**How to prepare a model for 3D printing**

**Teacher notes**

**Resources:**

* Teacher powerpoint
* Example STL file of hollowed out cube. Print this to use as an example for the lesson.
* Fusion 360

**Pre-preparation**

* Print out the student worksheets – These are to be used throughout the lesson to reinforce the key learning.
* Ensure you have access to Fusion 360
* If possible print out a model before hand and abort the print half way through so the infill pattern will be exposed and clear for students to see.
* Print out a model that has a raft attached to it.

**Learning Objectives**

* To understand how to prepare a model for 3D printing
* To know the difference between infill, layer height, print speed and a raft.

**Starter task 10 minutes**

* Students are to log onto Fusion 360 and open the 3D models that they were working on last lesson.

**Objective 1 – To understand how to prepare a model for 3D printing**

**Task 1 – 10 minutes**

* Show the students the slide with the 3D printing stages on it. Explain to the class that the 3D model that is created in Fusion 360 can’t be directly 3D printed until it’s file type is changed to an STL file (STL file means Standard Tessellation Language). This means that the model is wrapped in mesh of polygons that all fit together (like a coat of triangles around the model). This mesh is what’s sliced into layers and then sent to the 3D printer.
* Demonstrate to students how to export a file from Fusion 360 as STL files.

**Give students 10 minutes to export their files they created as STL files and save them to their documents. They will be used in later lessons.**

**Objective 2 To know the difference between infill, layer height, print speed and a raft.**

**Task 2 – 20 minutes**

Talk through the slides titled ‘What is Infill, layer height, print speed and raft’

Explain to students that before a model is ‘sliced’ ready for 3D printing these key terms need to be applied. They will learn how to do this later in the lessons after they have learnt how to 3D model.

Students are to then complete the questions on the worksheet testing their understanding of the key concepts.

**5 minute Plenary**

* Students to write a summary of they key learning from the lesson.