

Engineering

The activities used in the programme were adapted from the Engineering Everywhere project theme 'Engineering Thrills', and the Cre8ate Maths project 'Rigid Structures' activities. The 'Rigid Structures' and 'Ejection Seat' activities are included in this folder. For further information about the two projects and their resources please refer to the links below.

Key messages

- Science and mathematics are used in engineering.
- Engineering can be introduced through the teaching and learning of science and mathematics.
- Science and mathematics are really important to study if you want to be an engineer.
- Engineering-based jobs are really exciting, satisfying and rewarding.
- Engineers make a significant contribution to society.
- Engineers use the skills they are developing (both scientific skills, mathematical skills and personal capabilities).
- Engineers work in multidisciplinary teams.
- There are so many different engineering careers.
- The subjects and qualifications you need to study to do that job.

As teachers we also need to be aware of equality and diversity issues (these will be addressed in the programme eight in this series and the associated guidance pack).

Teaching hints

The stimulus 'Engineering Thrills' video material can be used as a starter for either the maths lesson or science lesson; or for a series of coordinated lessons across the two subject areas. The job interview simulation could also be used as a follow up careers activity to either lesson or as part of the coordinated programme.

Lesson 1

- Show the short Engineering Thrills video and then asked the students if they can identify the engineering involved in the roller coaster ride.
- Show the longer video and follow it up by using one of the 'Engineering Thrills' link activities to consolidate the ideas introduced in the video.
- Run the 'Rigid Structures' and/or 'Ejection Seat' activities as instructed in the teachers notes accompanying the activities.

Engineering

Lesson 2

- As a follow-up careers activity run the job interview simulation. The activity sheets are included in this folder.
- Divide the class into two groups give each member of one group the interviewee materials, including guidance sheet and application form. Give each member of the other group the interview panel guidance sheet and recording grid.
- In groups of three or four interview panels should prepare their questions and decide who will chair the panel and who should ask each of the questions they finally select (25 minutes).
- The interviewees/applicants should prepare their applications and prepare for their interview by, for example, thinking of the questions they could be asked and preparing their answers. This could be done in a separate room. (25 minutes).
- The interviews could either be carried out in front of the whole class by selecting one panel and three interviewees; or by linking three interviewees with each panel. You will need to prepare the room for the interviews.
- Debrief by asking the chair of each panel to report who they selected and why and then by asking the students what they had learned. Emphasise key learning points.

Useful links

STEM subject choice and careers

stemcareers@shu.ac.uk

The STEM subject choice and careers project was set up to signpost advice, guidance and resources from a wide range of bodies. The project will also be producing a range of resources for students, teachers IAG professionals and employers in a rolling programme up to 2011.

cre8ate maths

<http://cre8atemaths.cseprojects.org>

cre8ate maths is an exciting new maths project which takes as its starting point the key employment sectors of Yorkshire and Humberside. The maths education resources developed for the project use stimulating and motivating contexts that aim to engage and motivate pupils. The key characteristics of all the resources are that they link current mathematical thinking with real world applications. Why not take a look then download and use the materials as they come on line.

● Engineering

Engineering Everywhere

<http://www.engineingeverywhere.org.uk>

The aim of the Engineering Everywhere project is to introduce students to engineering through the teaching and learning of science. The resources developed for students aged 14 - 16 include 8 engineering themes. Each theme is introduced through 2 short videos; 4 link activities consolidate the learning in a short fun way and there are also 3 innovative new practical activities for each theme. The complete resource is in the form of a DVD which can be obtained free by completing the electronic application form on the website.