

Sustainability Challenge & Singapore Teams' Projects

Sustainability Challenge

Participating teams proposed an innovative solution to a sustainability issue in their local context. The teams trialled their idea and prepared a video presentation for their project. These projects have been published on the APT JSO website (<https://9thaptiso.org>). Visitors to the website can view the videos and pose questions and comments to the teams.

Singapore Teams	Sustainability Challenge Project
<p>Cedar Girls' Secondary School</p> <p>Students: Chordiya Priyal Hemant Ganesan Madhumita Wong Jingci Nivelle</p> <p><i>For media interviews with students, please contact:</i></p> <p>Contact Person: Ms Ng Pei Sun Designation: HOD IT Email: ng_pei_sun@moe.edu.sg Contact No: 9626 9005</p>	<p><u>Project Title:</u> Food Fashion</p> <p><u>Project Description:</u> Food and textile waste is a prevalent problem which can lead to detrimental impact on the environment. The team came up with a solution to repurpose food waste into fabric to reduce material footprint. They extracted cellulose fibres from waste bread, bananas, and orange peels, and turned them into strings and bioplastics. They then tested the samples for tensile strength, elasticity and absorption to find the best alternative for a Physical Education (PE) shirt, and discovered that samples made from bananas have higher tensile strength and elasticity than polyester. Furthermore, their sample bioplastics were found to be more absorbent than polyester. This potentially allows cellulose fibres to replace synthetic fibres and hence, upscale green fabric production.</p>
<p>Pasir Ris Secondary School</p> <p>Students: Lim Sing Yee Lim Zong Han, Marcus Osbert Tham Yeow Peng</p> <p><i>For media interviews with students, please contact:</i></p> <p>Contact Person: Ms Chua Wei Tian Designation: HOD Science Email: chua_wei_tian@moe.edu.sg Contact No: 9117 1872</p>	<p><u>Project Title:</u> Saponification</p> <p><u>Project Description:</u> In alignment with the United Nations' Sustainable Development Goal 12, "responsible consumption and production", the team used saponification to convert used oil into soap to cut down the amount of waste (used oil) going to landfills. Upon testing, they found that their soap was not only effective in reducing bacterial growth, but also had similar or even more effective antibacterial properties as compared to soaps available on the market. They also discovered that scent and ethanol together further enhanced the effectiveness of their soap. They plan to implement their project in their school for wipe-down purposes or for use as liquid hand soap, and eventually expand its use in the wider community.</p>
<p>Singapore Chinese Girls' School</p>	<p><u>Project Title:</u> Waterproof DIY bin liner with plant latex and oil</p>

<p><u>Students:</u> Kottamasu Venkata Ramya Jaswini Liyana Ashif Koorimannil Pattiyil Yong Sook Ting</p> <p><i>For media interviews with students, please contact:</i></p> <p>Contact Person: Ms Tan Beng Chiak Designation: Teacher Email: tan_beng_chiak@moe.edu.sg Contact No: 9767 3090</p>	<p><u>Project Description:</u> The team's project aim was to find an alternative to plastic bags used to line trash bins. Their project highlights the global problem of the excessive use of plastic bags, and this gave inspiration to the team to replace plastic bags with waterproof newspaper. They experimented with different types of plant latex, and also used cooking oil to design their prototype. They hope that their product would substantially reduce waste generation and promote reduction and reusing.</p>
<p>Raffles Institution</p> <p><u>Students:</u> Ian Ho Yi-En Jared Xu Xinrui Li Chang Cheng</p> <p><i>For media interviews with students, please contact:</i></p> <p>Contact Person: Mrs Low Mei Choo Designation: Teacher Email: meichoo.low@ri.edu.sg Contact No: 9772 8731</p>	<p><u>Project Title:</u> Aquaponics in a School Setting</p> <p><u>Project Description:</u> The team set up a small-scale aquaponics system in a greenhouse to produce fish and vegetables. Their system consists of red tilapia in a fish tank and kale in a hydroponics system. Water from the fish tank was filtered and pumped into the hydroponics system, before being returned to the tank. After 2 months, the team discovered that the fish increased in size, but the kale did not grow well. They then installed lights to increase the rate of photosynthesis, and added seaweed fertiliser to provide additional nutrients. The team hopes to build a sustainable mini-ecosystem.</p>