3.37 嘉諾撒聖瑪利書院 - Fight the virus together

Teacher Name	Miss Angel Chan, Miss Amanda Tang, Miss Dorothy Cheung, Mr. Benedict Kwok, Mr. Victor Yap
Subject	Integrated Science Information and Communications Technology
Subject Level	S1
Learning Objectives	To design a product, with the use of a sensor, to minimize the spread of Covid-19.

Integrated Science lesson plan

STEM Project introduction: The use of technology to keep social distancing

Time	Activities	Lesson Material	Homework
10 minutes	• To understand how products are designed using the engineering design process	**Worksheet:** The use of technology to keep social distancing	**Lunar New Year Assignment:** To design a product, with the use of a sensor, to minimize the spread of Covid-19.
20 minutes	• To state the input/ output signals of an Automatic Hand Sanitizer Dispenser and the purpose of designing such a product.		
10 minutes	• To give examples of applications of sensors in daily life		

Information and Communications Technology lesson plan

Objectives:	● To familiarize with the basic knowledge of single-board microcontrollers, Arduino boards, and their basic components. ● To be able to develop simple programs by simulator TinkerCAD to control different output devices such as LED and buzzer. ● To be able to develop simple programs to acquire data with ultrasonic sensor. ● To design and implement a simple system to solve daily life problems.

Lesson I (45 min)

Introduction	Top 10 Best Arduino Projects.mp4 (0:00-1:07)	2 min
Learning activities:	Introduction of Arduino board Digital pins (#1-13) and power pins (5V and GND)	5 min
	Introduction of TinkerCAD Sign in to TinkerCAD	5 min
	First Arduino program in TinkerCAD	10 min
	Test your program (LED) in Arduino.	13 min
	Class Activity 1	5 min
Conclusion	Arduino Program – Explanation	5 min

Lesson II (45 min)

Introduction	Ultrasonic sensor.mp4	2 min
Learning activities:	Measure distance using ultrasonic distance sensor - data acquisition - Concept of variable	15 min
	Test your program (ultrasonic distance sensor) in Arduino.	15 min
	Class Activity 2	5 min
Conclusion	Arduino Program – Explanation (Arduino IDE) - Type of variable (int, float, char) - Declaration of variable (e.g. float distance;) - Assignment expression (e.g. distance = 3;)	8 min

Lesson III (45 min)

Introduction	Social distancing	5 min
Learning activities:	Arduino social distancing alarm	20 min
	Class Activity 3	5 min
	Group discussion: 1. Improvement can be made on the Arduino social distancing alarm. 2. Apart from social distancing alarm, brainstorm an invention that can be used to fight the virus.	12 min
Conclusion		3 min

S1 Quality Education Fund Thematic Networks STEM Exhibition

As S1 students participated in the STEM QTN-T project, samples of their hard work and dedication are exhibited at the School Main Entrance during the post-exam period. All students and teachers are welcome to visit the booths displaying students work. Details are listed as follows:

Introduction to the exhibition:

- Showcase of S1 I.S. learning outcome: Student conceptual designs that can minimize the spread of Covid-19.
- Showcase of S1 ICT learning outcome: Design and implement an Arduino social distancing alarm that can minimize the risk of epidemic spreading in the community.
- Showcase of S1 student STEM projects in the Distance Measurement and Application Design Competition.

More photos about the STEM exhibition: