



Frontenac, Lennox & Addington Science Fair

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Prefair Report

1401 **Hussain Chaudhry**

Div/Cat **Human Health / Primary**

Title: **Sports Drinks Vs Custom Sugar Free Electrolyte Drink (Measuring Electrolytes)**

Summary: Ever wonder why when we are severely dehydrated as Diabetics or when we are dealing with high blood sugar levels? This is because we have a lack of electrolytes. An electrolyte is a substance that separates into ions in a solution and obtains the size to conduct electricity. Usually, we are losing this substance from our bodies when we start to sweat. Sodium, potassium, chloride, calcium, and phosphate are all examples of electrolytes.

Therefore, the idea behind doing this test is to raise awareness about the use of electrolyte drinks for people with Type 1 Diabetes. The Sports drinks, juice and the custom sugar-free electrolyte drink will be tested for the number of electrolytes. This analysis will determine the better use of electrolyte drinks for people with Type 1 Diabetes.

This experiment involves an electrolyte measuring kit, (it includes a 9-volt battery, a copper wire, a battery clip, a digital multimeter, 3 alligator clips, and an Ohm resistor) sports drinks, juices, and a custom-made drink. After testing all of the drinks, we will record what we have found.

My hypothesis is that Gatorade is the one that will have the most number of electrolytes because this drink really powers you up. The drink with the least amount of electrolytes will probably be the water because it's not a drink that would power you up but therefore is a liquid with the least amount of salts.



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Prefair Report

1402 **Alyssa Whalen**

Div/Cat **Human Health / Primary**

Title: **Is Gluten Really The Culprit?**

Summary: My project is about gluten allergies and sensitivities and whether people are allergic to the actual wheat or gluten or the pesticides used on the wheat. Farmers use pesticides to keep wheat fresh so that they can keep it for longer. I have read many articles online that say that people who have celiac disease or even a gluten sensitivity may not be allergic to what they were told that they are allergic to. For this project I will simply be taking information from as many websites as I can find and explain the info I get in a much simpler way. I will not need electricity for this project and I will not be testing on humans or animals. I myself have a gluten sensitivity, and I am very interested in the fact that I might not actually have a sensitivity to gluten and maybe be able to eat gluten in the future. A lot of websites, articles, and books say that gluten causes anxiety, and I am intrigued to find out whether that is true or not, based on the websites. The pesticides can not be toxic, legally, but there's nothing that says that it has to be allergy free. I have one request of where I am placed in the gymnasium. I would love to be beside my best friend Aeliya Haider and her partner Trina Tran.



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Prefair Report

1403 **Scotia Zuber**

Div/Cat **Human Health / Primary**

Title: **Public Health Education Goes Viral!**

Summary: The purpose of my project was to determine the affect of public education on the removal of bacteria from hands when students are instructed on the proper method of hand washing. My hypothesis was that, when a group of grade 4 students are properly instructed on the method of how to wash their hands, my prediction was that they will have less bacteria on their hands than when they are asked to wash their hands without proper instruction.

On day one on my experiment, a group of grade 4 students were asked to provide an unwashed hand sample by placing a thumb print in a petri dish filled with nutrient agar. Agar is a material that will help the bacteria to grow. They were then asked to wash their hands the way they normally do and press their thumb in a different petri dish filled with nutrient agar. On the second day, they were asked to again provide an unwashed hand sample by placing a thumbprint in a petri dish fill with nutrient agar. The grade 4 class was given a lesson on how to properly wash their hands and then watched a video on how to properly wash their hands using soap and water. After they watched the video, the grade 4 class then washed their hands again following a step by step diagram that had the information from the video. They then pressed their thumb into a different petri dish filled with nutrient agar. I observed the bacteria growth on the samples taken before the instructional lesson and compared them to the bacteria growth on the samples taken after the instructions lesson. I used a 250X magnification microscope to look at the bacteria and photographed the bacteria for my comparison.



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Prefair Report

1404 **Aeliya Haider, Trina Tran**

Div/Cat **Human Health / Primary**

Title: **Just Keep Breathin'**

Summary: Purpose:
The purpose of the project is to demonstrate how respiratory muscles help in creating pressure using differences in the chest cavity which is responsible for movement of air in and out of the lungs.

Hypothesis:
By creating a model of the lungs, with the help of bottles, balloons and straws, we can create the same mechanism of breathing to show the relation of pressure and volume!

Method:
We will create a lung model by using a bottle (as a chest cavity) straws (windpipe) balloons for lungs and an orange balloon for the diaphragm. We will cut the bottle in half and make a hole in the lid, big enough for the straw to pass through it. We will combine three straws to mimic the wind pipe and attach two red balloons at the two ends, we will place this inside the bottle and cover the open side with the orange balloon to create the diaphragm.

Conclusion: By moving the orange balloon (diaphragm) downwards we can create negative pressure in the bottle, which we will fill the red balloon with air (inhalation) when we put the orange balloon in resting position the air moves out of the balloons (exhalation) our simple model will demonstrate the relationship between the respiratory muscles, the lungs and the wind pipe, involved in breathing as well as pressure and volume.



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1405 **Karthik Appireddy**

Div/Cat **Human Health / Primary**

Title: **Effects of Smoking on Lungs**

Summary: My science experiment is the effects of smoking on the lungs. the purpose of my project is to demonstrate the effects of smoking on the human lung. I chose this experiment because smoking is a big problem worldwide because it is killing 6 million people worldwide and I am really interested in the topic of medicine and the lungs. My hypothesis is that smoking effects the lungs in a bad way because the soot deposits in the lungs. my experiment includes a sponge, a camera, a elastic band, a newspaper, a lighter, and a glass jar. I measured the changes in a sponge i was looking for if it got harder and darker. my procedure was to attach the sponge to the underside of the lid of the jar with a elastic band and light a piece newspaper on fire and put it in the jar after the fire turns into smoke close the jar and seal it keep the jar sealed for 7 minutes and after 7 minutes open the jar and take a picture of the sponge repeat this process 14 times for a week with the same sponge and after each day cut a small piece out of the sponge. my results were the sponge got harder and darker after each day and round. my conclusion is that smoking effects the lung in a bad way therefore confirming my hypothesis correct my sources of error was that there was no formal type of measurement for the soot deposited in the lung.



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Prefair Report

1406 **Zoe D'Elia**

Div/Cat **Human Health / Primary**

Title: **Baking the Milky Way**

Summary: Many people are lactose intolerant, so they cannot have regular whole milk. Others may be allergic to dairy. Some are vegans, and regular milk is cow's milk. Many people prefer skim milk to whole milk, because it is fat free, making it a healthier alternative. A lot of the time you need whole milk in baking. In my project, I will be testing the effects of different milk substitutes, such as skim milk, lactose free milk, rice milk, and soy milk on cakes. I will be baking a cake for each substitute, including the control, which is whole milk. I will be using the same recipe for each cake to control the variables. I will send out a letter of information and a form, listing the ingredients and letting people know that we do not have a nut free home. Volunteers will have to sign the form and ask their parents/guardians to sign in order to participate. The volunteers will taste and rate the cakes anonymously. I will be using five different categories in the survey: fluffy, moist, spongy, rich, and delicious. I hope that this project will show that people who can not have regular milk can still have a cake that is delicious.



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1407 **Ayden Luhtala**

Div/Cat **Human Health / Primary**

Title: **Remember the Smell**

Summary: "For my science fair project I wanted to explore how a scent and the nose can recall a memory. I researched how the nose and memory work. My experiment is going to determine if people can remember a person just by using their nose and the memory of the person's scent. There will be 5 people wearing a plain white T-shirt for one day. At the end of the day they will hand the T-shirts in. The T-shirts will be the independent variable in my experiment. Each participant will smell the T-shirts and record who the scent reminds them of. In between smelling the shirts each participant will smell a cup of coffee beans. The coffee is used to clear the nose of each scent. This will be repeated for all the T-shirt scents. After they have smelt and recorded all five scents, I will analyze their data to determine if the scent of the shirts triggered a memory.

Hypothesis

I think that people will be able to use their memory to tell what the scent is. I think that 2/3 of the people will be able to identify a person by the scent of the shirt because the scent will trigger a memory of that person.

"



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Prefair Report

1408 **Katie Sealy**

Div/Cat **Human Health / Primary**

Title: **Holy Smokes!**

Summary: I feel very strongly against smoking. Smoking (and vaping) is a disgusting, extremely unhealthy, gross habit. FACT: Even though kids my age generally know about the bad effects of smoking, it's surprising to know that many studies show that kids my age (Ages 11-12, Grades 5-6) may consider or might try smoking or even vaping. FACT: Studies also show that kids in this age group can be highly influenced by media and advertising, even more so than teens and adults. FACT: Health Canada tells us that people typically begin smoking during their teenage years, and if they do, they are more likely to continue smoking as adults. FACT: The vaping industry in Canada is growing quickly and, recognizing the attraction of e-cigarettes and flavoured smoking products to kids, Health Canada is specifically working to ban and restrict advertising and sales of vaping. But, is any of this getting through to us kids? The purpose of my project is to review tween's (Ages 11-12, Grades 5-6) knowledge and perceptions about smoking and vaping. Using my class as a small sample of kids in the tween age category, I will question their understanding and knowledge of the facts about smoking and vaping and question their awareness of and exposure to advertising and marketing relating to smoking and vaping. When we understand what tweens know about smoking and vaping, we can identify better ways to educate and inform children and parents on smoking and vaping and how we can better spread the message that all forms of smoking are bad. If we can help children make healthy, informed choices when they're younger, and work to make sure that tobacco and vaping companies can't advertise or target kids for their products, we can hopefully see smoking and vaping decrease (or STOP) in children.



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Prefair Report

1409 **Grace Rooney**

Div/Cat **Human Health / Primary**

Title: **Classical Music Rocks!**

Summary: Hello my name is Grace Rooney and for my science fair I tested to see what type of music lets you concentrate better while doing simple addition questions. I tested students that ranged from grade 3-8. The genres of music I played were heavy metal rock, classical and I tested silence as well. Music is really enjoyable to listen to and it uses many parts of our brain including the prefrontal cortex which is right in front of your brain where your forehead is. How all of these different areas of the brain work and how different brain jobs such as attention and listening to music interact with each other are really cool to understand.

My hypothesis was that classical music would let you concentrate the best while doing math questions. And I found out that my hypothesis was correct. I tested 19 students ranging from grade 3-8. The difference in the number of basic addition questions answered correctly in 2 minutes by each student showed that when compared to silence, classical music allowed students to complete an average of 1.26 more questions in the 2 minute time period. When exposed to heavy metal rock compared to silence students completed 12.05 less questions. Comparing classical music versus heavy metal rock directly, students completed 13.31 more questions when listening to classical music in the 2 minute time period.

To conclude I found that students did best while listening to classical music than while listening to heavy metal rock.



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Prefair Report

1410 **Priya Jugoon**

Div/Cat **Human Health / Primary**

Title: **Do you know there is hidden sugar in your food?**

Summary: Pre Fair report

Question -

Do you know that there are hidden sugars in your food?

For my science fair project, I am studying the general public's perception of hidden sugars. Hidden sugars are sugars that are disguised in your food. Common name of hidden sugar in your foods are agave, malt syrup, fructose and lactose. I created a survey for people aged 7 - 60 years old to see how much people really know about hidden sugars. The survey asked participants to select food items that do or do not have hidden sugars. I also asked participants if they could identify words that companies use to label hidden sugar on a Nutrition Fact sheet. After I have collected the surveys I analyzed the data to see if people know that there are hidden sugars in their food.

Hypothesis -

I hypothesize that 30% of people will know about hidden sugars and that 70 % of people will not know that pasta sauce, granola, and energy drinks have hidden sugars. I hypothesize that 20 % of people will not know that (sugar words) are other words companies use for sugar. I hypothesize that 60% of older people will know about hidden sugar because they are more cautious of what they eat and I think 40% of younger people will not know.

Pasta sauce	Boys - 10%	Girls - 20%
Energy drinks	B - 15%	G - 15%
Granola bars	B - 20%	G - 10%
Salad dressing	B - 5%	G - 15%
Yogurt	B - 10%	G - 5%
Cereal	B - 10%	G - 15%
Juice	B - 5%	G - 15%
Glucose	B - 10%	G - 20%
Fructose	B - 10%	G - 5%



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Karo	B - 15%	G - 10%
Agave	B - 20%	G - 5%

Sugar that is hidden B - 25% G - 15%

Sugar that has a different name so you don't know its sugar B - 5% G - 5%

Sugar that is dissolved in water B - 20% G - 10%

Fruits B - 25% G - 30%

Vegetables B - 5% G - 10%

Apple juice B - 15% G - 20%

Popcorn B - 20% G - 15%

Candy B - 15% G - 5%

Chips B - 10% G - 15%

Method -

1. Research hidden sugars.
2. Make survey questions.
3. Make survey.
4. Give survey to classmates on Jan 20th 2019.
5. Take back survey.
6. Analyze the data.



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Prefair Report

1411 **Zoe O'Brien, Lily Saunders**

Div/Cat **Human Health / Primary**

Title: **Does chewing gum improve concentration?**

Summary: We think this will help schools improve their thinking and hopefully, for the schools that do not allow students to chew gum, they will allow it because if our hypothesis is right this could improve kids test and school marks. We think kids with adhd have trouble during test because they have nothing to do but if teachers allow them, along with the rest of the students, chew gum then they will have an easier time doing tests. Our project is about giving students all the tools they need to have an easier time in school. I (Zoe) know personally I feel more confident and feel like schools easier when I'm chewing gum for me it takes the pressure off. Gum helps relieve stress which is why it is also good for studying. Overall we think kids should be able and allowed to chew gum during school, we also think that parents should put in the money for their kids to have a good education and less stress for their kids. Thank you so much for hearing us out we hope you'll take this project in consideration for a prize, thank you again... bu Bye (; (:< (;<



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Prefair Report

1412 **Agneya Pradhan**

Div/Cat **Human Health / Primary**

Title: **Micro Expressions**

Summary: My experiment is basically about micro-expressions and if age or gender affects how you can read micro-expressions. I tested people by showing them a video which shows all the micro-expressions. Then I showed them the list of all the micro-expressions: contempt, anger, happiness, sadness, fear, surprise and disgust. As my hypothesis I think that older people that are females will be better at reading expressions. My purpose is to bring awareness of micro expressions and make people understand how read social cues. It helps in deception detection. My independent variables are the videos that are shown, my dependent variables are the results of the participants and my control variable is the time the micro expression shown lasts for. In the end females did better than males with an average of 6.2 and males got an average of 5.9. The people who's ages were from fifty and over got an average of 6.4, the people who's ages were fifteen and under did the best with 7 as their average, and the people in between did the poorest with an average of 5.7. I noticed that people who took the test for a second time did significantly better than the first time. Even though females did better than males the highest score of 9 was achieved by two male participants, and the lowest score of 0 was by female. As a source of error, one of my participants saw other people taking the test.



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Prefair Report

1413 **Nika Levin**

Div/Cat **Human Health / Primary**

Title: **Are you being framed?**

Summary: The purpose of my project was to find out if kids' decisions could be influenced by a framing bias. Framing bias is a type of a cognitive bias that occurs when individuals make a decision based on the way information is presented to them. Cognitive biases can help our brain to make a mental shortcut to reach a solution a lot faster than it would be otherwise. Though these mental shortcuts could be quite accurate, they can also cause errors in our decisions. In framing bias information could be represented through a positive or a negative lens, which might affect the decision people make. For example, people have a tendency to avoid danger. Negative frames tend to make people a bit frightened of their surroundings. For most people, a surgery with 90% survival rate sounds better than surgery with 10% mortality rate, although it's the same information but it is presented through a positive and negative frame respectively. It was shown that adults generally fall quite easy for framing bias. My hypothesis was that children are not going to be influenced a lot by the way the problems are described.

To do my study, I designed a survey in which the same information was presented through a positive and negative perspective. The survey consisted of 5 questions. Questions 1 and 4 had the same information that was framed positively in question 1 and negatively in question 4, questions 2 and 5 were the same but framed differently. Question 3 had two options: kids had to choose either 1) ice cream with 20% fat or 2) 80% fat free ice cream. Survey was answered by 32 children from 6 to 17 years old. In general, my findings support my hypothesis. About 69% of children in my study were not influenced by framing bias in questions 1 and 4, and about 75% were not influenced by framing bias in questions 1 and 5. For question 3, 62.5% chose a positive frame (option 2). I think children are less affected by framing bias because they don't have a lot of life experience and they don't generally make mental shortcuts like adults. ...



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Prefair Report

1414 **Maya Nanji**

Div/Cat **Human Health / Primary**

Title: **Concentration and Computers**

Summary: PRE - FAIR REPORT

Do children and adults get distracted with a computer in front of them? Is it more distracting with it closed and away from them, or open with the Google homepage.
Is there a difference in gender and/or age.

We know that moving screens can be very distracting to children and adults, such as TV, video games, etc. But my question is if computers in front of people are distracting. I am testing children and adults to see if an open computer, and closed computer affect the concentration and attention both visually and auditory in people.

My hypothesis is that children and adults will do better concentrating with no computer in front of them. I also predict that the participants will be more distracted with the computer open to Google, rather than just closed. I don't think there will be a difference in age or gender.

What/How I am Testing:

I will make sure that I have their permission form.

I am testing adults and children. The children will be separated into two age ranges: Grades 1-3 and 4-8. I will hand in permission forms and get the consent of the child and adult. The participants will come in and do three simple tests with me. I will control for sequence by having a bag with just three numbers: 1, 2, and 3. Whichever they pick first is the one that we will do first, the one they pick second will be the one they do second, and the last one we will do last. That way it is randomized so it is not the same sequence every time. The three simple tests that they will do with me are; a concentration activity with either a computer closed in front of them, open to Google in front of them, or no computer at all. They will do a different variation of an activity for each test. Examples of alterations to the activity will be different question order or different numbers. They will be timed for how long they take to do each test/concentration activity. I will collect observations as they are doing the test. At the end, they will have to answer a multiple choice questionnaire. The questionnaire will be about their own experience doing the tests. After they have answered the questionnaire, they will get a little prize and be done. I will make the questionnaire, and the log sheet with observations as well as the time it took them to do the test and their result

Everything that I test them on will be confidential.

There are no risks in participating in this experiment.

All participants will receive a prize for participating.

Participants may withdraw from the experiment at any time.

The adult supervisor (Mrs. Shannon Bullock) may be present at any time.

Both guardian consent and participation assent (when under 18 yrs) will be received.



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