

Give your 3D printer

When school Technology departments receive a 3D printer for the very first time to help with curriculum and engagement, it is very common for both teachers and pupils to ask “What can we make?”



Figure 1 - Benchy boat model can be produced in any colour (image © Creative-Tools.com).

Even for more experienced departments who are familiar with producing models for students it is important to regularly put their 3D printers through check tests (like you would M.O.T. your own car.) This fantastic little scale model (Figure 1) has been designed by Creative-Tools.com to be quickly produced (at SSERC our first attempt took only 3 hours to complete before the support material was then washed off) and economical with the amount of material used (we calculate each 1:1 model we make costs around £3 to manufacture, including electricity!).

The 3D Benchy boat model can be produced in any colour of your choice and has also been designed to be suitable for use with both high-resolution 3D printers and also 3D printers that do not use support materials when printing. The plans and files from the 3DBenchy website are completely free of charge and you are encouraged to share your department’s results on social media using the tag #3DBenchy.

Ensuring your 3D printer settings are accurate is vital when producing student models and when confidently

forecasting both manufacture times and costs of production. The 3 simple steps for the “jolly torture test” allow all of these common issues to be analysed by:

- 1) Download the 3DBenchy STL file for free at www.3DBenchy.com/download.
- 2) Use the STL file to produce the model on your department 3D Printer using your own choice of colours and materials.
- 3) Measure the various aspects of your model using callipers and a protractor to gauge accuracy and success!

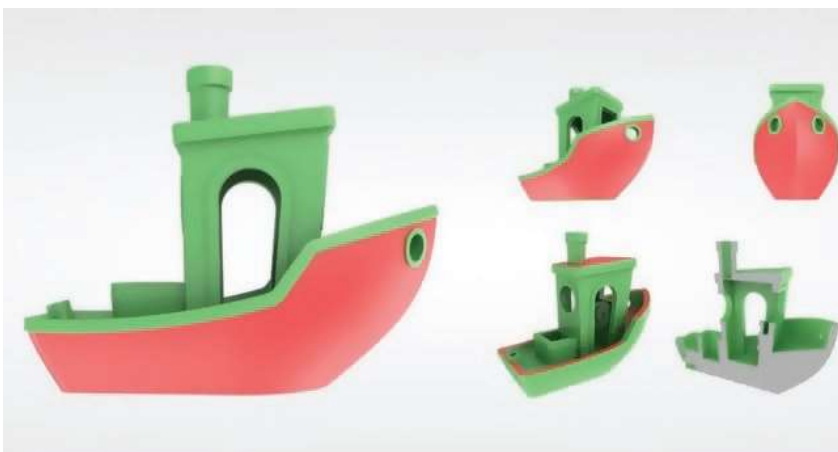


Figure 2 - Image © Creative-Tools.com.

There are many different sizes, angle and surface finish accuracy tests that can now be applied to your own model (even more if you are lucky to possess a high-resolution 3D printer) and each test can very quickly tell you if one or more of your settings are inaccurate or require adjustment (Figure 2).

the jolly torture test!



Figure 3 - The elevation and comparison in size with a 20p.



Figure 4 - The end elevation and angle of the model front.

How this process helped us at SSERC

Using the 3DBenchy model with our own 3D printer at SSERC allowed us to identify a breakage in the support material supply tube (Figure 6).

Because of this we were able to suspend manufacture of other products as it would have cost us lots of time and printer material that would not hold together (shown in Figure 5).



Figure 5 - The support material blockage results.



Figure 6 - The breakage in the support material supply.

How are we doing?

SSERC is fortunate to receive funding from a range of different sources. The Scottish Government has for a number of years provided support for many of our professional development programmes and as we reported in the previous issue of the Bulletin the government has offered further support for our professional development activities across the primary and secondary sectors. As we come to the end of one tranche of funding and the start of another we have been reviewing some of the statistics related to our CPD programmes.

According to the Scottish Government's Statistical Bulletin Education Series (February 2015) there are 362 local authority secondary schools in Scotland and during the period April 2012-March 2015 we have had representation on one or more SSERC courses from the 359 of them; just 3 more to go...!

