

## Clyde Waterfront Education curriculum resources

### Lesson/project idea

#### 'Communities'

Title	Curricular area	Age group
"Get me out of here"	Science Maths and Numeracy Health and wellbeing	Lower Secondary
<p><b>Lesson/project focus</b></p> <p><b>Lesson:</b> Applied physics in a practical situation encompassing problem solving, logistical planning, communication and safety awareness.</p> <p><b>Project:</b> Boat manoeuvring leading to an understanding of: forces, pivot points, fulcrums, levers and turning circles, planning, cause and effect.</p>	<p><b>Interdisciplinary learning opportunities</b></p> <p>Maths Health and Wellbeing Language - speaking</p>	<p><b>Cross cutting themes</b></p> <p>EiE; CfE; AifL</p>
<p><b>Description</b></p> <p>This constitutes a practical lesson in applied physics, but is related to an active, real life situation in which young people are directly involved. Associated learning includes discussion on planning processes, problem solving, safety and social responsibility This problem solving lesson focuses on the yacht's safe departure from its pontoon. Pupils are engaged in analysing the forces being applied to the yacht and the techniques used to overcome the manoeuvring restrictions.</p> <p>Through the exercise the pupils will be engaged in learning about forces, pivot points, levers, fulcrums and turning circles.</p> <p>They will gain skills for life and work, team building, co- operation and communication</p>		
<p><b>Aims of learning</b></p> <ul style="list-style-type: none"> <li>• To apply classroom learning about forces, pivot points, levers, fulcrums and turning circles</li> <li>• To gain skills in problem solving</li> <li>• To provide an understanding of the logistical and physical requirements needed to manoeuvre the yacht safely from its berth.</li> </ul>		

- To appreciate the safety implications of making uninformed decisions.

### **Broad Outcomes of learning**

To apply learning in a practical context  
To gain skills for work and careers  
To develop skills in working with others  
To develop safety awareness

### **CfE Experiences and Outcomes**

The sciences framework provides a range of different contexts for learning which draw on important aspects of everyday life and work.

In general, learning in the sciences will enable learners to:

- develop curiosity and understanding of the environment and the learners place in the living, material and physical world
- demonstrate a secure knowledge and understanding of the big ideas and concepts of the sciences
- develop skills for learning, life and work
- develop the skills of scientific inquiry and investigation using practical techniques
- develop skills in the accurate use of scientific language, formulae and equations
- apply safety measures and take necessary actions to control risk and hazards
- recognise the impact the sciences make on the learners life, the lives of others, the environment and on society
- recognise the role of creativity and inventiveness in the development of the sciences
- develop an understanding of the Earth's resources and the need for responsible use of them
- express opinions and make decisions on social, moral, ethical, economic and environmental issues based upon sound understanding
- develop as a scientifically-literate citizen with a lifelong interest in the sciences
- establish the foundation for more advanced learning and future careers in the sciences and the technologies

### **Properties and uses of substances:**

By exploring the properties of different substances and how they can be changed, learners gradually develop their understanding of the connection between structure and properties. They explore the development of new substances which have useful properties, and begin to relate physical and chemical properties to models of atomic structure. Learners begin to use symbols and chemical formulae as a way of communicating information about elements and compounds by:

- developing knowledge of the Periodic Table by considering the properties and uses of a variety of elements relative to their positions
- contributing to a variety of practical activities to make and break down compounds, learners can describe examples of how the properties of compounds are different from their constituent elements
- differentiating between pure substances and mixtures in common use and selecting appropriate physical methods for separating mixtures into their components
- taking part in practical investigations into solubility using different solvents and applying what learners have learned to solve everyday practical problems

<b>Resources for research</b>  www.saferglasgow.com	<b>Resources for project</b>  Teacher's Pack Fact sheets Worksheets
<b>Relevance to curriculum</b>  Supports CfE and puts applied physics into a real life situation, delivering skills for life and work	

## How to develop an *enterprising* lesson

### Developing confident individuals

#### How will you put this into a *real* context for learners to learn?

'I am able to assess risk and take informed decisions'

*I am developing the skills and attributes which I will need for learning, life and work. I am gaining understanding of the relevance of my current learning to future opportunities. This is helping me to make informed choices about my life and learning.*

**HWB 3-19a**

*I am investigating different careers/occupations, ways of working, and learning and training paths. I am gaining experience that helps me recognise the relevance of my learning, skills and interests to my future life.*

**HWB 4-20a**

### Developing responsible citizens

#### How will you share *responsibility*?

'I am able to evaluate environmental, scientific and technological issues' (responsible )

*I am learning to assess and manage risk, to protect myself and others, and to reduce the potential for harm when possible.*

**HWB 16a**

*I know and can demonstrate how to keep myself and others safe and how to respond in a range of emergency situations.*

**HWB 17a**

*I know and can demonstrate how to travel safely.*

**HWB 4-18a**

### Developing effective contributors

#### How will you develop *relationships*?

'I am able to learn independently and as part of a group '

*I am learning to assess and manage risk, to protect myself and others, and to reduce the potential for harm when possible.*

**HWB 4-16a**

*I know and can demonstrate how to keep myself and others safe and how to respond in a range of emergency situations.*

**HWB 4-17a**

'To help me when interacting or presenting within and beyond my place of learning'

**LIT 02a**

### Developing successful learners

#### How will you *reflect* on this learning?

'I am able to solve problems'

*Having recognised similarities between new problems and problems I have solved before, I can carry out the necessary calculations to solve problems set in unfamiliar contexts.*

**MNU 4-03a (maths and numeracy)**

*I can use the link between time, speed and distance to carry out related calculations.*

**MNU 4-10b**

*I can apply my knowledge and understanding of measure to everyday problems and tasks and appreciate the practical importance of accuracy when making calculations.*

*By making accurate measurements of speed and acceleration, I can relate the motion of an object to the forces acting on it and apply this knowledge to transport safety.*

**SCN 4-07b**

I can independently select ideas and relevant information for different purposes, organise essential information or ideas and

## Developing lifelong and employability skills

**How can you involve the following external partners to make this relevant for life for young people?**

- Employers/business - Glasgow and Community Safety Services
- Local community – Community groups and clubs can provide other opportunities for the pupil's new skills and knowledge skills to be developed by providing follow up learning.
- Families - Are supplied with the information on the activity day. Parents are asked to give their consent and support to their children.

**Is there an opportunity to highlight career opportunities?**

- The skills gained will be invaluable for life and work.
- There are links to various faculties of the growing marine and leisure industries.
- Pathways into these industries will be highlighted.
- Basic skills and knowledge will be imparted in sailing and boat handling.

**Principles of the Curriculum:**

'Get Me Out of Here' focuses on the physics of manoeuvring a vessel from its berth whilst involving pupils directly in the analysis of the procedures required to under-take this successfully and safely.

Includes: Planning, problem solving, safety and taking social responsibility in a very real situation.

In doing so the pupils will be aided in becoming:

Successful Learners: *able to make reasoned evaluations*

Confident Individuals: *able to assess risk and make informed decisions*

Responsible Citizens: *able to make informed choices and decisions*

Effective Contributors: *able to apply critical thinking in new contexts*

## Reviewing the process

**How could you involve other curricular areas?**

**Maths** - calculations required and problem solving

**HWB** – skills for life and work

**Could it be incorporated into an activity/project with a higher profile?  
(presentation, competition, production of materials, event)**

'Who dunnit?' at night for parents with learners running the evening

## Brief outline of plan

Sequence	Input and content	Teacher activity	Learner activity
<b>Pre-event</b>	<ul style="list-style-type: none"> <li>Teacher information pack provided</li> <li>Direct liaison between delivery team and teaching staff to establish levels, curricular links required and specific outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Deliver topic theory on subject matters to be covered during event; e.g. physics such as forces, vectors, etc; recording and analysing information, problem solving and/or risk assessment.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure understanding of concepts</li> <li>Find applications for theory</li> <li>Experience working in groups</li> <li>Discuss personal responsibilities to others</li> <li>Consider examples of safety issues relative to uninformed decision making actions taken</li> <li>Research business</li> </ul>
<b>Pre-event</b>	<ul style="list-style-type: none"> <li>The event outlined</li> <li>Pre-visit by crew member initiated if required</li> <li>Information and pro-forma supplied</li> </ul>	<ul style="list-style-type: none"> <li>Outline the Challenger adventure to bring classroom learning to life</li> <li>Organisation of pre-visit by crew member if required.</li> <li>Pro-form sent to parents</li> <li>Signed risk acceptance forms gathered</li> <li>Transport/ pack lunch arrangements made</li> </ul>	<ul style="list-style-type: none"> <li>Gain an understanding of process</li> <li>Commitment to task</li> <li>Research resources</li> <li>Research equipment/safety needs</li> </ul>
<b>Event</b>	<ul style="list-style-type: none"> <li>'Get Me Out of Here' exercise</li> </ul>	<ul style="list-style-type: none"> <li>Oversee travel</li> <li>Ensure pro-forma carried</li> <li>Provide support to delivery staff and pupils</li> <li>Collate work sheets etc for future review</li> </ul>	<ul style="list-style-type: none"> <li>Worksheets completed</li> <li>CfE delivery identified</li> <li>Self awareness development assessed</li> <li>Feedback from trainers gathered</li> <li>Progress assessed</li> <li>Attainment of learning outcomes</li> </ul>

<b>Post event</b>	<ul style="list-style-type: none"><li>• Review and assessment process</li></ul>	<ul style="list-style-type: none"><li>• Follow up for activity to consolidate learning</li><li>• Assessment required</li></ul>	<ul style="list-style-type: none"><li>• Review event focusing on learning</li><li>• Complete assessment process</li><li>• Discuss personal benefits</li></ul>
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