

**STEM Education**  
**Learning Activity Exemplar**  
**St. Paul's School (Lam Tin)**

Learning Activity:     Aquaponics    

Level/ Key Stage:     S1    

<input type="checkbox"/> Based on topics of a KLA	<input checked="" type="checkbox"/> Project learning
KLA: <input type="checkbox"/> SE <input type="checkbox"/> ME <input type="checkbox"/> TE	

Major L&T mode/ strategies (more than 1 could be chosen):

- Enquiry learning    Problem-based learning    e-Learning    Cooperative learning  
 Design & make        Direct teaching            Others: \_\_\_\_\_

Learning objectives (include generic skills, e.g. creativity, collaborative and problem-solving skills):

*Students should be able to:*

1. Subject knowledge and skills:

- learn and apply the principles of aquaponics
- find out the effect of a chosen factor (independent variable) on the growth of vegetables
- observe the characteristics of organisms and collect data
- draw conclusions from results

2. Generic skills and attitude:

- make adjustments to the system if any problem arises (Problem-solving skill)
- design a grow cup for the aquaponics system (Creativity)
- present data using graphs and interpret the results (Numeracy skill)
- collaborate and communicate with other groupmates (Collaboration and communication skills)
- develop good learning attitudes through continuous measurements and discussions throughout the project (Study skill)

Prerequisite knowledge:

1. Nature of science
2. Scientific investigation

Learning difficulties:

1. Students' lack of experience in conducting a month-long experiment

Remarks: The school joined the STEM Education support service provided by the SBCDS Section of the EDB. This exemplar is one of the school-based learning and teaching materials developed by the school in collaboration with the Section.

	Learning focus	Curriculum content/ elements involved	KLA		
			SE	ME	TE
1.	Investigate the effect of a chosen factor (independent variable) on the growth of vegetables	Scientific Investigation	✓		
2.	Design and make a grow cup	K6 Production Process			✓
3.	Measure the growth of vegetables and monitor the quality of water using suitable apparatus and tools	<ul style="list-style-type: none"> <li>• Looking at living things</li> <li>• K5 Tools &amp; Equipment</li> </ul>	✓		✓
4.	Present data in graph forms using graph paper and spreadsheet	<ul style="list-style-type: none"> <li>• Presentation of data</li> <li>• K16 Information Processing and Presentation</li> </ul>		✓	✓

Assessment:

1. Worksheet (Principles of aquaponics, data presentation, conclusion of investigation)
2. Grow cup (Design, 3D drawing skill, practicality)
3. Presentation (Effect of a chosen factor on the growth of vegetables, collaboration and communication skills)



Reference/  
Annex:

