**How to slice a model**

**Teacher notes**

**Resources:**

* Teacher powerpoint
* Example STL file from previous lessons
* Fusion 360
* Slicing software that your 3D printer uses.

**Pre-preparation**

* Print out the student worksheets
* Ensure you have access to Fusion 360 and that the slicing software is networked to student’s computers.
* Print out the same model three times, print one model at a low-resolution layer height, one at a medium layer height and one at a fine layer height.

**Learning Objectives**

* To understand the concept of slicing.
* To be able to slice models ready for 3D printing.

**Starter question**

* Thinking back to the earlier lessons what are the three main parts to the 3D printing process?

**Objective 1 – To understand the concept of slicing**

**Task 1 – 20 minutes**

* Read through slides 2 – 6 on the teacher powerpoint. Refer to the example printed models and pass them around the class for students to look at.
* Use the images on slide 3 as a guide for explaining the layer height along with the example models printed.
* Actually, open up your slicing software and demonstrate the concept of importing a file into the software and setting the layer height and infill density.
* Demonstrate the slicing simulation as shown on slide 7 so students understand how it works. The slicing simulation replicates what the 3D printer will do.

**Objective 2 - To be able to slice models ready for 3D printing.**

Student task – 20 minutes – Students are to log onto their computers and open Fusion 360 and your slicing software that your printer uses.

They need to export their STL files they have modelled over the past few weeks and then import their files one by one into the slicing software.

Students need to use the worksheet and record down the layer height and density they use. They are to record down the time the print will take, and the amount of materials used. This is an experimentation part of the lesson. Allow students to experiment with the settings to investigate how print settings effect the time and quality of a print. You can relate this to costing as well as the lighter the part and faster it will print, the lesson material it will use and the less electricity, therefore saving energy usage.

**10 minute Plenary**

* How does layer height effect the quality of a 3D print?
* If you wanted a lightweight model that would be extremely detailed, explain the settings you would need.
* Gain student feedback from the class.