

TEACHER NOTES

Forces at Isle of Wight Steam Railway



Contextual Summary

This resource is for upper key stage 2 students who are covering the topic 'Forces' as part of the Year 5 compulsory science element of the 2014 National Curriculum.

It allows students who visit Isle of Wight Steam Railway to engage with the scientific aspects within this environment.

Students can explore pushing and pulling aspects of the locomotive and how the carriages are moved around, the effects of pulling and pushing levers in the signal box, as well as their own physical pulling and pushing processing when entering and leaving the train during their visit.

They can also expand their understanding of how and why things change direction, as well as aspects of friction and gravity at the railway.

Task Implementation

This task can be introduced to students before their visit to Isle of Wight Steam Railway; it would be particularly useful if they have done some basic / refresher work on pulling and pushing forces.

When on site at the railway, students can then complete the questions on the sheet as they move around the venue. This will focus students' attention on the key areas for learning. Alternatively, this resource works well as a follow-up task as the teacher deems appropriate.

Ability Levels

There is one version of this resource intended ideally for mixed ability upper key stage 2. However, the resource can be adapted by teachers for other ability groups or younger students. There are versions for lower key stage 2 that can be considered for SEN, and for key stage 3 which can be used for stretch and challenge if required.

Key skills practised in this unit:

- ▶ Exploring the movement of familiar things
- ▶ Identifying how locomotives / trains use forces to gain traction / friction
- ▶ Understanding that both pushes and pulls are examples of forces and that opposing forces exist
- ▶ Recognising that when things speed up, slow down or change direction, there is a cause, and how traction and friction contribute to this

Relationship to Curriculum

The above skills are required to be taught and practised as per the National Curriculum 2014, for upper key stage 2, and the Curriculum for Excellence.

SUBJECT

Science

UNIT

Physics

OPPORTUNITIES FOR USE

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



30-60 Mins

APPLICABILITY



Upper KS2

P6 - P7

CURRICULUM / SYLLABUS

- ✓ National Curriculum 2014
- ✓ Curriculum for Excellence

Applies to Resource number

101051

Learning Opportunities

Pre-Visit

Students could cover the basics of forces and motion, particularly the pushing, pulling, speed, traction, friction and change of movement aspects, to allow them to engage with the resource at Isle of Wight Steam Railway

During the Visit

Completion of Science Upper KS2 Physics / Forces at Isle of Wight Steam Railway resource linked to this document:

Forces at the Railway!

Resource ID: **101051** (mixed ability)

Post Visit

Follow-up tasks could include:

- ▶ Class discussion of all the examples of forces they discovered at Isle of Wight Steam Railway
- ▶ Completion of labelled diagrams, PowerPoint slides, or animations showing these examples
- ▶ Finding other examples of where water becomes steam in the everyday world

Enrichment Opportunities

Opportunities exist for the students to also engage with other types of forces and motion that they will learn about in later key stages - for example, forces and linear motion, rotation etc.

Learning Outcomes

Students will be able to demonstrate an understanding of how familiar things (locomotives and trains) move and the key forces that are apparent at Isle of Wight Steam Railway. Students will be able to understand that trains go faster, slow down, change direction, and the effects friction and traction have on achieving this. They will be able to understand that both pushes and pulls are examples of forces.

See Also...

Other resources at Isle of Wight Steam Railway relevant to this age group include:

101022	English	10 questions to ask at the railway
101111	English	Review and comment
101182	English	Understanding railway texts
101202	English	Comprehension of information
101132	History	Railway events in chronological order
101232	History	Investigate the railway!
101141	Maths	Applying mental maths to the railway
101151	Maths	Interpreting railway data
101081	Science	The power of steam!

For further details visit www.edudest.info and click:

- ▶ *Resource Finder* - to locate specific resources identified above
- ▶ *Venue Finder* - to learn more about education at this venue
- ▶ *Subject Finder* - to find other relevant Isle of Wight venues

