SASTA OLIPHANT SCIENCE AWARDS

SOUTH AUSTRALIAN SCIENCE TEACHERS ASSOCIATION

Prize Winner

Models & Inventions

Year 5-6

Dherya Chousalkar

Pedare Christian College

COVID Detector Dogs

Scientific Principle

In 2019, several pneumonia cases of unknown cause appeared in humans in China. The International Committee on Taxonomy of Viruses announced severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as the name of the new virus, also known as COVID-19. The virus rapidly spread globally and, the World Health Organization declared COVID-19 as a global pandemic. Many countries went into lockdowns that resulted in a major impact on the world economy. Early detection of COVID-19 is essential for its control. I have developed a model where sniffer dogs can detect COVID-19 positive human patients at the airport. This will ultimately help in strengthening Australia's biosecurity**.** Dogs' noses bear 300 million scent receptors, compared with 5 million in humans. This enables dogs to detect tiny concentrations of odor that people cannot smell. Veterinary scientists have trained dogs to detect a distinct pattern of volatile organic compounds (VOCs) released in human sweat, during COVID infection. Dogs are trained to sit or paw the floor (shown as a dog shaking its head in this model when they detect signs of infection or COVID-positive patient in my model).

Construction

I used wooden sticks, rollers, straws, paper, thin polystyrene sheets, marker pens, glue, a hot glue gun, color, colored papers, magnet strips, and a toy dog to prepare my model. I first prepared a Y shape track on a cardboard and then mounted printed the graphic of individuals on rollers. The rollers were inserted into a track. The rollers were also interconnected with each other and connected to a little handle. A model of the dog's brain was also prepared to explain which part of the dog's brain plays a major role in sniffing.

Operation

I developed an interactive model to show an airport where people are disembarking the aircraft. After coming out of the plane, the sniffer dog sniffs an individual traveller to detect COVID-19. The graphic of individuals mounted on a roller can be pulled in the south direction of the cardboard. When Dog moves its head, the individual is considered as suspected positive and proceeds for further testing. When a dog does not shake its head, the individual is considered COVID negative and proceeds to the exit lane. I have also prepared a dog brain model showing different parts of the brain.

The novelty of my model

This is inexpensive for students, scientists, and the public to understand how sniffer dogs can detect COVID-19 and reduce the burden on the pub health system.

Risk assessment and acknowledgment

My risk assessment form is attached separately. My mother helped me in painting Dog's brain and in preparing a Y-shaped track.

OSA RISK ASSESSMENT FORM

for all entries in (✓) ☑ Models & Inventions and ☐ Scientific Inquiry

This must be included with your report, log book or entry. One form per entry.

NAME: Dherya Chousalkar ID: 0445001

SCHOOL: Pedare Christian College

Activity: Give a brief outline of what you are planning to do.

I have done a project that show Covid sniffer dogs in action. When Covid has been detected, a dog raises it's paw or sits down. In my project, the dog shakes its head. This project is for people to understand how sniffer dogs detect COVID-19 and reduce burden on the Pub lic health system.

Are there possible risks? Consider the following:

- Chemical risks: Are you using chemicals? If so, check with your teacher that any chemicals to be used are on the approved list for schools. Check the safety requirements for their use, such as eye protection and eyewash facilities, availability of running water, use of gloves, a well-ventilated area or fume cupboard.
- Thermal risks: Are you heating things? Could you be burnt?
- Biological risks: Are you working with micro-organisms such as mould and bacteria?
- Sharps risks: Are you cutting things, and is there a risk of injury from sharp objects?
- Electrical risks: Are you using mains (240 volt) electricity? How will you make sure that this is safe? Could you use a battery instead?
- Radiation risks: Does your entry use potentially harmful radiation such as UV or lasers?
- Other hazards.

Also, if you are using other people as subjects in an investigation you must get them to sign a note consenting to be part of your experiment.

Risks	How I will control/manage the risk
Stanly knife (cuts)	Have adut Supervision
hot Glue gun (burns)	Wear hot glue gun protective gloves
Skewers (sharp edges)	Take help from my Parents. For all I was wearing Gloves

(Attach another sheet if needed.)

Risk Assessment indicates that this activity can be safely carried out

RISK ASSESSMENT COMPLETED BY (student name(s)): Dherya Chousalkar

SIGNATURE(S): Dherya Chousalkar

☑ By ticking this box, I/we state that my/our project adheres to the listed criteria for this Category.

TEACHER'S NAME: Samantha Ireland

SIGNATURE: S Ireland DATE: 19/8/21