

Kau Yan College

e-Life@KYC

S.2 Unit 7: Drip Irrigation Device - Lesson Plan

Lesson	Strategies	Contents	Activities	Remarks
Pre-class	Engage	Understanding the global problem of water shortage and pollution Introduction of drip irrigation	Activity 1: Watch the video about water shortage and water pollution in developing countries, and the advantages of drip irrigation. Answer the questions in PowerLesson2	Use of PowerLesson2 online platform Remind students to collect disposable wastes, e.g. plastic water bottles, wooden chopsticks, etc.
1 st – 2 nd	Engage Explore Goal-setting Self-planning Self-monitoring Self-evaluation	Briefing and mini lecture Constructing a drip irrigation device	Activity 2: Review students' answers in pre-class learning Activity 3: Brainstorm of the engineering problems of making a drip irrigation device Activity 4: Design and make a device using disposable materials such as plastic bottle and wooden chopsticks that can (a) stand and (b) release water drop by drop into the soil for irrigation purpose	Remind students the pollution problems of disposable wastes, especially have takeaway meal during the pandemic Remind students to share their designs and products into the PowerLesson2 platform Remind students to add water for trial test of the function of the device. Evaluate the function and revise the device if necessary
3 rd – 4 th	Explore Self-planning Self-monitoring	Scientific investigation on the factors affecting the water dripped from the device	Activity 5: Carry out investigation on the different factors that affect the volume of water dripped for 15 minutes Possible independent variable (I.V.): (a) The position (height) of the plastic bottles (b) The volume of plastic bottles (c) The diameter of the rubber tubing (d) The number of holes in the rubber tubing	Engineering design informs scientific investigation Remind students to identify variables with the help of fishbone conceptual framework Remind students to share their results into the PowerLesson2 platform

	<p>Explain</p> <p>Self-evaluation</p> <p>Elaborate</p>		<p>Activity 6: Analyze and discuss the finding in a whole-class manner</p> <p>Activity 7: Competition on using the drip irrigation device for watering the pot of plants for 7 days in school atrium</p>	<p>Help students draw conclusion with the use of whole class data</p>
Post-class	<p>Elaborate</p> <p>Evaluate</p> <p>Self-evaluation</p>	Competition	<p>Activity 8: Make observation and record the condition of the pot of plant with the use of drip irrigation device</p>	<p>Remind students to record the results outside the class and share the condition of the plant in the Powerlesson2 platform</p>
5 th – 6 th	Revision	Revising the drip irrigation device with Micro:bit	<p>Activity 9: Revise and refine the drip irrigation device with Micro:bit, sensors and motors so that it can have higher efficacy of water conservation on watering the plant</p>	<p>Remind students to use knowledge about the use of micro:bit, sensors, motors and MakeCode for programming (S.1 Computer Literacy)</p> <p>Facilitate students in assembling a servo on the drip irrigation device with the 3D printed rack (Design and Technology)</p>