

## About the tutorial resources and their use in schools

These resources use a combination of screencast video tutorials along with an accompanying pdf tutorial of screenshots and instructions. The idea is to gradually build skills in using the CAD software by completing a range of actual product designs.

This approach to learning CAD was used very successfully to teach CAD to 11 to 13 year old school pupils during the University of Warwick project entitled [Engaging Young Learners in CAD and 3D Printing](#). This project used Autodesk 123D Design CAD software, however, since the withdrawal of 123D in April 2017, the tutorials have been redeveloped for Autodesk Fusion 360, using exactly the same combination of video and written tutorials, which was so successful during the project.

The evaluation of this project and this approach to teaching and learning CAD, highlighted the value in students using the two types of teaching resources together. The evaluation showed that students reflected on how they as individuals like to learn and over the course of the project, many became much more confident with using video tutorials, a valuable outcome for the skills development of the school students involved.

## Using the video tutorials with students

In the early stages of the project, we found that students were not familiar with how to use video tutorials, so some training on usage was needed. This simply involved suggesting they watch the complete tutorial first, then start the video again, stopping the video after just a few stages of the design, and going to the software to complete those stages. Then start the video again and do another small chunk of the design. They each needed to find out for themselves how much they could watch and retain before stopping the video and working on the software. They all found their preferred way of using the tutorial options. Some liked to use the written tutorial alongside the video tutorial. Typically, they would watch the video through to get an overview of the task and method, then they would follow the written tutorial, but may occasionally refer to the video when finding a particular part of the task difficult. Others would just use the video, watching it through once, then repeating in small chunks, stopping and re-starting the video as they worked on the software to complete the CAD task bit by bit.

## Setting preferences in Fusion 360

Read the sheet on [setting axes and unit preferences](#) before starting the tutorials. The default modelling orientation for Fusion is with the Y axis upwards, however, our tutorials are done with the Z axis upwards as we thought this to be more intuitive for the school pupils we work with.