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**Renishaw loan scheme makes 3D printing in schools possible**

[Global engineering company](https://www.renishaw.com/en/education-outreach--34713?utm_source=StoneJunction&utm_medium=Case+study&utm_campaign=REC250) **Renishaw lent a 3D printer to** [St Brides Major Church in Wales Primary School](http://www.stbridesprimary.org.uk/) **in The Vale of Glamorgan, South Wales. Since it received the printer in April 2018, the school’s Year 6 pupils have been designing and 3D printing in a range of lessons including design and technology (D&T), maths and religious education (RE).**

**The 3D printer and the ongoing support from Renishaw has allowed the pupils to develop their design skills, learn about the applications of 3D printing in the engineering industry and complement their lessons with engaging, creative activities.**

**Background**

St Brides is a primary school in The Vale of Glamorgan, South Wales with just over 200 pupils. The school’s relationship with Renishaw began in 2016, when its Year 6 class visited the company’s Fabrication Development Centre (FDC), a dedicated education facility at its Miskin site near Cardiff.

The school had limited space and resources, so Renishaw provided teaching and a facility for the pupils to have a science lesson on-site. The pupils learned about key topics in their curriculum, including friction and force, and looked at how engineering is used in everyday life.

Since this fruitful visit, St Brides’ Year 6 Teacher Cathy Jenkins has taken her class to visit Renishaw three times a year. This has enabled the pupils to complete the CREST Discovery Award — a science award for 11 to 14-year-olds.

**Challenge**

The UK needs 1.8 million new engineers and technicians by 2025 to overcome its skills shortage. To achieve this and protect the country’s engineering heritage and potential, young people must be exposed to the latest technology in the industry.

3D printing is one such technology. Manufacturers are already using 3D printing to prototype products and produce items such as medical implants, running shoes and parts for aircraft, which benefit from being customisable and lightweight.

“3D printing is not something I had ever considered using in school because I assumed we would never have access to the technology or be able to afford it,” explained Jenkins. “Even if we could get a 3D printer, I didn’t think we would have access to the training to allow us to make good use of it.”

**Solution**

As part of its [education outreach programme](https://www.renishaw.com/en/education-outreach--34713?utm_source=StoneJunction&utm_medium=Case+study&utm_campaign=REC250), Renishaw purchased ten 3D printers to loan for free to schools in South Wales. The 3D printers use fused deposition modelling (FDM), commonly known as plastic 3D printing, using polylactic acid (PLA) plastic. **The printers are robust and easy to use, but capable of printing complex designs to illustrate teaching points as well as simple products designed by primary school pupils.**

The company trialled its 3D printer loan scheme with a small number of schools — one being St Brides. Simon Biggs, Education Outreach Officer at Renishaw, set up the printer at St Brides in April 2018 and trained Jenkins on how to use it. Biggs also provided ongoing support, which involved handling any maintenance issues and being at hand to answer any questions that Jenkins had.

The trial of the 3D printer loan scheme was a huge success. Jenkins and the pupils found the printer so beneficial that the school signed up for the first formal loan period, which took place from September to December 2018.

 **Results**

St Brides’ Year 6 class used its 3D printer in a range of subjects. In D&T, the pupils practiced their design skills and got to experience taking a product from design to production. In RE lessons, they designed and printed models of a local church, while learning how 3D nets are used to produce hollow structures. The children also used the 3D printer in maths lessons to learn about scaling objects.

“Getting started with the 3D printer was really easy thanks to the wonderful training and support we received from Simon,” explained Jenkins. “He showed me how to use the printer and Tinkercad™, which is a free computer-aided design software. Simon is always at the other end of the phone when I have questions. He even prints the pupils designs when I don’t have time.

“The children absolutely love using the 3D printer and are always fully engaged in the activities. They find the 3D printing process mesmerising but also really enjoy the design stages. Having the printer for the end of the academic year was fantastic because it kept the children engaged after their exams and as they prepared to move to secondary school. A couple of the pupils have even asked their parents to buy them a 3D printer for use at home!

“One of our most successful 3D printing activities was when the children designed and produced their own World Cup trophies. Some pupils edited designs they found online and others designed their trophies from scratch. We saw some really quirky and wonderful designs.

“As well as teaching the children about engineering, using the 3D printer has taught them about resilience and patience. Tinkercad is quite tricky to use and if your design isn’t accurate, the 3D printing does not work.”

**“The manufacturing industry is really starting to see the benefits of 3D printing and the technology will be a fundamental part of engineering in the future,” explained Biggs. “We want to make sure the engineers of the future are familiar with the technology and understand its importance.**

“It’s been extremely rewarding hearing about the exciting activities the children at St Brides have used the printer for. We hope all teachers who are keen to use 3D printers in school will get the chance to do so.”

By September 2018, 30 schools in South Wales had already signed up for the loan scheme with additional schools on a waiting list, which demonstrates that teachers recognise the importance of using new technology in schools.

St Brides hopes to continue benefiting from Renishaw’s 3D printer loan scheme and will continue its regular visits to the FDC for high-quality science and engineering teaching.

For more information about Renishaw’s education outreach programme, visit the company’s website [https://www.renishaw.com/educationoutreach](https://www.renishaw.com/en/education-outreach--34713?utm_source=StoneJunction&utm_medium=Case+study&utm_campaign=REC250).

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Notes to editors

UK-based Renishaw is a world leading engineering technologies company, supplying products used for applications as diverse as jet engine and wind turbine manufacture, through to dentistry and brain surgery. It has over 4,500 employees located in the 36 countries where it has wholly owned subsidiary operations.

For the year ended June 2018 Renishaw recorded sales of £611.5 million of which 95% was due to exports. The company’s largest markets are China, the USA, Germany and Japan.

Throughout its history Renishaw has made a significant commitment to research and development, with historically between 13 and 18% of annual sales invested in R&D and engineering. The majority of this R&D and manufacturing of the company’s products is carried out in the UK.

The Company’s success has been recognised with numerous international awards, including eighteen Queen’s Awards recognising achievements in technology, export and innovation.

Further information at [http://www.renishaw.com/](http://www.renishaw.com/en/renishaw-enhancing-efficiency-in-manufacturing-and-healthcare--1030?utm_source=StoneJunction&utm_medium=PR&utm_campaign=REC263)