Design a Space Shuttle
Lesson Plan

Overview
In this 60-minute activity, pupils have the opportunity to design a space shuttle to transport astronauts to the International Space Station. This lesson focuses on the design element and additional time will be required to make and evaluate the spaceship.

Materials
Resources and organisation:
• Fact Sheet on the International Space Station
• Pictures and clips of space shuttles (available on the Internet)
• Individual whiteboards and pens
• Access to the EducationCity Mind Map Tool
• Reference Sheet for pupils to design and evaluate their space shuttle – photocopy enough for one per pupil

Lesson structure
0 - 10 minutes – Explain to the pupils that they have been commissioned to design and make a space shuttle for NASA and that as part of this commission they have to design and make a model prototype. Discuss the fact that the space shuttle is needed to take a group of astronauts to the International Space Station. Start by setting the scene and asking the pupils what they know about the International Space Station. This can be supported by the Fact Sheet on the International Space Station.

10 - 20 minutes – Show the pupils some pictures and clips of space shuttles (available on the Internet) to give them a starting point for their design should they need it. Discuss the purpose of many of its features, (e.g. the nose cone and number of engines) so that they gain an understanding of their importance.

20 - 35 minutes – Then show the pupils the design pro forma and ask them to work through the design element so that they consider what it will look like and to draw two different design sketches that they could use to make their design. As they work through this, remind them to think back to the pictures and clips you have shown them to ensure they incorporate the various components.

35 - 45 minutes – Draw the class back together and by way of peer assessment, ask pupils to swap their space shuttle designs with a partner. Ask them to assess each other’s work, commenting on the content covered in each of the sections. Once they have done this, give the pupils time to assess their own plans and add to them should they wish to.

45 - 55 minutes – Ask the pupils to choose the design they are going to use and to then consider the resources they will need to complete their prototype. These too can be listed on the pro forma.

55 - 60 minutes – By way of a plenary, ask the pupils to think about the various design and technology techniques they have learnt, such as joining and cutting, and may need in order to complete their design. Additional time will be needed to make and evaluate their designs. The pro forma will also take pupils through the evaluation process.