



CIFAL Singapore - Research and Development Programme (RDP) November



Icon of four vertical bars : 31 10 2024

- Icon of two vertical bars** : Other
- Icon of two vertical bars** : Singapore, Singapore
- Icon of two vertical bars** : 1 11 2024 to 15 11 2024
- Icon of two vertical bars** : 22 Weeks
- Icon of four vertical bars** : Decentralize Cooperation Programme
- Icon of two vertical bars** : <https://www.ntu.edu.sg/>
- Icon of two vertical bars** : US\$0.00
- Icon of four vertical bars** email: cradle@science.edu.sg
- Icon of two vertical bars** : NIL, CIFAL Singapore



The Research & Development Programme (RDP) offers students with opportunities to engage in R&D-style investigative and prototyping work targeting the UNSDGs.



We aim to meet the following objectives through our collaborative efforts: ● Provide applied STEM experience to passionate students from local schools through mentored science/engineering R&D project work (“Research and Development Programme”, RDP) ● UNSDGs 6, 7, 9, 12, and 13 as the topic for R&D project work to provide sustainability understanding and support in the accomplishment of the Goal 4 SDG target ● Provide students opportunities for science communication through sharing of research findings.



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Over 2 intensive weeks, all students will be exposed to technology and engineering through various relevant masterclasses on tools and equipment usage (e.g. Computer Aided Design and Laser Cutting) as well as the concepts on Scientific Research and Engineering. Each group is matched with a mentor from the Science Centre with the corresponding field(s) of expertise. At the end of the camp student teams come up with prototypes they have developed to address a community issue. The planned research and prototyping fields include synthesis of bioplastic, wastewater treatment, making paper using food waste, and sorting/recycling of trash. Related UNSDGs: • Goal 6: Clean Water and Sanitation • Goal 7: Affordable and Clean Energy • Goal 9: Industry, Innovation, and Infrastructure • Goal 12: Responsible Consumption and Production • Goal 13: Climate Action



Students 15-18 years



Past examples: Biology-related project: Synthesis of bioplastics using algae/plant-based materials In order to reduce waste generation, students created a mould for the bioplastics, and optimise the protocol for synthesis. Their synthesised bioplastics were then analysed for viability. Chemistry-related project: Removal of Bisphenol A from water by silica-coated magnetic iron oxide Clean, potable water is vital to support urban population. In this project, students developed a suitable protocol to measure bisphenol A (BPA) concentration using spectrophotometry. The effectiveness of silica-coated magnetic iron oxide on the removal of BPA in water by spectrophotometric measurement carried out. Engineering-related project: SMART Waste Sorting Bin Most recycling bins are contaminated with non-recyclable items. In order to alleviate this issue, students designed and built waste bins prototype that could identify the type of waste and automatically opens the lid of the matching bin to get the public to dispose their waste to its correct bin.