

Social Innovation Challenge 2018

Programme:	Social Innovation Challenge 2018	Level:	Secondary 2
Theme / Challenge Statement:	Design a device (through coding) which could help to address an issue faced by our elderly.		

Summary

Secondary 2 students embarked on a Social Innovation Challenge to devise solutions (through coding) which could help to address an issue faced by our elderly. Design thinking is used to facilitate student's thinking process in this challenge. Trainers are enlisted to assist in equipping students with coding knowledge and to synergise their learning experiences.



Prior Knowledge:	Students should already know: 1. Design Thinking
Learning Objectives:	By the end of the lesson, students should be able to: 1. Identify the issues faced by elderly. 2. Devise possible solutions to the issues faced by elderly. 3. Devise possible solutions (incorporating basic coding) to the issues faced by elderly. 4. Produce basic prototypes of their solutions to the issues faced by elderly.



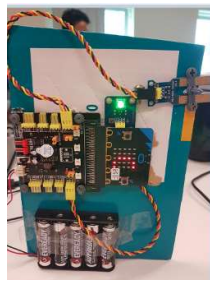


Time	Teacher Activities	Purpose	Resources Needed
Introduction/Pre-activity			
70 mins	Recap on Design Thinking: 1. Empathy 2. Definition 3. Ideation 4. Prototyping 5. Testing	To allow students to recap and deepen their understanding of the approach (design thinking) adopted for this challenge.	Slides

Lesson Plan

	<p>Introduction of Programme Challenge: Social Innovation Challenge</p> <ul style="list-style-type: none"> Design a device (through coding) which could help to resolve a problem faced by our elderly. 	To let students understand the objectives and requirements of this challenge.	
Lesson development/Main activities			
Day 1 – 70mins	<p>Experiential activities for students to experience the difficulties/issues faced by the elderly. E.g. rubber bands tied around fingers to simulate deteriorating body functions. Cotton buds to be placed in the ears to simulate worsened hearing.</p> <p>Defining and identifying issues faced by elderly. Finalising one issue to be addressed.</p>	To allow students to adopt perspective taking and feel for the elderly.	Slides
Day 2 – 2 hours	<p>Ideating possible solutions to their identified issue through the design thinking process.</p> <p>Basic coding and introduction to micro:bits and the various sensors and features. (motion, sound, light, moisture)</p>	To allow students to understand the available features / functionalities of the micro:bits.	Slides
Day 3 – 2 hours		To allow students to leverage coding in designing their solutions for their identified issue.	Booklet
Day 4 – 2 hours			
Day 5 – 2 hours			
Day 6 – 2 hours			
Day 7 – 2 hours			
Day 8 – 2 hours			
Day 9 – 2 hours	Prototyping	To allow students to understand the available	Slides Booklet

Lesson Plan

	Students will create prototypes of their solutions using lego, cardboard, papers and recycled materials.	features / functionalities of the micro:bits. To allow students to leverage coding and the different sensors in designing their solutions for their identified issue.	Card board, Lego, Papers, Recycled Materials
Day 10 – 2 hours	Refining Prototypes and testing their prototypes. Students will refine their prototypes and solutions upon feedback provided by the trainers. Preparation for Final Presentation.	To allow students to understand the available features / functionalities of the micro:bits. To allow students to leverage coding and the different sensors in designing their solutions for their identified issue. To allow students to better apply their basic coding skills through refining their solutions and prototypes.	Slides Booklet Card board, Lego, Papers, Recycled Materials
Day 11 – 2 hours	Internal Showcase	To celebrate and affirm students' effort in leveraging coding to ideate solutions for their identified issues.	Slides Students' prototypes
Closure and consolidation/Post-activity			
30 mins	Reflection Students reflected on their learning experience. 1. What are your top 3 challenges? 2. What are your top 3 key learning points? 3. If given one more opportunity, what would you improve upon? What would you change? Why? 4. Summarise your learning experience in one word.		Slides

List of Projects (5 – 10 projects if possible) created by Students			
Project 1	<p>Multi-Purpose Walking Stick</p> <p>To address elderly's weakened sense of sight, hearing and awareness of the surrounding.</p>	<p>Resources Needed</p> <p>Walking stick, motion sensor, sound sensor, moisture sensor, light sensor.</p>	
Project 2	<p>Medication Reminder</p> <p>To address elderly's potential memory lapses and their well-being.</p>	<p>Resources Needed</p> <p>Medication box/container, sound sensor.</p>	
Project 3	<p>Memory Game</p> <p>To assist elderly in training their memory skills.</p>	<p>Resources Needed</p> <p>Light sensor, Sound sensor. Memory toy game.</p>	
Project 4	<p>Retractable Clothes Hanger/Rack</p> <p>To assist elderly in keeping their laundry before it rains.</p>	<p>Resources Needed</p> <p>Clothing rack/hanger, light sensor, moisture sensor, sound sensor.</p>	
Project 5	<p>Household Automatic Lightings</p> <p>To address elderly's weakened sense of sight and weakened awareness towards their surroundings.</p>	<p>Resources Needed</p> <p>Nightlight, motion sensor, light sensor, sound sensor.</p>	

Please send this template, together with any additional resources, e.g. Powerpoint slides, worksheets and .hex file, to: digital_maker@imda.gov.sg.

Lesson Plan

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