying her toys but I want to know if she sees that colours. So I did it and tested it. I took felt clothed first I did blue and red. From those two colours, the dog saw blue and then I did yellow and brown and from those two colours, the dog saw yellow. So it was a success.	en	Anishka	Female
10	The Effects of Grooming Horses	**Experiment**	biology, scientific method	7	Life Sciences	Intermediate	I am interested in understanding if horses like to be groomed and whether it is something that comforts and relaxes them. My hypothesis is that grooming will have a positive effect. One of the ways I plan to test this hypothesis is to take their heart rate before and after grooming and see if the horses heart rate will decrease after grooming. I will also observe the horses and record physical traits, such as cocking their hooves, yawning, etc.	en	Nouria	Female
11	How does pH affect common household cleaners?	**Experiment**	biology, chemistry, environment	7	Life Sciences	Intermediate	Testing the pH level of common household cleaners, the pH level of combined cleaners (an acidic and a basic cleaner), and seeing how effective they are at cleaning a greasy surface.	en	Paige	Female
12	How Humans See Colour versus How Dogs See Colour	**Study**	biology, scientific method	7	Life Sciences	Intermediate	I want to discover how vision works and how it is different in humans and other Animals.	en	Riyaan || Christine	Male || Female
13	Can You Break Down Plastic At Home	**Experiment**	biology, scientific method, environment, pollution, waste management	7	Earth and Environmental Science	Intermediate	We are damaging the planet with the amount of plastic waste we have produced. Plastic is a problem because it is not biodegradable and does not rot like food. Plastic gets thrown into rivers and oceans oceans; it is put into landfills and the toxins go into the soils. My project will experiment using meal worms to see if we can break down plastic naturally at home as a alternate way to recycle it.	en	Jaeden	Male
14	Pop to power the planet	**Experiment**	chemistry, environment, sustainability, commercial potential / entrepreneurship, clean energy and technology	7	Earth and Environmental Science	Intermediate	The power that is created by pop reacting with mentos can be used to power the planet....one chemical reactions at a time!!	en	Zan	Male
15	What are effective natural textile dyes?	**Experiment**	agriculture / agrology, environment, sustainability	7	Earth and Environmental Science	Intermediate	For my science fair project I will be testing 3 different types of natural dyes made from avocado pits and skins, onion skins and blackberries. I found recipes for each dye and boiled the substances. I had 3 pots for each dye, adding up to 9 total. I then let the dyes sit for 24 hours before taking out the substances and adding my fabric to sit in the dye baths for another 24 hours. After that I will air dry the fabric and wash it to see how much the colour has changed, determaning how good the dye is.	en	Sophie	Female

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16	How Environmental Variables Affect Mushroom Growth	**Experiment**	biology, environment	7	Earth and Environmental Science	Intermediate	Three mushroom growth kits where purchased and put in three different scenarios. Each kit was given different humidity, temperature, light, and water conditions. The purpose of the project was to see in which of these conditions mushrooms grew better.	en	Rafaela	Female
17	Decomposing Food	**Experiment**	agriculture / agrology, biology, environment, sustainability	7	Earth and Environmental Science	Intermediate	Comparing how long it takes for organic and non-organic fruits and vegetables to decompose.	en	June || Mai-Ly	Female || Female
18	How can oil spills be cleaned up from ocean catastrophes more efficiently?	**Innovation**	scientific method, environment reclamation / rehabilitation, pollution, sustainability, science / technology innovation	7	Earth and Environmental Science	Intermediate	I want to invent something to clean up oil spills more efficiently.	en	Taylor	Female
19	Automatic Dog Feeder Machine	**Innovation**	agriculture / agrology, physics, psychology, chemistry, environment, science / technology innovation, engineering || mathematics, physics, psychology, commercial potential / entrepreneurship, science / technology innovation	6	Engineering and Computer Sciences	Intermediate	In this project we are creating a dog feeder machine from cardboard and wood and training our dog to use it.	en	Felicia || Elsa	Female || Female
20	Light at Night	**Innovation**	electricity, commercial potential / entrepreneurship, science / technology innovation, clean energy and technology, engineering	7	Engineering and Computer Sciences	Intermediate	My community has long nights in the fall and winter months. During these times, bus stops are very dark and unwelcoming. My sister felt that people would be more comfortable using buses if they felt safer at well-lit bus stops at night. So I decided to create a bus stop light that used natural resources, could be easily implemented, and did not have to depend on expensive infrastructure. I first harnessed solar heat using a solar vacuum tube. This heat was used to generate electricity using a thermoelectric generator. The electricity was then used to charge an LED light.	en	Beata	Female
21	Building a Stellar Engine: Rationale and Challenges	**Study**	astronomy, mathematics, physics, science / technology innovation, engineering	6	Physical and Mathematical Sciences	Intermediate	Our solar system may be threatened by a supernova, necessitating its repositioning in space. A stellar engine is a massive device envisioned to move our solar system to a position of safety. Two types of stellar engines, Shkadov and Caplan Thrusters, are explored. The merits and detriments of these technologies are considered.	en	Claire	Female
22	Dark Matter	**Study**	astronomy, physics, scientific method	6	Physical and Mathematical Sciences	Intermediate	I am making a research page on dark matter	en	Alexis	Male
23	Soundproofing for my Garage Band: Buffering Low and High Frequency Sound Waves	**Experiment**	physics, scientific method, science / technology innovation	6	Physical and Mathematical Sciences	Intermediate	My project tests which materials soundproof a room best for a garage band. I tested three different materials (carpet, foam mats and wood) to see which one buffered the best against both low frequency (bass guitar) and high frequency (electric guitar) sound - two instruments that might be in a garage band. I played each instrument from inside a closet with a door, using the materials to block over the doorway and measuring the decibels made each time with a decibel-measuring app on a mobile phone. Results that are described in my report show foam mats worked best overall.	en	Reagan	Female
24	Fast food fries	**Experiment**		6	Physical and Mathematical Sciences	Intermediate	To compare the cost per weight of French fries bought from different fast food establishments to determine the most cost effective.	en	Riley	Female
25	Primary School	**Study**	physics, scientific method, computer science	6	Physical and Mathematical Sciences	Intermediate	I want to discover why computers use red green and blue as the primary colours but paints use red yellow and green and printers use cyan magenta yellow and key (black) and how they are different .	en	Heather	Female
26	Magnus Effect	**Experiment**	physics	7	Physical and Mathematical Sciences	Intermediate	The Magnus Effect is the sideways force on a spinning object as it travels through the air. It is what curves the trajectory of a soccer ball or baseball. I built a special device to see if there is a windspeed at which the Magnus effect is the greatest, given how fast the object is spinning.	en	Laurian	Male
27	Cool Lava Lamp	**Experiment**	scientific method, chemistry	7	Physical and Mathematical Sciences	Intermediate	I will investigate why water and oil do not mix. I will learn about the density differences between different liquids.	en	Russell	Male
28	Black Holes	**Innovation**	astronomy, physics, scientific method, science / technology innovation, computer science	7	Physical and Mathematical Sciences	Intermediate	My project is about how black holes work, the types of black holes, and how they are formed.	en	April	Female
29	Algae Power! Can marine algae be used to produce electricity in a photovoltaic cell?	**Experiment**		9	Biotechnology	Junior	My project involved extracting pigment from algae and using that to conduct electricity	en	Phoebe	Female
30	Warped Words and the Stroop Effect	**Experiment**	scientific method, psychology	8	Health Sciences	Junior	Our project is about the Stroop Effect. The Stroop effect was discovered in 1935 by a Physiologist named John Ridley. It is mainly known for how the colors, and shapes of words affect the process of the brain. We hope to figure out a way to completely avoid or limit the Stroop effect. To figure this out, we tested human participants. We had sheets with words on it that were colored differently, had different formats (some were circular), and some with different backgrounds. The participants were timed how long it took them to read the words on the sheet.	en	Yingfan || Abby	Female || Female
31	Which type of mask makes the best water filter	**Experiment**	scientific method	8	Health Sciences	Junior		en	Lucy	Female

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32	Screen Time	**Innovation**	occupational hygiene, commercial potential / entrepreneurship, science / technology innovation	8	Health Sciences	Junior	The COVID Delta variant is aerosolized when a contagious person coughs, sneezes, sings, laughs or even talks. For science fair this year I created an infection-control innovation to help people feel safe while socializing and eating in indoor public places during the pandemic as restrictions are lifting. Screen Time is a compatible and portable transparent screen. The idea is that it will fit in a person's bag so they can take it out and unfold it when they are not able to wear their masks and want separation from people nearby.	en	Lois Delaney	Female
33	ADHD in classrooms	**Experiment**	genetics and/or genomics, social sciences, psychology	9	Health Sciences	Junior	In this project, I tested students with ADHD in classroom environments to see how much of an effect it had. This was tested by changing the room environment from a quiet to a loud classroom during a math test. This was important because students with ADHD can be sensitive to noise and distractions. I found that there was a 4% difference between the tests, where distractions led to a lower score. Changing the volume of the noise did not seem to make a difference (any sound was detrimental).	en	Erin	Female
34	Can we measure agitation and aggression in patients with severe Autism Spectrum Disorder by measurin	**Innovation**	Social Sciences, Psychology, Computer Science, Science / Technology Innovation	9	Health Sciences	Junior	My project is about how we can measure agitation and aggression in patients using an app that can track three main variables: Pulse Rate, Body Temperature, and Tremors or Shakiness. I made the basic framework of the app and the interface but still need to put the app on the App Store and Google Play store.	en	Ibrahim	Male
35	The Leaning Tower of Arugula	**Innovation**	agriculture / agrology, environment, pollution, sustainability, commercial potential / entrepreneurship	8	Earth and Environmental Science	Junior	What if there was a better way to grow food more efficiently, and sustainably, all from the comforts of your home? That was exactly our goal. We created a space-saving four-level hydroponic tower that grows a variety of vegetables using a minimal amount of space. A water pump also circulates nutrients throughout the tower and allows the microgreens to thrive. Our tower is offering a solution to easily growing nutritious food at home to solve numerous problems caused by the products found in stores such as unnecessary packing, usage of dangerous fertilizers, and carbon emissions from transporting the food.	en	Cindy	Female || Female
36	Health of Garry Oak Trees - Vancouver Island's Special Trees	**Study**	biology, environment, environment reclamation / rehabilitation, sustainability	8	Earth and Environmental Science	Junior	I researched risks to the health of Garry Oak trees, including English Ivy infestation, winter moths, jumping gall wasps, and climate change. Due to the time of year, the risk that I was able to study was English Ivy infestation. I went to Uplands Park in Oak Bay and observed the larger Garry Oak trees, looking for English Ivy growing up their trunks. I measured the trunk circumference of the trees that I studied, in order to estimate the age of the trees. I recorded the amount of ivy growing on the trunks, and the height to which it grew.	en	Liam	Male
37	Coagulant Conundrum: Comparing the Efficacy of Natural and Chemical Coagulants	**Experiment**		9	Earth and Environmental Science	Junior	For my project, I wanted to determine whether natural or chemical coagulants were more effective at coagulating microplastics. For my chemical coagulant, I used aluminum sulfate in powder form. For my natural coagulant, I used the seeds of a plant called Moringa Oleifera, which I then turned into a paste. I conducted multiple experiments which consisted of me preparing suspensions containing water, microplastic samples, and various quantities of coagulant. Once shaken thoroughly I took numerous samples from each suspension to measure each coagulants' effectiveness. I also tested different pH levels of water as well as different plastic types.	en	Katharine	Female
38	Climate Change and Plant Growth	**Experiment**	environment, sustainability	9	Earth and Environmental Science	Junior	I created four environments to match projected climates in Victoria over the next couple of years with the projected climate change. I then placed four kinds of plants in each of the areas and measured them to see their growth over the period of a month. I also took qualitative notes. This helped me answer my question, "What effects will climate change have on the growth of plants, particularly common garden plants?"	en	Zoë	Female
39	Can Slime Mold Adapt and Communicate?	**Experiment**	biology	9	Earth and Environmental Science	Junior	The experiment is designed to test if their learning (slime mold introduced to the deterrent), memory (slime mold that have previously been introduced to the deterrent), or communication (slime mold that have been previously introduced to the deterrent combined with slime mold that has never been introduced to the deterrent before) is the most successful at awarding the slime molds with food in the shortest time. The reason for the trials of slime mold who have to cross nothing is to prove the effect of salt on the other trials and see the extent of its abilities.	en	Evan	Male
40	Generating Electricity from the Waste Heat Created in Composting	**Innovation**	agriculture / agrology, electricity, sustainability, science / technology innovation, clean energy and technology	9	Engineering and Computer Sciences	Junior	I created an innovation that used the Seebeck Effect to turn the by-product of heat into electricity. My purpose was to create a new form of green energy that could be implemented in large-scale operations where energy is lost as heat. I used water to transfer the heat from a compost pile to my device which included a thermoelectric generator that used the Seebeck Effect to create electricity. I was able to prove my theoretical design correct with the wattage created due to the temperature differential of my pile and the outdoors over the course of 35 days.	en	Sophie	Female
41	Using neural network to classify garbages	**Experiment**	waste management, computer science	9	Engineering and Computer Sciences	Junior	Using the models in sklearn machine learning dataset to classify garbages and observe the accuracy change when changing the number of neural layers and the number of hidden layers.	en	Junming	Male
42	Measuring distance through bluetooth EMR	**Innovation**	commercial potential / entrepreneurship, computer science	9	Engineering and Computer Sciences	Junior	I designed a product using a microprocessor and bluetooth speaker which can measure the distance between the patient and their walker using EMR in the form of Bluetooth (radio waves). This can prevent patients with memory loss from forgetting their walker and injuring themselves. This system can then warn the patent when they exceed a settable radius of their walker, preventing a fall from ever happening.	en	Daniel	Male
43	Dissolving Oils	**Experiment**	chemistry	8	Physical and Mathematical Sciences	Junior	In my experiment, I will be testing how time affects the difficulty of removing oil paints, off of different materials. Using different solvents. I will be using cotton and polyester for the two different fabrics. There will be three trays, both including cotton and polyester, with two different removing solvents. For the polyester and cotton. The first tray's oil paints will be removed after 10 minutes, the second tray's oil paints will be removed after 3 hours, and the third tray's oil paints will be removed after 3 days.	en	Preeya	Female

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44	What is the best number to choose as the third player in a guessing game of 1-100?	**Study**	mathematics	8	Physical and Mathematical Sciences	Junior	My science fair project involves probability, badly made bar lines, a few friends and a pumpkin that is not related much. In the project, I created a hypothesis that didn't have many obstacles even so, it had many options and took a little time to find out which was option was the best. After playing a few games with my friends, I discovered through calculation that instead of assuming a set position in a game with three players, the third player (or more if possible) should go directly below or above a chosen victim.	en	Eric	Male
45	Breakup is a Drag	**Study**	astronomy, mathematics, physics, environment, pollution,	9	Physical and Mathematical Sciences	Junior	Orbiting debris from discarded satellites is hazardous for active space infrastructure; a single piece of orbiting debris could destroy a satellite. With more satellites planned for launch, my project focuses on a way to minimize the amount of unnecessary debris in orbit. The goal of my project is to find an altitude where air resistance would be sufficient to take down debris, but allow satellites to remain in orbit for prolonged periods. Given the impracticality of testing satellite orbits experimentally, I approached this as a physics study to identify an altitude for satellite safety and maintenance, while minimizing debris.	en	Nathan	Male
46	The Toilet Paper Epidemic: Exploring the Effectiveness of Anal Cleansing Methods	**Study**	biology, scientific method, sustainability	12	Health Sciences	Senior	Immigrants from East to West experience significant lifestyle changes. A critically overlooked change is that of toilet hygiene practices from East to West, these being water-based to dry-wipe respectively. Impacts of such changes were experimented in my 2018-study where toilet paper indicated little to no benefits on hygiene and the environment. This extended study aims to solidify the findings of the previous study by increasing experimental sample size accompanied with an extensive literature review. Due to COVID-19, the experiment was not approved. Work presented here attempts to shed new light on the 2018-findings based on a stronger literature review.	en	Wishva	Female
47	SODIS Water Bottle Holder	**Innovation**	biology, physics, sustainability, science / technology innovation	10	Life Sciences	Senior	This project is a water bottle holder that uses and reflects UV-rays from the sun as a method to kill bacteria in water without having to rely on electricity. While this process, known as solar disinfection, is commonly used, this project will use tinfoil, strategically placed, to reflect the light back into the water after passing through it once to potentially make kill more bacteria and make the normal solar disinfection more efficient and effective.	en	Kevin	Male
48	Determining the Environmental Effects of Cigarette Butts and Vape Cartridges on Lake Water Samples	**Experiment**		11	Earth and Environmental Science	Senior	Many studies have quantified the effects of cigarettes and vapes on the human body; however, cigarettes environmental effects have only been briefly explored and the impact of vapes remains unstudied. This study aims to evaluate the impact of vaping juice and cigarette butts on water and the potential hazards imposed on ecosystems. E-cigarette juices and cigarette butts were introduced to different lake-water samples. Elemental analysis was then conducted using mass spectrometry. Contaminated samples contained higher concentrations of several known carcinogens and toxic heavy metals compared to controls. Concerns of bioaccumulation need to be further studied to fully understand environmental impacts.	en	Sarah	Female
49	Orange Peels as Biosorbents in the Treatment of Heavy Metal Wastewater	**Experiment**	chemistry, environment, pollution, waste management, science / technology innovation	11	Earth and Environmental Science	Senior	Biosorption is a method of wastewater treatment that involves the passive uptake of pollutants by biomass; this can be a highly efficient and cost-effective technique for removing heavy metals from industrial wastewater. Citrus fruit peels are produced in large quantities in the fruit juice industry, and have been identified as promising biosorbents as they possess high metal binding capacities, making them effective sorbents of aqueous metals. I will be examining the effect of different pH environments on the uptake of Cu(ii) ions by orange peels to determine the optimal environment for water treatment through biosorption using agricultural fruit waste.	en	Eunjo	Female
50	Aerodynamic Drag Reduction with Vortex Generators	**Innovation**	physics, pollution, sustainability, science / technology innovation, engineering, transports and transportation	10	Engineering and Computer Sciences	Senior	I tested the effectiveness of Vortex Generators on Airfoils in a homemade wind tunnel. The airspeed is constant but the angle of attack is varied. I designed 3 airfoils. Two with vortex generators and one without for baseline testing.	en	Isaac	Male
51	SwimGuard: A Drowning Detection and Alert System	**Innovation**		10	Engineering and Computer Sciences	Senior	I developed a system for detecting drowning and alerting authorities. The first component is a wearable device which detects drowning using pulse oximetry or a timed moisture sensor. If drowning is detected, the device sends out an ultrasonic signal via a piezoelectric transducer. An intermediary device at the surface of the water receives this signal, sounds an alarm, and alerts authorities, lifesavers, and/or lifeguards. Because of the difficulties of distinguishing normal activity from drowning in all contexts, this device could help lifeguards save lives in both pool and open water contexts(such as beaches and lakes).	en	Sung Bin (Raphael)	Male
52	A Hidden Markov Model Based Computer Platform for Evaluating Behavior Within a Zero-Sum Game	**Innovation**	social sciences, psychology, computer science	11	Health Sciences	Senior	Human behavior can be unpredictable and hard to understand. The aim of my project is to analyze and recognize human behavior patterns from a simultaneous, zero-sum game. In my project we used Rock, Paper, Scissors. Players play games with a computer platform and from them, the platform is able to build a personalized behavior pattern mathematical profile for each player. This is done through the use of a Hidden Markov Model which is a statistical model that analyzes hidden information from sequential observations. From the profile, we are able to understand the behavior of the player.	en	Geoff	Male