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A Novel Way of Communicating Science:

Developing an Online Teaching Resource to Bring 3D Prints to the Classroom

We report the development of a pragmatic teaching programme with the objective of teaching the skills and concepts necessary to create successful 3D prints. The programme is based on a set of lectures and a standalone online platform providing a centralised source of information.

3D printers are becoming more and more readily available, but to exploit this emerging technology, specialist knowledge in computer aided design (CAD) is required. Our programme offers a taught overview of the existing printing technologies, detailing design considerations for CAD drawings for 3D prints. The focus is to teach design basics using OnShape, a freely available cloud-based CAD program. For this, we have created a database of videos, curated to teach everything needed to create your own print: from the first CAD drawing to the realised object.

Students, research and teaching staff can benefit from the acquired expertise to create custom parts and teaching models without any previous CAD knowledge or the need for a mechanical workshop. Custom parts like holders are often necessary in engineering research, while the models can be used as educational objects, explaining complex scientific concepts. This can be used to demonstrate 3D geometry directly, or even to visualise more abstract data. For example, atomic force microscopy images can be brought into the real world to demonstrate the operating principle of the imaging system. Such models can also clarify the research projects and concepts at Public Engagement and Outreach Activities.

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