

TEACHER NOTES

Science: Physics

Motion & Forces, Working Scientifically

Contextual Summary

This resource is for students at key stage 3 and relates to the 'Motion and Forces' part of the Science National Curriculum, focusing on the forces needed to turn and slow down vessels.

The tasks link to their journey on board the Red Funnel vehicle ferry.

The pre-visit task requires students to carry out a practical activity to experience how forces are used to turn vessels and slow them down. This is then related to Newton's Third Law of Motion; for every action there is an equal and opposite reaction.

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Task Implementation

The pre-visit practical activity is based on using forces to turn a vessel. The activities will require model boats or the opportunity for students to make their own model boats.

Suggestions for templates are included.

The on-site resource is designed to be completed during the journey. Students are requested to look for different types of boats and study the various methods of propulsion and steering. Students are expected to add lines of force to diagrams. Their observations are then related to Newton's Third Law of Motion.

Ability Levels

There are two variants of this resource for students of higher and lower ability in key stage 3.

Teachers can support as necessary.

Key skills practised in this unit:

- ▶ Working scientifically
- ▶ Recording data
- ▶ Making conclusions
- ▶ Presenting reasoned explanations.

Relationship to Curriculum

This resource links to the required teaching as specified by the National Curriculum 2014 for key stage 3 Science.



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RED FUNNEL

SUBJECT

Science: Physics

UNIT

Motion & Force (Propulsion)

OPPORTUNITIES FOR USE

- ✓ Pre-Visit
- ✓ On-Site Activity
- ✗ Post-Visit

CURRICULUM / SYLLABUS

- ✓ National Curriculum 2014
- ✓ Curriculum for Excellence

Applies to Resources numbered:

107081
107082

Learning Opportunities

Pre-Visit & On-Board

- ▶ Students complete the Science resource linked to this teacher note:

Resource ID:

107081 (KS3 low-mid ability)

107082 (KS3 mid-high ability)

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the Key Stage 3 national curriculum

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- ▶ The worksheets and experiences will enable students to have a greater understanding of forces and motion allowing them to relate to other unfamiliar examples.

Learning Outcomes

- ✓ Students will investigate practically the effects of forces on the movement of vessels.
- ✓ Students will relate their findings to Newton's Third Law of Motion.
- ✓ Students will relate their knowledge to the propulsion and steering of different vessels.

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