

## River & Rowing Museum

### Key Stage 2: Forces in Action

#### Workshop Summary



The workshop will help pupils understand the forces involved in rowing, with a view to designing a boat to win an Olympic Gold Medal and to develop their knowledge and understanding of the forces of upthrust, friction and gravity through practical application. They will have 'hands on' experience of these concepts in our education centre with a series of structured experiments. These ideas are then reinforced in the Rowing Gallery with opportunities to try out the interactive displays.

#### Workshop Contents

##### Education Centre (Museum Tutor led)

- Activities designed to develop pupils' knowledge and understanding of the forces involved in rowing - Gravity, Upthrust and Friction (drag) and to encourage pupils to think about the importance of materials, shape and power in their designs
- Experiments focussed on floating, displacement and comparing the weight of objects in the air and in water using Newton meters
- A tow tank experiment shows how movement through the water is affected by friction, hull shape and power

##### Handling Objects (Museum Tutor led)

- The aim of this session is to acquaint pupils with some of the objects and vocabulary associated with rowing: a sliding seat, cross section of a hull, cross section of an oar, an oar, and an outrigger with oarlock and gate attached

##### Galleries (Teacher led)

- At the beginning of the session pupils are told that the information they collect will help them decide on the best design for their boats
- Each group starts at a different activity, with about 10 minutes to carry out the task sheets and to fill in their answers
- It is important that the adult at each activity asks pupils to discuss their findings and poses relevant questions at the appropriate time

#### Learning Outcomes

- Gain an understanding of forces of gravity, friction, upthrust and balanced/unbalanced forces
- Gain an understanding of how modern boat design seeks to enhance or inhibit these forces to increase the speed of a boat
- Develop scientific skills and vocabulary

#### National Curriculum Areas Covered

- Science:
  - Friction
  - Forces and movement
  - Forces in action

#### Useful Pupil Preparation

- Introduction to the ideas of friction and gravity
- Some knowledge of the use of Newton metres