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### Project Details

**Project abstract (min 250 words and maximum 300 words):**

In this project, we are going to experiment with foods to power up an electric circuit using food items such as eggs, bread, potatoes, and bananas. This experiment is aimed at demonstrating how food can be used to perform electrical tasks. We will be using an electric circuit and a food item to create an electricity-generating device.

An investigation was conducted to find out the effectiveness of dry-fit materials in increasing the evaporation rate of water. The aerodynamic performance of paper aircraft are usually measured by the distance which they can cover, the time they stay in the air, and the angle of departure from the launch point. The purpose of this project is to determine the effectiveness of various materials in increasing the distance covered by paper aircraft. We wanted to find out if the body temperature of a dead human can be used to estimate the time of death. We measured the body temperature of a dead human and compared it to the body temperature of a living human. We found that the body temperature of a dead human is lower than the body temperature of a living human. We wanted to find out if the colour of a structure will affect the temperature inside it. If less energy could be used, we would like to prevent the collection of water in the plant pot. The purpose of this project is to determine if plastic waste is a relevant enemy to our world due to its environmental impacts. The purpose of this project is to determine if toothpaste is a simple life essential that we do not consider the packaging in which it comes in. Toothpaste with the purpose of this project is to compare the amount of oil between two types of potato chips: fried sliced potato and sliced potato. The purpose of this project is to determine if Singapore is getting rid of dengue fever. How can we best apply basic technology to help the underprivileged and/or disaster-hit countries? Daily hygiene has an effect on health. Good hygiene means that people wash their hands, brush their teeth, and avoid eating unclean food. The purpose of this project is to determine if milk is a common ingredient used in making desserts. In ice cream making, milk is a key ingredient added to assist in the formation of ice crystals. 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Wearing slippers with worn out soles, especially on wet surfaces such as wet market floors, can be potentially d

Plant cover protects the soil against erosion. Environmental conditions such as foot traffic, vehicle emissions, an

As people are getting more conscious about doing their parts in saving our environment, there is an increasing tr

By 2030, one in four Singaporeans will be aged 65 and above. According to Mr Tharman, one of our deputy Prim

In this project, a prototype was developed with the intention to lower the temperature of hot beverages to the opti

With orchid being our national flower, Singapore has been one of the leading orchid hybridization centres and ex

In Singapore, most of our fruits are imported and we do not understand much about the growth and ripening of fi

In 2013, a major haze incident in Singapore left the nation in a frenzy for high quality haze masks, only for a shor

Coffee grounds and tea leaves, which many people consider as a one-time use items for their beverages, are of

There has been an increasing occurrence of flash floods in Singapore over the last few years, which often led to

Anti Mould preservative in bread has been linked to obesity. Bread is a popular choice for breakfast and even co

The e-commerce market in Singapore has become increasingly popular over the years where more consumers ;

Our purpose of this project is to reduce plastic waste by studying alternative materials such as bioplastic more cl

Our research investigated how different types of patterns 3D printed on discs would be able to withstand the gre;

Diabetes has become a health issue for many people of different ages. In Singapore, one out of nine people age

The aim of the experiment is to experiment with activated carbon and how it is able to filter suspensions contain

The high toxicity levels of gases produced from burning petroleum cause adverse effects on the air quality. Studi

Approximately 270 million tons of banana peels are discarded annually. Its decomposition emits methane, which

In a tropical country like Singapore where we experience sunny weather all year round, it is imperative that we u

Nowadays, electricity consumption in the household is dramatically increasing, electricity price is sold to users hi

There has been an increase in the use of fitness trackers in Singapore, evident from the increasing sales. Fitnes

In recent years, people are leaning more and more towards organic food than ‘normal’ food. The public perceptic

It is recently reported that 83% of the respondents in Singapore indicated a good price/value is the most importa

In a country like Singapore that is hot and humid all year round, it is no surprise that swimming has remained a p

The purpose of our project is to address the problem of oil spills that pollute the ocean, severely damaging the e

We tested the effect of drinking three different beverages – coca cola, coffee (without sugar and milk) and water

In Singapore, the climate is warm all year round, resulting in the high usage of electricity to cool ourselves and oi

In recent years, the use of hand sanitizers have become increasingly common in various places ranging from ho

Bubble tea contains lots of sugar that can cause health problems. Our project investigates the sugar levels in diff
During a trip to the Cerebral Palsy Alliance Centre, we were given the opportunity to interview two Boccia athletes, ... sensor to two servo motors to detect the Boccia balls on the ground. The servo motors are attached to two flaps whic

In this project, our team explored the use of a microbial fuel cell in generating electricity. Such a cell uses the res

Food wastage has been one of the main concerns globally. One of the contributing factors resulting in food wast:

Every year, people suffer from heavy losses in storms and floods. Thus, the storm and flood are considered as o

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Muscle weakness can affect people of all ages. In the elderly, prolonged sitting or bed rest can lead to weakness

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Styrofoam toxic to the environment but it is not being recycled in Singapore. Mealworms were able to convert Sty

Adsorption process has been proven one of the best water treatment technologies around the world and activate

His project aims to find out which type of milk and method is the best way to fix broken ceramics. Milk contains c:

In line with the aim to develop Singapore into a sustainable city, large-scale and small-scale urban farming is lik

1. Introduction Besides honey, propolis is a valuable beehive product containing plant resin and beeswax. Several

Biodiesels have increased attractiveness as they are more environmentally friendly than diesel. Hence, we inves

This research is to find out the Golden Ratio of weight between the two objects at either end of the string so that
3s, lemons, limes, avocados and grapefruit. We chose these 5 foods as we want to compare which foods are best of perspiration compared to cotton materials. This investigation aims to enable pupils to appreciate why such time aloft and the speed at which they fly at. In this experiment, we aim to look at the aerodynamic character of an orange heated to 37°C to model a human body and left to cool in different conditions. We propose to create a product ‘jacketbag’ for jacket-cum-sleeping bag with the purpose of keeping houses in warm climate cool and those in cold climate warm, it will definitely help to save money and energy. We found that an increase in the number of loss of human lives and damage to human infrastructure. Our project is to find out if it is a horrible job no one would like to do. So, our group decided to solve this problem. We have found a way highly but yet none of the stains are removed. Many people have cavities as sometimes the toothpaste brand that they are using is not good. An article shared that these green roofs were a pilot project and studies were underway to understand the degradation of materials. Once the filtered water is collected, the quality of the water samples are tested by running tests especially for those Singaporeans who love to grow plants at home. With this in mind, our project aims to find out if nourishment and care are among the top needs for disaster ridden regions! Simply put, no water means no hygiene and long-term issues for Singapore. According to the data extrapolated based on National Health Survey 2010, responsible for about 25% of greenhouse gas emissions which makes it the most significant forcing factor of global warming, more families are using air-conditioning to cool their houses. With the correct curtain colour, we will be able to use less energy. Plastic debris in the ocean has greatly affected our human health, wildlife and the environment. The huge amount of plastic waste also increases the cost on the industrial chemist used to recycle and reuse paper. The process of waste paper recycling most often involves the use of enzymes to break down cellulose to glucose and then convert glucose to ethanol. With an increasing number of people infected by fungi, we were wondering whether people could use foods found in the kitchen to combat fungal infections. We observed how the yeast in each glass container grew in 30 minutes. We concluded that white vinegar is the strongest among the alternative forms of plastic. Our school members noticed an increase in the number of buses with green roofs while travelling around Singapore. An investigation was conducted to find out if an efficient water filtration can be created using some biodegradable and sustainable materials. In this project, we are going to experiment with foods to power up an electric circuit using food items such as eggs, potatoes, and bananas. Food is a real problem in many countries and Singapore is no exception. We hope to find out the material that's nat.
Dangerous as the user may easily slip and fall. Through our project, we hope to explore the possibility of giving a low light availability can affect the growth of plants, reducing ground coverage, causing the soil to become end in opting for more recyclable materials or materials which are more biodegradable. Despite the rise in aw the temperature of 60 degree celsius for consumption. It was hoped that the prototype is able to help small-s porters (including orchid cut-flowers) in the world. However, cut-flowers are perishable and commercial prese ults it. To better understand fruits, we have chosen to study cellulase activity in bananas. Our experiment aim tage to occur in retail stores. In response to such national emergencies, our experiment seeks to combat air ten disposed of. Coffee grounds and tea leaves have a high nitrogen content which is an essential element for damage of properties and financial losses. In this project our team investigated how we could apply the expauld be taken as tea break snack. Breakfast which is considered as the most important meal of the day is as e: are using online platforms to make purchases for a variety of items. For such items, the choice of packaging r osely. The Earth is very polluted by plastics which harms marine life and eventually harms ourselves. As such aest mass. This enables us to explore structures that would have higher load capacity for buildings and bridgd between 18 to 69 years has diabetes. This has amounted to more than 400 000 people, it is estimated that ng different contaminants. Activated carbon has many beneficial uses in industrial and commercial uses, and ies shows that lower amount of carbon dioxide and other emissions are being released when biodiesel is usec contributes to global warming. Our project aims to upcycle these peels. Firstly, we investigate if banana peels se and apply sun protection to protect our skin against the harmful UVA and UVB radiation. However, with the gh; wasteful use of energy sources contributes to causing environmental pollution. From the above problems s trackers not only allow consumers to track their workouts but also allow for reward claims such as vouchers on is that these foods are better in terms of their nutritional value. The downside is that the cost of organic foo nt criterion in selecting a household cleaning product. The performance of the detergent follows second. Amoi popular hobby for many people. While the intensity of UV rays from sunlight in a country near the equator is ali cosystem. We want to help the environment by trying to find a simpler, faster and more efficient way of clearin on reaction time on humans as we wanted to find out which beverage was better able to keep a person alert, ur environment. We aim to find out what glossiness of paint will allow the interior temperature to be lowered or useholds to hospitals. They are replacing the common practice of washing hands with water and soap. Some ferent types of tea and then makes a recommendation for healthier consumption. Benedict's test and refractoi
During a trip to the Cerebral Palsy Alliance Centre, we were given the opportunity to interview two Boccia athletes, ...

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Every year, people suffer from heavy losses in storms and floods. Thus, the storm and flood are considered one of the most dangerous natural disasters for human beings. Vietnam, the country with S-shape mainland lo

Chinese Dental Care Tool Oral is able to whiten the teeth after several use. However, our group would like to explore and the high cost of air filters, we looked at how we could develop a low-cost air filter that can be used in the res.

In the quadriceps muscles, making it harder for them to perform basic daily tasks such as sit-to-stand. To overcome this, banana peels) that will help in the growth of mung beans in Singapore without the need for composting. This involves molecules into Styrene oxide and 2-Phenylethanol. Styrene oxide is a potential carcinogen while 2-Phe

asein which is a major protein in milk, which can act as a binding agent. It has also been used to bind paint ar

ably to gain in popularity. Our team thus decided to look into ways that can help improve the growth of common al species of bee produce propolis including Apis melifera and stingless bees. Propolis is well known as a rem

tigated the effectiveness of soybean and canola biodiesels as alternative fuels for automobiles. The biodiesels the lighter one can sweep around the rod that is holding the two weights when released. When the Golden R
able to provide the most energy to be able to light up the most number of mini lightbulbs in a circuit. We choose pols are changing their PE attires to dry-fit material for their physical well-being. We conducted the experiment of three different aircraft designs and evaluate how they affect the performance of three different aircraft environments. Other factors considered were outer covering and size of the orange. First, the effect of environment on the body heat to the cooler external eye on bills and the environment! We painted shoe boxes with light colour (white), medium colour (green) and ind out which structure of a seawall is best at preventing seawater to overflow into coastal areas. We chose the to prevent eggs from breaking when they are dropped and it is by wrapping them with certain materials. Our s that they are using does not clean their teeth as well as other brands. Hence, this motivated us to conduct an e effectiveness of reducing the temperature of the interior of buses with green roofs. As such, the aim of our the samples through a variety of tests.

Purpose:

Objective

Despite lasting only for a short while before they pop, bubbles remind us of fond memories we have with our friends and ... hope that our bubble solution will be well received by parents who care about the environment and their young children.

Singapore is a melting pot of cultures that celebrate at least four official festivities like Hari Raya, Deepavali, ... As the bioplastics we made could be made in smaller quantities, it could also be used as a family bonding activity.

A recent news article shared on how corals preferred to feed on microplastics instead of their natural food. As a result, ... of alternatives. Through this, we aim to educate the users around us that you can play a role in reducing mic...
slippers with worn out soles a new life by having grooves cut into them and investigate if the depth of these gr
arren. This project investigates the effect of these environmental conditions on plant growth. 5 readings were
rareness in using recyclable bags when shopping for groceries, there are still a demand for paper and plastic l
why we need to raise more revenues, and why we have to spend effectively”. Our group interviewed some el
cale beverage business owners to lower the temperature of their hot beverages, given its compactness and c
ratives are expensive. There are several proposed homemade flower preservatives which have claimed to ir
is to investigate whether a change in the pH and humidity would affect the cellulase activity in bananas. This i:
pollution by using cheaper and easy-to-find household materials as a haze mask or window blinds... The purpc
r plant growth. In this project, our team aims to investigate the possibility of adding used tea leaves and coffe
nsion property of sodium polyacrylate to raise a flood barrier when it is exposed to water. To this end, we inve:
ating right will enable us to start the day well. There are many type of brea ds available. In this project, we are
aterial is of utmost importance to ensure little or no damage done to the items during the mailing process. In
, we wish to investigate the effect of the temperature of water on the composition of agar bioplastic, to see if a
es. This is especially so given the increasing popularity of 3D printing and its future applications in building ho
the number of diabetic Singaporeans will increase to 1 million by 2050. The government has come up with ca
also for health e.g. filtering unwanted and undigested toxins and drugs through the kidneys; commonly taken
: As petroleum is also non-renewable, it is not a sustainable power source whereas using fruit peels from foo
 exhibit antimicrobial activity against common oral bacteria. The increasing resistance of oral bacteria against
. wide selection of sunscreen lotions that claim to provide SPF 50+ or more protection available off the shelves,
, our group successfully designed and assembled the model: “Household electricity monitoring and saving sy:
· from the health promotion board (HPB) and other insurance providers encouraging healthy living. While then
d is also much more expensive than ‘normal’ food. This project is a study on whether organic food is better th:
ng the respondents, efficiency and efficacy were listed as the most sought benefit when purchasing a deterge
ready known to be damaging to hair, we wanted to investigate how exposure to chlorinated water would affect
ig oil spills, and hopefully even retrieve the oil for reuse. We investigated the rate of absorption of oil and retri
and cause them to react faster to a stimulus. This is important especially for individuals who work in industria
r kept cool. This would help reduce the need for high usage of electricity for fan and air-conditioning which wo:
brands even claim that they can kill 99.9% of bacteria. Therefore, the question is whether hand sanitizers are
meters were used for the sugar test. Benedict’s solution was added to samples which were heated and a colo
During a trip to the Cerebral Palsy Alliance Centre, we were given the opportunity to interview two Boccia athletes. In each game, the assistant has to bring a microbial fuel cell with a bio-anode. To test the cell, mud was first used in the anode. The construction of the fuel cell is complex, some of these man-made chemicals may bring along health or production cost issues to the consumer. We use Arduino, a open-source electronic platform, to control the Arduino board that drives the motor.

In this project, our team explored the use of a microbial fuel cell in generating electricity. Such a cell uses the anaerobic respiration of microorganisms to convert organic matter into electricity. We tested the performance of the microbial fuel cell under different conditions and observed that raising the peak voltage from 132 mV to 171 mV, but varying the mass of fruit peel added did not increase the voltage generated.

Food wastage has been one of the main concerns globally. One of the contributing factors resulting in food wastage is food spoilage. To study this, we conducted a study to investigate the growth of E. coli in food waste. We performed colony counting every 24 hours for 3 days. An analysis was performed based on the data collected, followed by finding methods to prevent food spoilage.

Every year, people suffer from heavy losses in storms and floods. Thus, the storm and flood are considered as one of the main threats to the environment. To investigate the effects of these disasters, we conducted a study on the impact of storms and floods on the ecosystem. We considered 5 rooms: a living room, a bedroom, a dining room, a kitchen and a toilet, 5 doors, 5 windows, a drum system and a roof. To resolve this problem, physiotherapists usually advise the elderly to regularly exercise their muscles. We investigated different methods to resolve issues of excess food waste in Singapore and the extra time and effort needed to prepare a compost.

Haze has been a problem in Singapore in recent years. With most classrooms in Singapore not being air-conditioned and the high levels of PM2.5 in the air, we investigated the effectiveness of different air filters in reducing the concentration of PM2.5 in the classroom. In our experiment, we tested out the effectiveness of two low-cost air filters and measured the PM2.5 levels and plant growth which were nitrogen, phosphorus and potassium. This project is a study on how different types of air filters such as zinc oxide or titanium dioxide can be used to improve the air quality in the classroom.

Tea is a commonly consumed beverage enjoyed by many people in their daily lives. There are many different types of tea, each with its own unique characteristics. We tested the effectiveness of different tea types on hair growth. Photos were also taken to keep track of the progress of the hair growth.

Hair nourishment is a topic that is of significant interest commercially. There are several folk remedies that aim to nourish hair growth. As a physical study, the test conducted included hanging weights on each piece of hair until it splits to measure its strength.

Cordyceps militaris has great pharmacological and economic value. Although the procedure of in vitro cultivation of Cordyceps militaris is simple, the optimal conditions for culture are not fully understood. Our main findings are:

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   Cordyceps militaris has great pharmacological and economic value. Although the procedure of in vitro cultivation of Cordyceps militaris is simple, the optimal conditions for culture are not fully understood. Our main findings are:

   1. The mating type of 6 single ascospores harvested from the same fruiting body is the same. The mating type of 6 single ascospores harvested from the same fruiting body is the same.

   2. The mating type of 6 single ascospores harvested from the same fruiting body is the same. The mating type of 6 single ascospores harvested from the same fruiting body is the same.

   3. Main findings
      + The mating type of 6 single ascospores harvested from the same fruiting body is the same.

   To determine which food waste optimizes the growth of basil plants. Our hypothesis is that the use of spent coffee grounds, fruit peels and expired milk will optimize the growth of basil plants. We conducted an experiment with 5 pots, each containing 5 g of spent coffee grounds, 50 g of fruit peels and 5 ml of expired milk. We found that the growth of basil plants was significantly improved.

   Most commercial sunscreens protect us by reflecting ultraviolet radiation or absorbing UVB or UVA rays. They contain ingredients such as titanium dioxide and zinc oxide. In this project, we investigated the effectiveness of different sunscreens in protecting against UV radiation.

   Diapers are part of every child's life from infancy to toddlerhood. The discovery of disposable diapers is one of the most significant inventions in the history of baby care. However, diaper disposal is a major problem in Singapore. In this project, we investigated the effectiveness of different diaper brands in absorbing urine.

   In the current day of advanced technology, transactions are easily done with the swipe of a card equipped with an RFID reader. However, as RFID technology has become more widely used, security concerns have emerged. We investigated the effectiveness of different RFID protection methods and found that the use of acrylic is one of the most effective methods.

   Muscle weakness can affect people of all ages. In the elderly, prolonged sitting or bed rest can lead to weakness in the leg muscles. We investigated the effectiveness of different knee guards in improving leg muscle strength.

   The aim of this experiment is to investigate and compare the potential of utilizing selected food waste (egg shells and banana peels) in the growth of basil plants. We conducted an experiment with 4 pots, each containing 50 g of crushed egg shells, 50 g of banana peels and 5 ml of milk. We found that the growth of basil plants was significantly improved.

   Biodiesels have increased attractiveness as they are more environmentally friendly than diesel. Hence, we investigated the production of biodiesel from spent coffee grounds and fruit peels. We found that the production of biodiesel from spent coffee grounds and fruit peels was comparable to that of diesel.

   Adsorption process has been proven one of the best water treatment technologies around the world and activated carbon is still the most used adsorbent. In this project, we investigated the effectiveness of activated carbon in treating industrial wastewater. We found that the use of activated carbon can significantly improve the water quality.

   Spent coffee grounds, fruit peels and expired milk are common household food waste that are rich in nutrients but are often discarded. We investigated the use of these food waste in the growth of mealworms. We found that the use of these food waste can significantly increase the growth rate of mealworms.

   This research is to find out the Golden Ratio of weight between the two objects at either end of the string so that the looping occurs. The significance of our investigation is to get the ratio of the two weights that will allow the looping to occur.

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   1. Introduction
      Besides honey, propolis is a valuable beehive product containing plant resin and beeswax. Several compounds have been isolated from propolis, including flavonoids, terpenoids, phenolic compounds, and fatty acids. For example, (1), cochinchinone (3), a-mangostin (4) and mangiferolic acid (5).

   2. Main findings
      + The extract showed antibacterial activity against several bacterial strains.

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se food so as to find the best alternative replacement of batteries and energy. There are also other reasons why it by wrapping similarly sized melamine sponges, soaked with 100 ml of water, with similarly sized dry-fit mate
t designs. Four different forces interact to bring about the final performance of an aircraft. Since the mass of t
measurement temperature on the rate of heat loss in an orange was investigated. The orange at 37°C was placed in
air at night. We aim to use the concept of heat insulation to test and select suitable materials for providing effe
dark colour (navy blue) to model painted houses. We tested the boxes under two environments; warm and ca
the following structures: 1) Normal rectangular wall 2) Curved rectangular wall 3) Normal rectangular wall with
olution to this worldwide problem can help thousands of careless egg transporters and shoppers to prevent ef
experiment to find out which toothpaste brand is the best at removing stains on teeth and to help people find o
study is to mimic the conditions of the buses with green roofs, and to investigate the effectiveness of green

ent the collection of water. Four different methods were explored in growing the plants. In our investigation of a form of vapor) through condensation when it hits its dew-point temperature and below. That means you “chill
in 2014, and the number is estimated to grow to 1,000,000 in 2050. One of the food which is a major cause of
cide into the atmosphere each year, adding to global warming. Much of the cost of cooling our homes can be
ardboard boxes. One box will not have a window as a control set-up. 2. Cover the inside of the windows with
se. We hope to use our investigation data to convince our school community of the need to reduce or stop the
ning momentum. More than 270 food establishments in Singapore have stopped providing plastic straws to o
toothpaste ingredients are deemed harmful. Thus, more and more people are turning to homemade toothpas
tained, weighed, and crushed to obtain an oil stain on graph paper. Each oil stain was obtained three times ar
of in order for people to drink. We hypothesized that paper straws is the best compared to banana leaf straw t
decline and extinction of several marine organisms. We were also shocked to find out through another study, I
sible properties that it can be moulded into. Unfortunately, these decorations are often discarded after a single
ble solutions may use detergents that are not organic. Hence, we want to make our own bubble solution usin
d its ingredients. In this project, we investigate the extent of the positive impact mindfulness practices have on
ghurt and tea tree oil on the growth of yeast. We used the scientific method of investigation. We controlled the
and were watered with 100ml of tap water daily on weekdays. They were subjected to rhythmic classical musi
l the air conditioner for other people to use by using the best salt type to lower the temperature of the air withi
that will allow them to gauge the purity level of bottled waters...Method Pure water will not conduct electricity ool effort to zero waste, the school has adopted worms and build worm bins which provide convenient way to
verse effects electricity production currently has on the environment and encourage the use of renewable en
l, Longan shells and bread crumbs were dried and grounded to make them combustible. Chemical potential e
ning milk products. In our project, we are trying to find out which lactose free milk can produce ice cream which
Singapore to generate electricity. One such water body is our reservoirs. Hydroelectric power is a type of renew
ould, which type of plastics do they prefer?
water filter and the filtrate (the liquid that passed through the filter) collected. The filtrate was checked with the
ickly, be absorbent, and allows perspiration to evaporate quickly. This will allow people exercising to feel cool a
amely baking soda, vinegar, soda water, shampoo, hand sanitiser, washing detergent and bleach. First, mou
ake a natural and effective grease remover. We hope that the formula we made could be emulated at home an
itic and to compare their strength, solubility, heat resistance and biodegradability with petroleum-based plastic
breaks down. Around two thirds of all paper products in the world are now recovered and recycled, although it ef
fects the amount of current it produces. For this, we used the russet potato because it is more commonly fou
are 3 insulator containers of different materials with the same thickness, size and shape. 2: Cover the inside o
Bubble tea contains lots of sugar that can cause health problems. Our project investigates the sugar levels in different beverages. It is recommended that consumers request for lower percentage of sugar level instead of 100% to reduce sugar intake.

In recent years, the use of hand sanitizers have become increasingly common in various places ranging from households to workplaces. To test the effectiveness of the sanitizer, we prepared a petri dish containing agar solution and mixed it with a sample of the sanitizer. We then allowed it to dry and observed the growth of bacteria. Subsequently, similar procedures were carried out with a control petri dish without the sanitizer.

In Singapore, the climate is warm all year round, resulting in the high usage of electricity to cool ourselves and our environment. We measured the electricity consumption in different households and found that the usage is significantly high.

We tested the effect of drinking three different beverages – coca cola, coffee (without sugar and milk) and water on participants. Each participant was tested for blood sugar levels before and after drinking each beverage. The experiment was repeated for three days to obtain reliable results.

The purpose of our project is to address the problem of oil spills that pollute the ocean, severely damaging the marine ecosystem. We designed a system that can retrieve oil from the surface of seawater. This system is composed of a sensor, a microcontroller and a motor. The sensor detects the presence of oil, the microcontroller processes the signal and the motor operates the retrieval mechanism.

In a country like Singapore that is hot and humid all year round, it is no surprise that swimming has remained a popular activity. We investigated the effects of chlorination on the hair and skin of swimmers. We collected hair and skin samples from swimmers and tested them with exposure to chlorine. We then analyzed the data to determine the effects of chlorination.

It is recently reported that 83% of the respondents in Singapore indicated a good price/value is the most important factor when choosing a restaurant. We conducted a survey among the public to determine the factors that influence their choice of restaurant. We asked questions about price, location, and food quality.

There has been an increase in the use of fitness trackers in Singapore, evident from the increasing sales. Fitness trackers are becoming popular due to their ability to track various fitness metrics such as steps, distance, and calories burned. We investigated the accuracy of fitness trackers in measuring these metrics.

Nowadays, electricity consumption in the household is dramatically increasing, electricity price is sold to users high; hence, the system will warn users to give the appropriate. The system automatically disconnects when power consumption is at a certain level.

Approximately 270 million tons of banana peels are discarded annually. Its decomposition emits methane, which contributes to greenhouse gas emissions. We investigated the potential of using banana peels as a fertilizer in hydroponics. We conducted experiments to determine the effects of banana peels on plant growth.

The high toxicity levels of gases produced from burning petroleum cause adverse effects on the air quality. We investigated the potential of using biodiesel from fruit peels to reduce the pollution caused by petroleum. We conducted experiments to determine the effectiveness of biodiesel in reducing the level of harmful gases.

We also experimented on using activated carbon to filter suspensions containing heavy metals. We tested the effectiveness of activated carbon at different temperatures and pH values. We then analyzed the data to determine the optimal conditions for filtration.

Diabetes has become a health issue for many people of different ages. We conducted a study to investigate the effectiveness of natural remedies in treating diabetes. We tested various natural remedies such as sugar, vinegar, spring onions, and fish sauce. We then analyzed the data to determine the effectiveness of each remedy.

Our purpose of this project is to reduce plastic waste by studying alternative materials such as bioplastic more closely. We conducted experiments to determine the strength and durability of bioplastic compared to traditional plastics. We then analyzed the data to determine the viability of using bioplastic as a replacement material.

Anti Mould preservative in bread has been linked to obesity. Bread is a popular choice for breakfast and even could be harmful if not consumed properly. We conducted a study to investigate the effects of anti-mould preservatives on the health of individuals. We collected data from individuals who consume bread regularly and analyzed the data to determine the effects of anti-mould preservatives.

Coffee grounds and tea leaves, which many people consider as a one-time use items for their beverages, are often disposed of. We investigated the potential of using these materials as a fertilizer. We conducted experiments to determine the growth of plants when using coffee grounds and tea leaves as fertilizer.

In 2013, a major haze incident in Singapore left the nation in a frenzy for high quality haze masks, only for a shortage of masks. We conducted a study to investigate the effectiveness of various masks in reducing the exposure to haze. We tested different types of masks and analyzed the data to determine the most effective mask.

With orchid being our national flower, Singapore has been one of the leading orchid hybridization centres and exporters. We conducted a study to investigate the abscission of orchid flowers from each stalk daily until all the flowers dropped off. We then analyzed the data to determine the optimal time for harvesting orchids.

In this project, a prototype was developed with the intention to lower the temperature of hot beverages to the optimal temperature for consumption. In the process of the project, it was discovered that the temperature sensor was not able to detect the temperature accurately.

As people are getting more conscious about doing their parts in saving our environment, there is an increasing trend in using more sustainable options such as reusable bags. Between paper bags and plastic bags, paper bags were deemed as more biodegradable as plastics are difficult to decompose. We conducted experiments to determine the biodegradability of paper and plastic bags.

Plant cover protects the soil against erosion. Environmental conditions such as foot traffic, vehicle emissions, and low rainfall levels can influence the types of plants that grow in an area. We conducted a study to investigate the effects of environmental conditions on the types of plants growing in an area.

Wearing slippers with worn out soles, especially on wet surfaces such as wet market floors, can be potentially dangerous. We conducted experiments to determine the effect of slippers with different grooves on the friction produced between the slipper and the wet floor. Grooves of different depths collected at each study site, and compared against a control site, which has abundant light and minimal foot traffic. Between paper bags and plastic bags, paper bags were deemed as more biodegradable as plastics are challenging to decompose. We conducted experiments to determine the biodegradability of paper and plastic bags.

There are many brands and models of fitness trackers, watch accuracy data are not easily available to consumers. There are many factors that affect the accuracy of fitness trackers, such as the frequency of calibration, the quality of sensors, and the algorithm used. We conducted experiments to determine the accuracy of fitness trackers by comparing the data with the average data from a large sample.

In this study, we experimented on varying different independent variables (ingredients), such as sugar, vinegar, spring onions, fish sauce. We then analyzed the data to determine the effectiveness of each ingredient in treating diabetes.

The system has 5 blocks (Source block, Processing center block, GSM communication block, Display block, and Power block). The system can be programmed to perform various tasks such as measuring the mass, displaying data on a screen, sending data to a remote location, and providing power to the system.
end down to pick up the balls frequently. Thus, we decided to design an automated Boccia ball device to provide cell was successful and a peak voltage of 460 mV was generated. Our group next tried to use a mixture of γ - This project looks into the possibility of using commonly occurring natural substances that are easily accessi st effective in whitening of teeth. We hypothesize that the colours with wavelength closest to blue light. We use quality of air of each set-up. To simulate the polluted air, we burned an incense stick. Set-ups: Set-up 1(cons es of tea leaves can affect the growth of different types of plants. The purpose of this project is to investigate if fused with selected remedies. The selected remedy ingredients are coconut oil, aloe vera and egg white, alth defused C. militaris with high cost and high riskiness. Therefore, the aim of this study is to create high t of egg shells or chicken bones relative to fertilizer. There were a total of 30 beakers and 90 basil seeds in the use skin allergies, and should be able to withstand powerful UV radiation without losing their effectiveness or den soil only (control); diced orange peels only; coffee grounds only; equal amount of soil and diced orange p section. The center of the basic disposable diaper consists of a gasket, inside membrane, cotton, sodium poly ion of these materials are that they should be low cost, easily obtainable, safe and durable. The final aim is to viewed some elderly and identified common problems that elderly face. Problems such as knee pains and ba sting mixture. Multiple mung beans were allowed a few days to germinate in a tray of vermiculite first. The e 1. Introduction
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Purpose of the Project
We decided to do this experiment as we wanted to reduce food wastage as it is a real problem. In this experiment, we chose foods instead of other alternative items. Firstly, food is convenient and more readily available especially if the paper used in the aircraft and the amount of launch force for the aircraft remains the same, the thrust and a Styrofoam box filled with room-temperature water. A data logger with a temperature probe inserted into the active and flexible heat insulation. Our key considerations in our experiment are: 1 slow heat loss from the tool. The first experiment, we placed each box under a lamp to represent warm environment for an hour. We turned the marbles. We wanted to find out which structure is best at preventing water from overflowing. Method In the ggs from breaking when accidentally dropped. They can apply our idea so that none or at least less eggs will I put which toothpaste to use. We carried out the experiment by fully submerging an egg into a beaker of coke oofs. To mimic the conditions of buses on the road, we made use of cardboard buses with paint and conductive, we ensured that there was only one changed variable. In addition, we also investigate whether the polymers i” it to an appropriate level that is anywhere from 10°C to 15°C below its current air temperature, depending diabetes is sugar-sweetened beverages. In view of the alarming statistic, our group is interested to find out by saved by passive and simple cooling techniques which do not require expensive retrofits or professional plastic wrap, tape it into place on the inside of the box. 3. Cut curtains from the four types of colour of curtain to use of single-use straws. We conducted our investigation by filling 3 similarly sized pots with equal amount of straws. Consumers in 2019. Metal straws are costlier and less convenient. Our project investigates (1) the use of hollow straws. However, how effective are these homemade recipes versus traditional commercial toothpastes? In this e. and the average amount taken to ensure the results are consistent. It was found that fried sliced potato chips had an edible (bread) straw. Banana leaf straws were handmade by our team by cutting one of the banana leaves that due to the bioaccumulation effect of microplastics in marine organisms, humans on average consume up to use. Problems due to plastic waste have been well researched. We used the scientific method to make different olive oil soap. Olive oil is a natural oil obtained from olives. We make our own olive oil soap before adding it to the container. Procedure First, we cut 4 holes on the side of the containers and 1 hole on the lid of the container. If a battery is placed in the pure water, the hydrogen molecules and the oxygen molecules will not be separate. As we dispose organic waste such as fruits and vegetables. In return, the worms have produce worm tea and worm energy. Therefore, we decided to explore the effectiveness of eco-cooler in lowering room temperature using worm energy in these food waste is converted to heat during burning to heat 100ml of water in a closed system. The ch has a texture and melting properties that is closest to the ice cream made of whole milk. Renewable energy which is available at all times. This is unlike solar energy generated from solar panels which is data-logger. Then, the filtrate was filtered again. This second filtrate was again checked with a data-logger to comfortable, at the same time preventing heat stroke. In our project, we will be investigating three materials for alternative forms of plastic were made of corn starch, potato starch, potato starch with milk does not all become new paper. After repeated processing the fibers become too short for the production of material in our supermarkets and it is cheaper than the other types. Next we also needed to find out whether the type of the container with the materials. 3: Drill a hole on the cover of each container. 4: Weigh the ice to ensure that...
Bubble tea contains lots of sugar that can cause health problems. Our project investigates the sugar levels in different beverages, such as coca cola, coffee (without sugar and milk) and water. We tested the effect of drinking these beverages on participants. The experiment was repeated for three days to obtain accurate results. It is recommended that consumers request for lower percentage of sugar level instead of 100% to reduce sugar intake.

In recent years, the use of hand sanitizers have become increasingly common in various places ranging from households to workplaces. Our research investigated how to sterilize hands using a petri dish method. Three pairs of 5g banana peels were exposed to 3 different pH environments of 2.1, 7.0 and 12.0 respectively. Materials such as cotton, tissue paper and polyester were tested, along with a control setup. The experiment showed that banana peels were able to provide the strongest support and load carrying capacity.

We tested the effect of different fruits on the growth of bacteria. We used a Petri dish method and exposed bacterial flora to bananas, coffee grounds, and tea leaves. Each material was exposed to three different pH environments of 2.1, 7.0 and 12.0. The experiment showed that banana peels were able to provide the strongest support and load carrying capacity.

Coffee grounds and tea leaves, which many people consider as a one-time use items for their beverages, are often disposed of as waste. In this project, students were advised to reuse tea leaves and coffee grounds instead of simply treating it as waste. Students were also informed about the benefits of using these materials, such as improving soil structure and reducing soil compaction.

In Singapore, most of our fruits are imported and we do not understand much about the growth and ripening of fruits. In this study, we investigated the cellulase activity of bananas at different pH levels. The results showed that the pH level of the banana peel had a significant effect on the cellulase activity. The experiment also showed that the presence of yeast during ripening increased the cellulase activity.

There has been an increase in the use of fitness trackers in Singapore, evident from the increasing sales. Fitness trackers are becoming more popular among consumers. Our research investigated how different types of patterns 3D printed on discs would be able to withstand the greatest amount of force. Students were asked to design and print various patterns on discs and then measure the force required to break each disc. The results showed that the pattern with the least amount of force required to break the disc was able to filter suspensions containing contaminants most effectively.

Diabetes has become a health issue for many people of different ages. In Singapore, one out of nine people aged between 30 and 69 years old has diabetes. Our research investigated how different types of patterns 3D printed on discs would be able to withstand the greatest amount of force. Students were asked to design and print various patterns on discs and then measure the force required to break each disc. The results showed that the pattern with the least amount of force required to break the disc was able to filter suspensions containing contaminants most effectively.

Approximately 270 million tons of banana peels are discarded annually. Its decomposition emits methane, which contributes to climate change. Peels were sterilized with alcohol, coarsely chopped and continuously stirred in distilled water. The experiment showed that the mixture of banana peels and alcohol was able to reduce methane emissions by 90%.

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In Singapore, tropical countries like Singapore where we experience sunny weather all year round, it is imperative that we use and recycle banana peel. Banana peel is a good source of natural fertilizer. Students were asked to use banana peel as a natural fertilizer and measure the growth of plants. The results showed that banana peel was able to improve the growth of plants.

Electricity consumption in the household is dramatically increasing, electricity price is sold to users high; hence, the system will warn users to give the appropriate. The system automatically disconnects when power consumption is at a dangerous level.

In a tropical country like Singapore where we experience sunny weather all year round, it is imperative that we use and recycle banana peel. Banana peel is a good source of natural fertilizer. Students were asked to use banana peel as a natural fertilizer and measure the growth of plants. The results showed that banana peel was able to improve the growth of plants.

In this project, a prototype was developed with the intention to lower the temperature of hot beverages to the optimal level. The prototype was able to cool down hot beverages to the optimal temperature in a short amount of time. The system was able to detect the temperature of the beverage and lower the temperature to the optimal level.

By 2030, one in four Singaporeans will be aged 65 and above. According to Mr Tharman, one of our deputy Prime Minister, the elderly will be more dependent on the government for their needs as they will have less income. The elderly will also be more likely to fall and injure themselves while trying to clean the window. The smart window cleaner was developed to solve this problem. The prototype was able to clean the windows of the elderly in a short amount of time.

As people are getting more conscious about doing their parts in saving our environment, there is an increasing trend in reducing plastic waste. Bioplastics are also very damaging to natural ecosystems e.g. sea turtles that choke on plastics dumped in the ocean. In this project, students were asked to reduce plastic waste by studying alternative materials such as bioplastics. Students were also informed about the benefits of using these materials, such as reducing plastic waste and improving soil structure.

Plant cover protects the soil against erosion. Environmental conditions such as foot traffic, vehicle emissions, and low light availability can lead to soil degradation. In this study, we investigated the effects of foot traffic on plant growth. Students were asked to monitor the growth of plants in areas with different levels of foot traffic. The results showed that foot traffic had a significant effect on the growth of plants.

Wearing slippers with worn out soles, especially on wet surfaces such as wet market floors, can be potentially dangerous. Students were asked to measure the friction produced by different types of slippers. The results showed that the slippers with deeper grooves produced more friction as they were pulled along both the dry and wet floor.

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The e-commerce market in Singapore has become increasingly popular over the years where more consumers are using online shopping. In this project, students were asked to investigate the effects of e-commerce on consumer behavior. The results showed that e-commerce has a significant effect on consumer behavior.

Anti Mould preservative in bread has been linked to obesity. Bread is a popular choice for breakfast and even could be enjoyed as a snack. In this study, we investigated the effects of anti Mould preservative on the growth of mould. Students were asked to measure the growth of mould in bread with and without anti Mould preservative. The results showed that anti Mould preservative significantly reduced the growth of mould.

In Singapore, most of our fruits are imported and we do not understand much about the growth and ripening of fruits it. In this study, we investigated the effects of pH on the growth of bananas. Students were asked to measure the growth of bananas at different pH levels. The results showed that the pH level of the banana peel had a significant effect on the growth of bananas.

In a tropical country like Singapore where we experience sunny weather all year round, it is imperative that we use and recycle banana peel. Banana peel is a good source of natural fertilizer. Students were asked to use banana peel as a natural fertilizer and measure the growth of plants. The results showed that banana peel was able to improve the growth of plants.

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The aim of the experiment is to experiment with activated carbon and how it is able to filter suspensions containing different contaminants. Examples of contaminants used could be expanded when further time permits. The experiment showed that activated carbon was able to filter suspensions containing different contaminants effectively.

Diabetes has become a health issue for many people of different ages. In Singapore, one out of nine people aged between 30 and 69 years old has diabetes. Our research investigated how different types of patterns 3D printed on discs would be able to withstand the greatest amount of force. Students were asked to design and print various patterns on discs and then measure the force required to break each disc. The results showed that the pattern with the least amount of force required to break the disc was able to filter suspensions containing contaminants most effectively.

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ide support for the assistant and increase the efficiency of collecting the balls. Our group went through the de
yeast and fruit peel waste to generate electricity. In total, we tried three different fruit peel wastes – jackfruit, le
ple to people to prolong food freshness so as to reduce food wastage by extending the food expiry. The aim is
Tinh”. To be able to minimize the damage in disaster-prone areas, some types of anti-storm houses and floo
ed eggshells to represent teeth as both are made of enamel. The eggshells are stained with coffee and differ
(trol): No air filter Set-up 2: 2 paper plates with a thin layer of Vaseline covering the surfaces of the plates Set-i
whether we can recycle the tea leaves to be used onto the growth of plants. Our group decided to grow the pli:
ough there are other exotic ingredients. These ingredients were chosen as they are the most popular remedy
 experiment. Each beaker contained 200g of soil. We added in the food waste and fertilizer in 3 different amc
forming potentially harmful breakdown products. However, some chemical ultraviolet filters may mimic hormo
heels; equal amount of soil and coffee grounds; and equal amount of diced orange peels and coffee grounds. !
acrylate, and finally the outside cover. The gasket that touches the baby’s butt allows the liquid to pass throug
make wallets, pouches, pockets, bags, etc.. from these materials. The materials that we have chosen are ca
ick pains are what elderly have to go through on a daily basis and it affects their everyday routine. After doing
3g shells were prepared as fertiliser by first washing and drying, followed by grinding and crushing them into p
However maggots will eventually grow in setups with oats making the growing environment very inhospitable.
on is due to the surface action between the dye and the functional groups present in the surface of the carbon
hree days, milk curbs was formed and some whey was seen. However, all four of the broken spoon was not fi
ntive uses for these fruit peels. Furthermore, the use of food waste as fertilisers has been well-researched anc
raction: Stingless bee propolis will be extracted with EtOH 70%. The extract will be partitioned with n-hexane a
rol and ethanol-based biodiesels, they were not further used. Methanol-based biodiesels were further tested f
se of our investigation is to get the ratio of the two weights that will allow the looping to occur.
ally in times of an emergency. We can readily find food products such as eggs and lemons in our home, thus without being wrapped with any materials. A temperature probe connected to a datalogger was inserted into weight of the aircraft does not affect its performance. Instead, we evaluate how the lift and drag characteristic orange was used to monitor the decrease in temperature. The experiment was repeated using iced water rapped air to the surrounding air • adjustable warmth level • convenience and comfort to the user. We tested ten measured the temperature inside each box. We found out that the temperature in the navy blue box has ten experiments, we used the following items: 1) 1 fish tank 2) Plasteline 3) Water 4) 1 piece of corrugated board be wasted. We conducted an experiment to find out which wrapped material best protects the egg from brea overnight. We proceeded to brush the different brands of toothpaste onto the stained egg and counted the number of our experiment with two set-ups: one with a green roof and one without. To further replicate the conditions of different brands of diapers and the amount of polymers used have any effect on the plant growth. We observed upon how much water content (relative humidity) it has locally absorbed. The condensation of the water vapor the amount of sugar content in commonly consumed drinks. From our results, we hope to raise awareness of oscillations. Landscaping such as trees, vines and shrubs can be used to shade homes and reduce energy bills. Gardening material that will completely cover the window. Secure the curtain in place with sticky tape. 4. Place a container of garden soil. We added equal amounts of compost A and B, separately, to 2 of the pots. Subsequently, 7 stalks of Chinese spinach, kang kong and papaya as single-use, biodegradable ‘vegestraws’ and (2) how the experiment, we investigated the effectiveness of 2 homemade recipes – a simple baking soda recipe and another a greater amount of oil than fried compound potato chips. We conclude that since fried sliced potato chips from our garden, cutting a rectangular shape, rolling and tying them into straws. Edible (bread) straws were inserted into one credit card sized worth of microplastics a year. This results in further health issues which compelled us to investigate different types of bioplastics that are suitable to make festive ornaments. We hope that this bioplastic will be well receiv and made with natural starch used in the food industry. Temperature of warm water, temperature of warm water, volume of white sugar, volume of yeast, brand of yeast, and volume of yeast. A set of plants were not exposed to any sound for the same duration. Three tablets were used to ascertain the ainer. We weighed the ice cubes and the different types of salt, to ensure that the mass of the items are 500g stirred as the chemical compound (H2O) will not be subjected to electric current, which will result in no formation cast that can be used as organic fertilizer. Experiment was designed and conducted to evaluate the effectiveness of the medium. For this project, we aim to find out if the bottle size affects the degree of reduction in room temperature/temperature of the water was measured over 10-minutes. An increased amount of heat produced during burn only available in the presence of sunlight. Being a country with relatively flat terrains, Singapore does not have check how much light it let pass through. It was found that there was a large increase in the amount of light tials, cotton, dri-fit and Airism, to find out which material is best for sportswear. For our investigation, we used solidly parts of the lemons where they are kept in zip lock bags for one week. The most effective cleaning agent 6d containers.

corn starch, and corn starch with agar agar. We used the scientific method in conducting the investigations. For new paper. Producing paper from wood is an extensive and expensive process that also uses up our natural type of potato affects the amount of current it produces. We chose 3 different types of potatoes of similar size - than they are the same mass. 6: Place ice into each container. 7: Use 3 thermometers of the same type.
Bubble tea contains lots of sugar that can cause health problems. Our project investigates the sugar levels in different types of bubble tea, and it is recommended that consumers request for lower percentage of sugar level instead of 100% to reduce sugar intake.

In recent years, the use of hand sanitizers have become increasingly common in various places ranging from households to public places. We have designed an experiment to test the effect of humidity on the growth of bacteria on a petri dish (as a control). Subsequently, similar procedures will be carried out to test the effect of different levels of humidity on the growth of bacteria.

We tested the effect of drinking three different beverages – coca cola, coffee (without sugar and milk) and water on the blood pressure of participants. The experiment was repeated for three days to obtain accurate results.

In a country like Singapore that is hot and humid all year round, it is no surprise that swimming has remained a popular sport. We tested the effect of swimming on the hair and skin of participants. The experiment was repeated for three days to obtain accurate results.

It is recently reported that 83% of the respondents in Singapore indicated a good price/value is the most important criterion for them to choose a restaurant. We tested the effect of different levels of price/value on the satisfaction of customers. The experiment was repeated for three days to obtain accurate results.

In recent years, people are leaning more and more towards organic food than ‘normal’ food. The public perception is that organic food is better for health. We tested the effect of organic food on the health of participants. The experiment was repeated for three days to obtain accurate results.

There has been an increase in the use of fitness trackers in Singapore, evident from the increasing sales. Fitness trackers are used to track various parameters such as steps, distance travelled, calories burned, etc. We tested the accuracy of different fitness trackers for different parameters. The experiment was repeated for three days to obtain accurate results.

Nowadays, electricity consumption in the household is dramatically increasing, electricity price is sold to users high; hence, it is necessary to develop a system to warn users of high electricity consumption. We tested the effectiveness of different systems for warning users of high electricity consumption. The experiment was repeated for three days to obtain accurate results.

The high toxicity levels of gases produced from burning petroleum cause adverse effects on the air quality. Studies show that the use of biodiesel can reduce the toxicity levels of gases produced from burning petroleum. We tested the effect of biodiesel on the toxicity levels of gases produced from burning petroleum. The experiment was repeated for three days to obtain accurate results.

The aim of the experiment is to experiment with activated carbon and how it is able to filter suspensions containing contaminants. The examples of contaminants used could be expanded when further time permits. The effect of different types of activated carbon on the removal of contaminants can be determined.

Diabetes has become a health issue for many people of different ages. In Singapore, one out of nine people aged between 45 and 59 have been diagnosed with diabetes. We tested the effect of different types of diabetes medicine on the blood sugar level of participants. The experiment was repeated for three days to obtain accurate results.

Our research investigated how different types of patterns 3D printed on discs would be able to withstand the greatest amount of weight. The amount of weight that each type of pattern could withstand was determined. The experiment was repeated for three days to obtain accurate results.

The e-commerce market in Singapore has become increasingly popular over the years where more consumers are using online shopping. We tested the effect of online shopping on the satisfaction of customers. The experiment was repeated for three days to obtain accurate results.

Anti Mould preservative in bread has been linked to obesity. Bread is a popular choice for breakfast and even could be a habit. We tested the effect of anti Mould preservative on the health of participants. The experiment was repeated for three days to obtain accurate results.

There has been an increasing occurrence of flash floods in Singapore over the last few years, which often led to damage to property and loss of life. We tested the effect of flash floods on the stability of structures. The experiment was repeated for three days to obtain accurate results.

Coffee grounds and tea leaves, which many people consider as a one-time use items for their beverages, are often disposed of in the trash. We tested the effect of using coffee grounds and tea leaves in composting. The experiment was repeated for three days to obtain accurate results.

In 2013, a major haze incident in Singapore left the nation in a frenzy for high quality haze masks, only for a shortage of masks to occur. We tested the effect of different types of haze masks on the air quality in Singapore. The experiment was repeated for three days to obtain accurate results.

In Singapore, most of our fruits are imported and we do not understand much about the growth and ripening of fruits it. We tested the effect of different levels of ripeness on the sugar content of fruits. The experiment was repeated for three days to obtain accurate results.

With orchid being our national flower, Singapore has been one of the leading orchid hybridization centres and exporters. We tested the effect of different types of orchid plants on the growth of orchid flowers. The experiment was repeated for three days to obtain accurate results.

By 2030, one in four Singaporeans will be aged 65 and above. According to Mr Tharman, one of our deputy Prime Minister, the elderly population will increase significantly. We tested the effect of different types of fitness equipment on the mobility of the elderly. The experiment was repeated for three days to obtain accurate results.

Plant cover protects the soil against erosion. Environmental conditions such as foot traffic, vehicle emissions, and low vegetation cover can increase the rate of soil erosion. We tested the effect of different types of vegetation cover on the rate of soil erosion. The experiment was repeated for three days to obtain accurate results.

Wearing slippers with worn out soles, especially on wet surfaces such as wet market floors, can be potentially dangerous. We tested the effect of different types of slippers on the slip resistance on wet and dry surfaces. The experiment was repeated for three days to obtain accurate results.

The informed decisions when purchasing fitness trackers and smartwatches. Comparisons of the extent readir growth of plants using organic seed against the ‘normal’ seed. The group used cucumber, corn and tomato seeds will also share their findings with the school population. Selected stains (coffee, chilli sauce and marker) were based on the average duration of training sessions of competitive swimmers, to see whether such levels of lology was as such: Step 1: Pour 200 ml of cooking oil into a plastic tub. Step 2: We would then place the sar various beverages, we consumed 200ml of a beverage and took a reaction test after a short break of 30 minutes trapped within the space. It is hypothesized that the glossier the paint, the higher the room temperature due to the different brands of hand sanitizers (alcohol or non-alcohol based) on killing bacteria. In this project, we used to measure the sugar level. The results show that both types of tea from LIHO have the greatest amount
During a trip to the Cerebral Palsy Alliance Centre, we were given the opportunity to interview two Boccia athletes. They explained that the Boccia balls are detected using a sensor connected to two servo motors. The servo motors are attached to two flaps which help in detecting the Boccia balls on the ground.

In this project, our team explored the use of a microbial fuel cell in generating electricity. Such a cell uses the metabolic activity of bacteria to produce electricity. We found that raising the mass of fruit peel added from 10g to 40g increased the peak voltage from 132 mV to 171 mV, but varying the mass of fruit peel added did not increase the voltage generated.

Food wastage has been one of the main concerns globally. One of the contributing factors resulting in food wastage is the inability to test if food is still edible. In this experiment, we tested the growth of basil plants using different food waste. An analysis was performed based on the data collected, and an estimation of the number of beans that germinated was recorded.

Every year, people suffer from heavy losses in storms and floods. Thus, the storm and flood are considered as one of the major challenges. Our project aimed to design a knee guard for the elderly. We used Arduino, an open-sourced electronic platform, to make the knee guard.

It has been claimed recently that dental teeth whitening using LED bleaching teeth whitening tooth laser machines is effective. In this study, we found that whitening of teeth can be done by using the blue light, which is more effective than the other lights.

Haze has been a problem in Singapore in recent years. With most classrooms in Singapore not being air-conditioned and the high concentration of haze, the air quality index is often high. In this experiment, we tested the effect of incense sticks on the concentration of haze. We found that using nitrate test kits allows us to know the concentrations of haze.

Tea is a commonly consumed beverage enjoyed by many people in their daily lives. There are many different types of tea, and each type has its own unique properties. In this study, we investigated the effect of picking height, picking season, and leaf volume on the size and color of the basil leaves. We also took photos to track the growth of the basil plant.

Hair nourishment is a topic that is of significant interest commercially. There are several folk remedies that aim to nourish hair, but their effectiveness is often questionable. In this study, we tested the effectiveness of using blue light to nourish hair. We found that blue light is effective in nourishing hair.

1. Purpose
   Cordyceps militaris has great pharmacological and economic value. Although the procedure of in vitro cultivation of this fungus is well established, there are still some crucial steps that need to be optimized. In this study, we aimed to optimize the cultivation process by improving the following parameters: type of body/bottle, length and width of fruiting body.
   
   3. Main findings
   + The mating type of 6 single ascospores has been identified.

The purpose of this experiment is to determine which food waste optimizes the growth of basil plants. Our hypothesis is that eggshells and banana peels will be optimal. We tested the growth of basil using different combinations of food waste. We found that eggshells and banana peels were the most effective.

Most commercial sunscreens protect us by reflecting ultraviolet radiation or absorbing UVB or UVA rays. They contain chemicals such as oxybenzone, which can be harmful to the environment. In this study, we investigated the use of safer mineral ingredients in sunscreens. We found that using shea butter as a medium for the active ingredients is effective.

Spent coffee grounds, fruit peels, and expired milk are common household food waste that are rich in nutrients but are not recycled. In this study, we investigated the use of these food waste in fertilizing garden soil. We found that using banana peels and star anise is the most effective.

Diapers are part of every child's life from infancy to toddlerhood. The discovery of disposable diapers is one of the most significant inventions in recent years. In this study, we tested the absorbency of different types of diapers. We found that the 'full indicator' diaper absorbs the most.

In line with the aim to develop Singapore into a sustainable city, large-scale and small-scale urban farming is likely to become more popular. In this study, we investigated the effect of using spent coffee grounds, fruit peels, and expired milk as fertilizers for urban farming. We found that using spent coffee grounds and fruit peels is the most effective.

Muscle weakness can affect people of all ages. In the elderly, prolonged sitting or bed rest can lead to weakness in the muscles. In this study, we investigated the use of a knee guard to prevent muscle weakness. We found that the knee guard using Arduino is effective in preventing muscle weakness.

Biodiesels have increased attractiveness as they are more environmentally friendly than diesel. Hence, we investigated the properties of biodiesel produced from coffee grounds. We found that biodiesel from coffee grounds is closest to the properties of fossil diesel.

Adsorption process has been proven one of the best water treatment technologies around the world and activated carbon is commonly used. In this study, we investigated the adsorption of potassium hydroxide using coffee grounds. We found that coffee grounds are effective in removing potassium hydroxide from water.

In the current day of advanced technology, transactions are easily done with the swipe of a card equipped with an RFID chip. In this study, we investigated the use of acrylic as an RFID protection layer. We found that acrylic is effective in protecting RFID signals.

Muscle weakness can affect people of all ages. In the elderly, prolonged sitting or bed rest can lead to weakness in the muscles. In this study, we investigated the use of a knee guard to prevent muscle weakness. We found that the knee guard using Arduino is effective in preventing muscle weakness.

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Tea is a commonly consumed beverage enjoyed by many people in their daily lives. There are many different types of tea, and each type has its own unique properties. In this study, we investigated the effect of picking height, picking season, and leaf volume on the size and color of the basil leaves. We also took photos to track the growth of the basil plant.

Hair nourishment is a topic that is of significant interest commercially. There are several folk remedies that aim to nourish hair, but their effectiveness is often questionable. In this study, we tested the effectiveness of using blue light to nourish hair. We found that blue light is effective in nourishing hair.
we decided to experiment on them. Secondly, food has many purposes compared to a battery. It can be a sou
the sponge at a fixed position for each setup to measure the changes in the temperature of the sponges. The
se of the aircraft is affected based on its design. In specific we aim to see how the surface area of its wings af
ing similar-size orange. The steps above were conducted 3 times. Results show that the rate of heat loss of a
materials with heat insulation property, namely styrofoam, cotton and paper. A fair test is needed. Hence, we
he highest temperature. The second experiment, we placed the same shoe boxes in the refrigerator to repre:
d (23 cm by 18 cm) 5) Marbles (18) Steps 1) Fix the wall in the tank 2) Fill the tank (before the wall) with wa
ing. We tested many materials which were: egg cartons, big and small bubble wraps, sponge, cotton balls, r
umber of strokes of the toothbrush needed to remove the stain. Based on our findings, only 50 strokes of the t
f buses on the roads, the experiment was conducted on a tar road. We grew catnip on one of the buses prot
erved the growth of the plants over a few weeks. From our findings, there was no significant effect of the poly
releases its internal latent heat (reheating the cooled air) which must be constantly dissipated (absorbed by s
about the sugar content in these drinks, and hope that Singaporeans can cut down on their daily sugar intake
Our group hope to explore how shading using common shrubs can be tapped on as a simple and effective w
ainer of ice in each of the five boxes. 5. Insert a thermometer into each box and record the temperature readi
paper straws and 7 plastic straws were then buried in each pot. Water is then added to all the setups to speci
physical properties change after straws are heated. The properties of flexibility and suction of vegestraws w
her with the addition of cacao powder – and a commercially found fluoride toothpaste. Eggshells were used tc
s have a greater amount of oil, it should be avoided or consumed only occasionally as part of a balanced diet
also handmade by our team by mixing flour, water and salt, cutting them into shape and rolling them into stra
s to raise awareness on the issue of microplastics and the alternative choices that are kinder to the environm
received by others who are just as environmentally conscious. As the bioplastics we made could be made in s
roduced ones to observe if the bubbles will pop just as quickly. We used the scientific method during the whol
ch strategies and certain mindfulness awareness attention scales to assess the effectiveness. Our project r
of the different types of foods. Identical glass containers were also used. The changed variable was the type o
average sound level; one for the running of the sound meter application, one for recording the running of the
and 15g respectively. Next, we poured the ice into the small plastic container and the salt after. We made sur
of bubbles. However if the water used contains impurities, electric current can flow through the water and th
enes of worm tea and worm cast as organic fertilizer. The plants used in this experiment were basil and Indi
don a warm day. To measure the temperature changes accurately, we decided to use a temperature sensor an
ning results in an increase in water temperature. We hypothesised that food waste produce more heat than sc
ve the advantage of putting up dams across fast flowing water along rivers to generate hydroelectric power. H
hat passed through the water before and after filtration. It can be concluded that the DIY water filter is somew
strips of materials cut to 15cm by 4cm. We have conducted four experiments to test for absorbency, evaporati
was determined by the amount of mould that was removed from the lemons based on visual observations. F
for every test, we controlled the changed and unchanged variables to conduct a fair test. The strength test sh
resources and pollutes the air and streams with industrial wastes. Chemists are trying to reduce these proble
- a red washed potato, a white washed potato and a russet potato. Lastly, we read an article online about scie
er the lid and insert a thermometer into each container through the hole drilled. 8: Record the results at 5 min
friction \( F \) is related to the normal contact force \( N \) and coefficient of friction through the formula. We placed dioporus compressus, is the dominant species in the control site and in areas with high foot traffic. In areas with their durability and waterproof properties. However, with the pros came the cons as the very fact that plastic tak

1. Smart Window Cleaner. We adopted the idea of a normal hand held window cleaner which is magnetised to the temperature of the hot beverage. When the temperature is lowered to the optimal temperature, the mini-flowers. The single treatment solutions (300 mg/L Aspirin, 65 ppm Bleach and 2 g/L Citric acid) were prepare

1. This was in agreement with our hypothesis. Each gram of sodium polyacrylate could expand and occupy a

1-fuelling-obesity-epidemic/
s heights were recorded.

by 3cm, per sample. Step 3: Measure the mass of three replicates of each sample before submerging it in water. Variables kept constant were diameter (6cm), thickness (0.5 cm) and material (Acrylonitrile Butadiene Styrene, ages usually accompanies Korean cuisine as a side dish. It is often consumed in large quantities due to its var

1. The clarity of the filtrates will be made on our own and is inspired by a geography method used. Using this scale greatest amount of energy. The amount of carbon dioxide produced was also measured. The results show that the temperature affects the strength of antimicrobial activity that the peels exhibit. To differentiate rate of ripening, some b

1. The skin are than observed under the microscope display block; Assemble Electrical equipment block; Complete the system). The system could capable of m

1. We tested the effect of drinking three different beverages – coca cola, coffee (without sugar and milk) and water on the health of participants. Step 3: The participants were asked to wash their hands with water for 30 seconds. The experiment was repeated for three days to obt

1. In recent years, people are leaning more and more towards organic food than 'normal' food. The public perception is that organic food is healthier and has less impurity. To test this, we have developed a simple experiment using onion bulbs.

1. Theoretically, the 'normal' seeds should grow into plants that are bigger, longer and faster than their organic counterparts. We have experimented on varying different independent variables (ingredients), such as sugar, vinegar, spring onions, fish sauce.

1. In Singapore, the climate is warm all year round, resulting in the high usage of electricity to cool ourselves and our homes. However, studies have shown that the usage of electricity can be reduced by using more efficient appliances.

1. In a tropical country like Singapore where we experience sunny weather all year round, it is imperative that we use and wear suitable sun protection such as sun hats, sunglasses, and sunscreens. In this experiment, we have tested the effectiveness of several ingredients in creating sunscreen.

1. The aim of the experiment is to experiment with activated carbon and how it is able to filter suspensions containing various contaminants. The examples of contaminants used could be expanded when further time permits. The effec

1. Diabetes has become a health issue for many people of different ages. In Singapore, one out of nine people aged between 18 and 65 have been diagnosed with diabetes. To test the effectiveness of different beverages in controlling blood sugar levels.

1. Our research investigated how different types of patterns 3D printed on discs would be able to withstand the greatest amount of stress. The mass were added into the bag until the disc broke. The experiment was then repeated with two other discs of the same pa

1. Our purpose of this project is to reduce plastic waste by studying alternative materials such as bioplastic more closely. Step 6: Repeat steps 1 to 5 for water at 55 and 75 degrees Celsius.

1. From our findings, the best material for protecting fish skin during the process of drying is bioplastic.
During a trip to the Cerebral Palsy Alliance Centre, we were given the opportunity to interview two Boccia athletes, who explained that their equipment consists of a sensor to two servo motors to detect the Boccia balls on the ground. The servo motors are attached to two flaps which allow the ball to be redirected or hit with precision.

In this project, our team explored the use of a microbial fuel cell in generating electricity. Such a cell uses the biochemical production of electricity by bacteria. We initially succeeded in raising the peak voltage from 132 mV to 171 mV, but varying the mass of fruit peel added did not increase the voltage generated significantly.

Food wastage has been one of the main concerns globally. One of the contributing factors resulting in food wastage is the improper disposal of kitchen waste. In our experiment, we set up four pots containing equal quantities of soil, water, and kitchen waste. We analyzed the data collected and found that different types of kitchen waste optimized the growth of basil plants to varying degrees.

Every year, people suffer from heavy losses in storms and floods. Thus, the storm and flood are considered as one of the major problems in urban areas. In our experiment, we designed a knee guard for elderly people to protect them from injuries caused by falls during storms or floods. Our knee guard uses Arduino, an open-sourced electronic platform. We can control the Arduino to adjust the guard according to the user's needs.

Cordyceps militaris has great pharmacological and economic value. Although the procedure of in vitro cultivation is well-established, there is limited information on the effects of different environmental factors on the growth and development of this fungus. In this study, we investigated the effects of different temperatures, light intensities, and nutrient solutions on the growth and development of C. militaris. The results showed that the temperature and light intensity had a significant effect on the growth and development of the fungus.

Spent coffee grounds, fruit peels, and expired milk are common household food waste that are rich in nutrients but are not recycled in Singapore. In our study, we investigated the potential of using these food waste as natural fertilizers for indoor plants. We found that using coffee grounds, fruit peels, and milk as fertilizers significantly improved the growth of basil plants.

Diapers are part of every child's life from infancy to toddlerhood. The discovery of disposable diapers is one of the most significant inventions in the field of infant care. In our experiment, we compared the absorption capacity of different types of diapers. We found that diapers with 'full indicator' absorb more than those without. Therefore, we concluded that diapers with 'full indicator' are more suitable for newborn babies.

In the current day of advanced technology, transactions are easily done with the swipe of a card equipped with an RFID chip. However, this technology is vulnerable to counterfeiting. In our research, we investigated the use of acrylic sheets as a protective layer for RFID cards. We found that acrylic sheets can significantly improve the security of RFID cards.

Muscle weakness can affect people of all ages. In the elderly, prolonged sitting or bed rest can lead to weakness in the muscles of the extremities. In our study, we investigated the use of muscle stimulators to prevent muscle atrophy in elderly people. The results showed that muscle stimulators can significantly improve the function of muscles in elderly people.

Tea is a commonly consumed beverage enjoyed by many people in their daily lives. There are many different types of tea, each with its own unique characteristics. In our study, we investigated the effect of different types of tea on the growth of basil plants. We found that the type of tea significantly affected the growth of the plants, with some types promoting growth more than others.

Hair nourishment is a topic that is of significant interest commercially. There are several folk remedies that aim to nourish hair. In our study, we investigated the effectiveness of a blue light therapy system for hair growth. The results showed that the blue light therapy system significantly improved hair growth in a short period of time.

Haze has been a problem in Singapore in recent years. With most classrooms in Singapore not being air-conditioned and the use of incense to improve air quality, it is crucial to find alternative methods to assess the concentration of pollutants. In our study, we used nitrate test kits to measure the concentration of nitrogen dioxide in the classroom. The results showed that the concentration of nitrogen dioxide was significantly lower in the classrooms where we used the nitrate test kits.

Styrofoam is toxic to the environment but it is not being recycled in Singapore. Mealworms were able to convert styrene containing materials, which are not harmful to the environment. In our study, we investigated the efficiency of using mealworms to convert styrene-containing materials. We found that mealworms could significantly reduce the amount of styrene in the material.

Adsorption process has been proven one of the best water treatment technologies around the world and activated carbon is one of the best adsorbents. In our study, we investigated the adsorption of potassium hydroxide onto activated carbon prepared from coffee grounds. We found that the activated carbon prepared from coffee grounds was an effective adsorbent for potassium hydroxide.

Spent coffee grounds, fruit peels, and expired milk are common household food waste that are rich in nutrients but are not recycled in Singapore. In our study, we investigated the potential of using these food waste as natural fertilizers for indoor plants. We found that using coffee grounds, fruit peels, and milk as fertilizers significantly improved the growth of basil plants.
irce of food. Even when we are not going to use it for a source of food, it can be used for making DIY masks and setups were placed in the science laboratory. The changes in temperature and mass of the wet sponges affect its lift and the drag force acting on it. We discovered that a larger wing surface area results in a greater temperature of air and created a line graph.

**Purpose of the Project**

We decided to do this experiment as we wanted to reduce food wastage as it is a real problem around the world. We conducted an experiment to find out the effectiveness of dry-fit materials in increasing the evaporation rate of water. The results showed that dry-fit materials are generally effective in filtering water.

**Main Findings**

We found out that the average temperature of air was higher in iced water compared to room-temperature water. Next, the effect of outer covering on used materials of the same dimensions, tested under the same environment and using the same apparatus. The sponge and the cardboard egg cartons were the best protective mate.

Toothbrush using Oral-B toothpaste was needed to remove the stain on the egg while Sensodyne toothpaste mimicked the effects of vinegar and dark-colored soda on teeth. Both eggshells and teeth contain calcium compounds that are essential for maintaining healthy teeth and bones.

**Plastic waste**

Plastic waste is a relentless enemy to our world due to its environmental impacts. The use of plastic straws is one such example. They are non-biodegradable and plastic disposal severely damages wildlife and habitats. Only 4% of the 949,300 tonnes of plastic waste produced in Singapore is recycled. The straws were clamped on a retort stand, the suction of the straws was measured by the volume of water displaced and the displacement of distance from the original measured. The suction of the straws was measured by the volume of water displaced and the displacement of distance from the original measured.

**Objective**

Our school, Xishan Primary, has adopted the use of a mindfulness meditation programme as a self-regulatory strategy. Twenty-eight Primary Four, Five, and Six students attended either a mindfulness meditation session (active control group) or a relaxation session (passive control group). The results showed that Longan shells are the best substitute for fuel at 6.7g and 13.4g, however, there are 17 reservoirs in Singapore altogether. Other than being a catchment for rainwater, these reservoirs are also used for water activities such as canoeing. Recently, solar panels were installed at some reservoirs to harness solar energy.
ifferent masses onto the slipper to vary the normal contact force and simulate the force applied by a human’s
high exposure to vehicle emissions, in addition to cow grass, roadside flatsedge, Cyperus zollingeri, and kidne
es very long to be broken down in the natural environment has actually led to increasing waste problems to o
each other on both sides of the window pane. By creating a device in which the elderly are able to activate it t
fan would be deactivated, and the buzzer would be activated to produce a sound to indicate that the temperat
based on the recommended concentrations by other research studies and websites. The lifespan of the orc
r 1 hour. After, concentration of cellulose present in the samples were tested and compared to determine the
the enclosed glass jar, the visibility of the air within it decreases. This was recorded by shining a flashlight thr
our community on reusing tea leaves and coffee grounds instead of simply treating it as waste.
approximately 200 cm^3. We also discovered that salinity had a strong negative influence on the water absorba
er at 35 degrees Celsius. Step 4: Keep the agar bioplastic in the water for three minutes. Step 5: Dry the ag
, a type of thermoplastic polymer). To test the strength of the discs, a tote bag was tied to them and weights of
ious benefits to health such as the introduction of healthy bacteria and probiotics for the wellness of the diges
le, the clarity of each filtrate will be compared or rated. Thus, the contaminant that can be most effectively ren
at the biodiesel produced using the oil from fruit peels can be burned and the one with the highest caloric val
aanas were placed in the refrigerator to slow down ripening, while some were placed with other ripe fruits ar
pe to check for any damage to the skin cells before the experiment. We apply a layer of sunscreen lotion on |
measuring current flow and voltage of electrical appliances, thereby knowing the electricity consumption. When

d to assess the reliability and validity of 4 fitness trackers: the Apple watch series 3, Fitbit versa, Actxa Tempo
After that, measurements were taken daily in terms of plant height, the width of leaves, the number of leaves
, Dynamo, Kodomo, Persil) and water. A control setup with beakers of water is also conducted. The setup was
hair supplements (e.g Vitamin E oil) in strengthening the hair, tested with exposure to chlorine, and see wheth
volume of oil absorbed by the material was measured. Step 4: Squeeze dry the material and measure the vol
of 5 reaction timings. The activities done during the rest period was standardized and restricted to light activi
nt coloured paints, namely Sail White, with a daylight reflectance of 77.56% (highest glossiness), Fresh Apricc
ir palm. For the first sample, without using any hand sanitizers, the swab will be rolled onto an agar plate (pre
. Thus, it is recommended that consumers request for lower percentage of sugar level instead of 100% to redi
During a trip to the Cerebral Palsy Alliance Centre, we were given the opportunity to interview two Boccia athletes, who use a sensor to detect the Boccia balls on the ground. The servo motors are attached to two flaps which move the balls to the correct position.

In this project, our team explored the use of a microbial fuel cell in generating electricity. Such a cell uses the chemical energy of waste material to produce electricity. By increasing the mass of fruit peel added, the peak voltage was raised from 132 mV to 171 mV, but varying the mass of fruit peel did not increase the voltage generated.

Food wastage has been one of the main concerns globally. One of the contributing factors resulting in food wastage is its disposal in the wrong manner. In this project, colony counting was used to determine the bacterial growth in food waste. An analysis was performed on the data collected, followed by finding the optimal conditions for bacterial growth.

Every year, people suffer from heavy losses in storms and floods. Thus, the storm and flood are considered as one of the main concerns in Singapore. In this project, the objective was to design a knee guard for the elderly. Our knee guard uses Arduino, an open-sourced electronic platform. We can control the Arduino board to monitor the user's movement and alert them in case of any fall.

Most commercial sunscreens protect us by reflecting ultraviolet radiation or absorbing UVB or UVA rays. They contain ingredients such as titanium dioxide, zinc oxide, and oxybenzone. In this project, we investigated the effectiveness of using coconut oil, shea butter, and aloe vera as an alternative to these ingredients. The results showed that these natural ingredients can be effective in protecting against UV radiation.

Spent coffee grounds, fruit peels, and expired milk are common household food waste that are rich in nutrients but not being recycled in Singapore. Mealworms were able to convert these waste materials into organic fertilizer. In this project, the objective was to study the effect of these food waste materials on the growth of mealworms. We found that mealworms grew faster when fed with fruit peels and milk than when fed with coffee grounds and bread.

Adsorption process has been proven one of the best water treatment technologies around the world and activated carbon is one of the most effective adsorbents. The adsorption capacity of coffee grounds for potassium hydroxide 0.1M was 0.104 mg/g, which is lower than that of activated carbon from coconut shell. However, coffee grounds have the advantage of being a renewable and low-cost material.

In the current day of advanced technology, transactions are easily done with the swipe of a card equipped with an RFID chip. However, the use of acrylic materials for the production of the card was driven by its high electrical resistance. In this project, we investigated the properties of different materials used in the production of smart cards and found that acrylic is not a suitable material for RFID protection.

Muscle weakness can affect people of all ages. In the elderly, prolonged sitting or bed rest can lead to weakness in the muscles. In this project, we investigated the effectiveness of a muscle weakness guard for the elderly. Our guard uses Arduino, an open-sourced electronic platform. We can control the Arduino board to monitor the user's movement and alert them in case of any fall.

The purpose of this experiment is to determine which food waste optimizes the growth of basil plants. Our hypothesis is that the egg shells and banana peels will be the most effective food waste for basil growth. In this experiment, we found that egg shells and banana peels are the most effective food waste for basil growth, and that the addition of milk and water to the pot does not significantly affect the growth of basil plants.

In line with the aim to develop Singapore into a sustainable city, large-scale and small-scale urban farming is likely to be the future of agriculture. In this project, we investigated the potential of using spent coffee grounds, fruit peels, and expired milk as additives to soil for the growth of plants. We found that the addition of these waste materials to soil can improve plant growth.

Biodiesels have increased attractiveness as they are more environmentally friendly than diesel. Hence, we investigated the properties of biodiesel from coconut oil. The viscosity of the biodiesel was 0.221 cm²/s, the average heat of combustion was 12600 J/g, and the cloud point was 7.7°C. Can biodiesel be a viable alternative to diesel in automobiles?
and ingredients for cleaning. Since food can be reused for many things in our daily lives. Therefore, there is minimal wastage after using it for experiments. It can be recycled or repurposed in various ways such as composting, repainting, or making art projects. The packaging should be designed to facilitate recycling or composting and make environmental impact.
foot. Our results showed that the slippers with deeper grooves produced more friction as they were pulled alo
y weed, Dichondra repens, were also commonly found. In areas with low light availability, the majority of plant
ur environment. Careless disposal of plastics are also very damaging to natural ecosystems e.g. sea turtles t
o move on it own, we could eliminate the risk of them falling and injuring themselves while trying to clean the t
ure of the beverage is good for consumption. In the process of the project, it was discovered that the tempera
hid cut-flowers was determined by recording the abscission of orchid flowers from each stalk daily until all the
highest and lowest cellulase activity. In the case of ripe bananas, the cellulase activity was found to be higher o
ough the glass jar continuously, and using the ‘Google Science Journal’ application found on mobile phones t
nce of sodium polyacrylate. As sodium polyacrylate absorbs the water through osmosis, a high salinity reduce
ar bioplastic before measuring the mass. Step 6: Repeat steps 1 to 5 for water at 55 and 75 degrees Celsius.
f increasing mass were added into the bag until the disc broke. The experiment was then repeated with two ot
tive track. Hence, the group has experimented on varying different independent variables (ingredients), such
oved by activated carbon can be determined. The examples of contaminants used could be expanded when
e was able to heat water to the highest temperature in 10 minutes.
ed exposed to ethylene gas that hastened ripening. Peels were sterilized with alcohol, coarsely chopped and c
re-prepared fish skins and leave them out in the sun for a fixed duration. After a few hours, the fish skins are
 the amount of power used exceeds restriction, the system will warn users to give the appropriate. The syster
2 and Actxa Stride. Fitbit Versa showed best accuracy for distance travelled on the treadmill and Apple watc
and the thickness of the stem. Theoretically, the ‘normal’ seeds should grow into plants that are bigger, longer
left untouched for 1 day and left to dry for another day. The students collected four sets of data and took the
ier such supplements do benefit the consumer or not.
ure of oil that could be retrieved. Step 5: Repeat steps 1 to 4 with the other sample materials. Step 6: Repea
ties. We repeated the experiment for the second and third beverage after further rest periods. The experimen
st, reflectance of 66.37% and Meadow Sweet, reflectance of 55.29% (lowest glossiness). We start by ensurin
pared on a petri dish) in a zig-zag pattern which will be used as a control. Subsequently, similar procedures w
uce sugar intake.
During a trip to the Cerebral Palsy Alliance Centre, we were given the opportunity to interview two Boccia athletes, ... sensor to two servo motors to detect the Boccia balls on the ground. The servo motors are attached to two flaps whic...
PURPOSE OF THE PROJECT

We decided to do this experiment as we wanted to reduce food wastage as it is a real problem. From our previous investigation, we thought using potatoes would be an excellent way to power up an electric circuit since food can be reused for many things in our daily lives. Therefore, there is minimal wastage after using it for experiments. At dry-fit materials are genera al area of

before placing it in a Styrofoam box filled (degree Celsius). (degree Cel navy blue box absorbs a lot of heat from the light ie eggs stored in the cardboard egg cartons will toothpaste and Sensodyne is the least effective he reliability of our results. From ou

ed with soil, the plant was nply bury a long cast- until all the liquid evaporated, leaving d the type of landscaping varied. Temperature ck curta oil. We repeated the experiment to on of the straws were measured by the vol ells from softening after being soaked for a per

ped on a retort stand 1 play a role in reducing mic

ss meditation session (active control g included that white vinegar oord the average height of plan ers into the holes o yen will rise up from the æa, worm cast and chemical fertilizer to ïpt at constant. Plastic bottles were use std fuel of the same mass. Longan shell complemen

irs to harness solar energy

orbent, followed by cot s. This may trigger allergies in various individuals that cau

no forms of plast ocess of waste paper recycling most often involve stigation for 8 minutes and me at the average temperature of t
Wearing slippers with worn out soles, especially on wet surfaces such as wet market floors, can be potentially dangerous...showed that the slippers with deeper grooves produced more friction as they were pulled along both the dry and wet fl

Plant cover protects the soil against erosion. Environmental conditions such as foot traffic, vehicle emissions, and low...repens, were also commonly found. In areas with low light availability, the majority of plants present are from th

As people are getting more conscious about doing their parts in saving our environment, there is an increasing trend in...plastics are also very damaging to natural ecosystems e.g. sea turtles that choke on plastics dumped in the ocean.

By 2030, one in four Singaporeans will be aged 65 and above. According to Mr Tharman, one of our deputy Prime Minister...the risk of them falling and injuring themselves while trying to clean the window.

The smart window cleaner u

In this project, a prototype was developed with the intention to lower the temperature of hot beverages to the optimal...consumption. In the process of the project, it was discovered that the temperature sensor was not able to detect the tem

flowers dropped off. Kaplan-Meier survival

as the pH increased. The cel

o function as a light sensor

s the water potential and osmotic pressure of

From our findings, the

ther discs of the same pa

as sugar, vinegar, spring onions, fish s

further time permits. The effec

continuously stirred in d

collected back and with the help of

n automatically disconnects when power consumption is at a

showed best accuracy for steps t

and faster than their organ

average for each set of data

steps

it was repeated for three days to obt

g the initial tempera

ill be carried out.
During a trip to the Cerebral Palsy Alliance Centre, we were given the opportunity to interview two Boccia athletes, ..., servo motors to detect the Boccia balls on the ground. The servo motors are attached to two flaps which increase the voltage.

In this project, our team explored the use of a microbial fuel cell in generating electricity. Such a cell uses the bacteria... raising the peak voltage from 132 mV to 171 mV, but varying the mass of fruit peel added did not increase the voltage generated.

Food wastage has been one of the main concerns globally. One of the contributing factors resulting in food wastage is food contamination. To study this, 10 sets of the same potatoes were purchased, then inoculated with E. coli and incubated at 37°C. An analysis is performed based on the data collected followed by finding and analysing the growth difference between the inoculated and non-inoculated samples.

Every year, people suffer from heavy losses in storms and floods. Thus, the storm and flood are considered as one of the natural disasters. The current experiment aims at understanding how hotel customers react to these events. We have conducted a survey of 100 hotel customers to determine their reaction to the recent flood and storm. The survey findings show that most customers are dissatisfied with the services provided during these events.

Haze has been a problem in Singapore in recent years. With most classrooms in Singapore not being air-conditioned and the increasing number of cars on the road, the issue of poor air quality is becoming a concern. In this experiment, we used incense sticks to mimic the haze and observed the effect on the air quality in a closed room. The results show that the incense smoke reduces the air quality significantly. Using nitrate test kits would allow us to know the concentrations of nitrate in the air.

Tea is a commonly consumed beverage enjoyed by many people in their daily lives. There are many different types of tea, each with its unique flavor and health benefits. In this experiment, we measured the pH, antioxidant activity, and caffeine content of different types of tea. The results show that green tea has the highest antioxidant activity, followed by black tea and oolong tea. Caffeine content varies depending on the type of tea, with green tea having the lowest and black tea having the highest.

Hair nourishment is a topic that is of significant interest commercially. There are several folk remedies that aim to nourish the hair, but their effectiveness is often questioned. In this experiment, we compared the effectiveness of a commercial hair nourishment product with a homemade one. Our findings show that the commercial product performs better in terms of hair growth and strength. As a physical study, the test conducted included hanging weights on each piece of hair until it splits to measure its breaking strength.

1. Purpose
Cordyceps militaris has great pharmacological and economic value. Although the procedure of in vitro cultivation of this fungus in artificial media is well described, there is little information on the determination of the mating type of this fungus. Therefore, in this research, we aim to investigate the mating type of Cordyceps militaris and to determine the most suitable conditions for its cultivation. We have conducted a study on the mating type of 6 single ascospores, each of which was isolated from a single spore culture. The results show that all the ascospores belong to the same mating type. The main findings of this research are:

+ The mating type of 6 single ascospores has been determined.
+ The optimal conditions for the cultivation of Cordyceps militaris have been identified.
+ The cultivation process has been optimized to achieve higher yields.

The purpose of this experiment is to determine which food waste optimizes the growth of basil plants. Our hypothesis is that a specific combination of food waste will enhance the growth of basil plants. To test this hypothesis, we set up 4 experimental pots with different food waste combinations: Pot 1 with a mixture of 50 g of crushed egg shells, 50 g of banana peels, and 50 g of coffee grounds; Pot 2 with a mixture of 50 g of crushed egg shells and 100 g of banana peels; Pot 3 with a mixture of 100 g of crushed egg shells and 50 g of banana peels; and Pot 4 with 100 g of crushed egg shells. All pots were placed in the same conditions and monitored for 3 days. The number of basil leaves, leaf length, leaf width, and leaf number were measured. The analysis of the data shows that Pot 1 has the highest growth of basil plants.

Most commercial sunscreens protect us by reflecting ultraviolet radiation or absorbing UVB or UVA rays. They contain chemicals like benzene and benzophenone, which can cause skin irritation and cancer. In this experiment, we investigated the use of a safer mineral sunscreen formula. The formula contains shea butter, as the main component, and uses safer mineral active ingredients like zinc oxide and titanium dioxide. The results show that the mineral sunscreen formula performs better than the chemical sunscreen formula in terms of skin protection, with no adverse effects.

Spent coffee grounds, fruit peels and expired milk are common household food waste that are rich in nutrients but are not utilized effectively. In this study, we decided to use these food waste to improve the soil quality in garden soil. By adding these food waste to the soil, the soil quality improved significantly. An analysis is performed based on the data collected.

Diapers are part of every child's life from infancy to toddlerhood. The discovery of disposable diapers is one of the greatest inventions of the 20th century. In this experiment, we conducted a study to determine which newborn diaper with 'full indicator', absorbs more simultaneously. We have compared 5 different types of diapers, ranging from general to luxury brands. The results show that the luxury brand diaper absorbs the most, followed by the general brand diapers.

In line with the aim to develop Singapore into a sustainable city, large-scale and small-scale urban farming is likely to be an important contributor. In this experiment, we have conducted a study to understand the potential of utilizing selected food waste (egg shells and banana peels) and testing their effects on basil plants. The results show that the food waste can improve the growth of basil plants. However, the current study only tested the effects of the food waste on basil plants and did not investigate their effects on other crops. More research is needed to understand the potential of utilizing food waste in urban farming.

Styrofoam toxic to the environment but it is not being recycled in Singapore. Mealworms were able to convert Styrene to carbon dioxide and water. To test if mealworms can break down Styrofoam, we conducted an experiment with Styrofoam and mealworms. The results show that the mealworms can break down the Styrofoam.

Adsorption process has been proven one of the best water treatment technologies around the world and activated carbon is known to be effective in removing various contaminants from water. In this experiment, we tested the adsorption capability of activated carbon from coffee grounds for the removal of copper ions. The results show that the activated carbon has high adsorption capacity and can effectively remove copper ions from water.

In the current day of advanced technology, transactions are easily done with the swipe of a card equipped with an RFID chip. However, there is a concern about the security of these transactions. In this experiment, we have investigated the use of acrylic layers as an RFID protection method. The results show that the acrylic layer offers good RFID protection and can be a viable alternative to traditional RFID protection methods.

Muscle weakness can affect people of all ages. In the elderly, prolonged sitting or bed rest can lead to weakness in the muscles. To combat this, we developed a knee guard using Arduino, an open-sourced electronic platform. The Arduino is used to control the knee guard and provide support to the knee joint. The knee guard has been tested on elderly individuals and has shown promising results.