



January Diary Entry

Happy New Year! 2020 is set to be an exciting time as the project continues and we are looking forward to seeing how the ideas of our students come to fruition over the coming weeks. We have decided as a team to extend the project deadline from February half term to mid-March. This is to allow the students a little bit more time on their projects, and to ensure that they have something to showcase when we have our prize-giving event around April-time. This extension will also allow for more 3D modelling – as we have noted it is something the students have really enjoyed – and ultimately, as a department, are looking to build upon this skill with GCSE students. We have seen it as too good an opportunity to miss and are looking to “exploit” it as positively as we can!

Last week, we also invited our head teacher Andy Taylor to come along and see the action at the “Skills for the Future” club – Andy took the time to speak to each and every student in attendance at length about their chosen design brief, what inspired their design work, how their modelling was going and their thoughts on the club so far. It was great for the students to be able to share their ideas with someone who has not seen each step of the way – by introducing these opportunities little and often, we are hoping to build their confidences to speak about their design ideas at the showcase event towards the end of the academic year.

In other news, the Rolls-Royce partnership and the “Skills for the Future” club is the most popular extra-curricular activity Parkside School has ever had! Fantastic news for this year, but also something we are keen to continue long after the Rolls-Royce project has finished.

Lorna Dee Evans (Team Leader)

On the first day back after the Christmas holidays, we took delivery of our Ultimaker2+ from CREATE Education. Myself and Sarah Osgerby had the task of unboxing and setting it up – and I was pleasantly surprised by how easy the process was and how user-friendly the 3D printer is. We sent a couple of test prints to run (including one of the Ultimaker robots, and a 3D cube game) and the finish provided by the higher-end machine is impressive. This machine is definitely the sort of thing we would be looking to invest in following the trial period.

This month, we have also received our Education Bundle of PLA (polylactic acid) from Filamentive – we have been sent five spools of brightly coloured filament to work with. This choice of colour makes projects a little bit more appealing to our students as they have a little bit more of an option with regard to personalisation of their product. The materials are extremely high quality, and have a 90% recycled content. PLA is a bio plastic, derived from plant-based sources meaning that it is far more environmentally friendly than the likes of ABS. The use of eco-friendly materials is something we are pushing for – especially when it comes to minimising traditional plastic use. Filamentive stock a range of eco-friendly materials including wood effect PLA, and this is something I would be looking to purchase to try and sample a few different finishes with our printing.

Our first “Skills for the Future” club night of 2020 was something I was very much looking forward to running. All students are almost finished with their design work in their sketchbooks, and it was time to make them into something “real” and something tangible that they could work with in their hands. Instead of opting to go straight from sketchbook to screen using TinkerCAD, I asked them instead to come to the school workshop. The students were each presented with a tub of good old-fashioned Playdoh; and were set the task of sculpting their product design ideas by hand – using the easiest tool in the world to work with! They all took to this task really well – and managed to find some initial pitfalls with their designs even just by modelling in this way. Students could look at their 3D models and realise quickly which parts of the design would need extra support when printing, or that some of their designs needed some tweaking before they could properly come to life. This simple iterative process really allowed them to be creative, without the age-old “fear of failure”, we see from many of our students.

In our department, we usually find that Parkside students are notorious perfectionists. A lot of the time, they worry about their design work not being perfect first time, and therefore get “the fear” and struggle to get started. Something I have noticed about the 3D printing process and the way it allows students to work is that it does make it easier for them to take risks in their design work. On screen, if it goes wrong, they can just press Ctrl+Z and re-do... Just like the Playdoh, if it goes wrong – what is the worst that can happen? Just squash it all back up and restart. This has been a surprising and incredibly welcome extra to the success of our students attending the extra-curricular club – they are truly building on their resilience in a way I did not predict and it is brilliant to see!

On top of the usual things keeping our 3D printers busy this month, it has also been the start of my GCSE Controlled Assessment manufacturing stages. This is where my fifteen Year 11 students are building their prototypes for their coursework that makes up 50% of their GCSE grade. Several of my students have opted to 3D print parts of their products to include a new and emerging technology in their coursework folder to demonstrate their understanding of these. Others have opted to use 3D printing because they have complex shapes that would be very difficult to manufacture in other, more traditional, methods. My GCSE students have really begun to appreciate the ways in which additive manufacturing can make what would have once been a long, drawn out process something much less time-consuming.

Helen Dunn

This month has seen me continue to assist the after-school club. Ideas are really coming together and students have begun physically modelling their ideas with modelling clay to get an idea and see where further improvements can be made. This is all part of the iterative process and students are seeing the benefits. Creativity is flowing with the group and many are ready to transfer their ideas into CAD files for printing – something that has been fantastic to see is the students giving each other constructive feedback about their design ideas and helping each other make improvements in a collaborative way.

Students who have chosen my brief have met to discuss their ideas and seek reassurance that it meets fully the criteria I set. They have embraced the client/designer relationship fully – and again, this is something we are trying to encourage at GCSE level, so to see this level of understanding and iterative design at Key Stage 3 (even from some of the Year 7 students) is really quite encouraging and a testament to how their confidence is growing as the competition progresses. I have also begun teaching a 3D printing rotation to our Year 9 cohort where the printer accessed from CREATE Education will be utilised; expanding further our usage of this technology in our Key Stage 3 curriculum. We have invested in some USB kits, these will be a new project for the Year 9 classes – they will be designing and printing their own USB covers. We aim to 3D print these for every single student in the classes, meaning that more students across Parkside will have “hands on” experience with the 3D printers.

Andrew Mangham

Since coming back after Christmas, I have tried to speak with as many students who are completing my competition brief as possible to make sure they are on board with developing their ideas to their full extent. Attending the 3D modelling session during the first week back was interesting as the students could really begin to see their ideas “in the flesh” for the first time and it brought about a lot of problem solving conversations – in the same way engineers do in reality. During Neil’s visit, Lorna had arranged for some of my Year 10 Engineering students to have a careers-based talk

and to further their understanding of what it would be like to work at Rolls-Royce. This has inspired a number of them to speak to me about their own career aspirations – listening to Neil speak about his journey into working for Rolls-Royce has struck a chord with some of our older students. On top of this, some of our Year 9 students who will be choosing their GCSE options in the next month or so have been coming to speak to me about the Engineering choice – as I am the subject lead for this, we have a large cohort of Parkside students interested in studying Engineering and finding a career in this area, and therefore it may be good to use our partnership with Rolls-Royce to inspire this further. It would be good to speak to Neil about how we can do this.

Sarah Trowers

This month has been an exciting one for the development of 3D printing into the Key Stage 3 Technology curriculum. We have amended the Year 7 and Year 9 Schemes of Work so that every child will now design and make their own 3D printed USB cover. This means that over the remaining academic period, 150 Parkside students will have 3D printed something they will be able to take home. We felt as a team that we need to ensure that as many students as possible get the opportunity to 3D print something useful to them and something they will be able to claim as “theirs” that they have made from scratch. We often find that students opting for our subjects at Key Stage 4 do not know how to use USB sticks, never mind having their own (something we usually provide for them), so because of a joint brainstorm session this was the outcome.

I am extremely keen to ensure that we are providing students with the culture capital opportunities including the use of new and emerging technologies that will give them the “skills for the future” as I firmly believe the creative industry is going to develop and change dramatically in the next few years. As a school, we have a huge focus on careers, building skills and grabbing opportunities that allow students to have a taste of the job they would like to do in the future. This project builds on this massively and is already doing so much for our students.

I loved assisting in the first modelling session, as I have been able to see the students who have chosen the Food context’s ideas come to life, I was able to offer support to students whilst they were trialling ideas and they were excellent at responding to questions when the head teacher Mr Taylor came in for a visit. I have also started to organise the paperwork side of a trip to the Heritage Centre in Derby that our 3D club students have been invited to, we have also opened this up to Y10/11 students in Engineering and our two Post-16 Product Design students. The aim of this trip is to increase students’ interest in Engineering and technological based careers and their exposure to STEM in the “real world”.

Sarah Osgerby

This month after our exciting delivery from CREATE Education, I have helped Lorna to unpack the Ultimaker2+ 3D Printer. It was relatively easy to set up and this has meant we have been able to get some speedy sample prints made. One of these was a prototype teapot spout for one of our sixth former students for their coursework folder. The student has since been able to write up about the benefits of rapid prototyping and how this has changed the face of model-making. I showed the student and A Level teacher how to use Cura to slice the .STL file and how to export the file to the SD card ready for cutting.

In order to progress the Scheme of Work for Year 9 students, I have also researched an Uncased Memory USB stick project and was pleased that it was accepted as a good idea, and asked to order fifty units as a trial for the current two classes running. These have been approved using the Rolls-Royce budget and we are awaiting their arrival. So far, I have downloaded the resources from the Kitronik website and attempted to print off an exemplar for the students to see – however, the scale is not correct so I will need to investigate further as to why. This should be up and running in the next couple of weeks. Whilst supporting with Lorna’s GCSE students’ coursework, I have also suggested to a student about 3D printing a Batman logo lithopane as a lampshade. This is something I will be trying to develop alongside the student over the coming weeks. The GCSE students are beginning to see the advantages of using 3D printing in their coursework by following little suggestions such as this one and it is slowly becoming a “go-to” solution for many of the older students as a result of this.

James Windle

I have really enjoyed watching the students develop their ideas and I am always blown away by the creativity of the group. Last week they were able to model their ideas using modelling clay in order to help people visualise their final idea in three dimensions. I have been in touch once again with Dr Brown from the University of Bradford in order to arrange for our students to visit, and gain a real insight into the industrial applications of 3D Printing. In addition to this, they will receive a talk from a student who is just about to complete his PHD in additive manufacturing. I am very excited to see how things take shape over the next few months and see the students creations come to life.

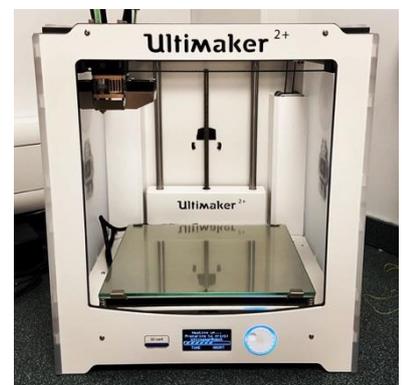
Mentor Update: Neil Chattle

Following the successful visit from Neil in December, we have been lucky enough to have been offered a trip to the Rolls-Royce Heritage Centre for up to 40 students. I have been talking with Neil about arranging the trip and looking at different STEM workshops that could be offered when we are there. James Windle has been consulting the Science curriculum, and along with Helen Dunn and Andrew Mangham, we have been looking at areas of misconception within the Design and Technology/Engineering GCSEs and together with help from Neil we have come up with the following subject areas: 3D Printing, Flight and how an aircraft flies, Aero Engine Technology and Newton’s Laws in relation to Forces.

Images

The top image shows the Ultimaker2+ machine in situ, ready to print.

The bottom image shows one of our Year 7 students, George Rigby, modelling his “pencil gripper” prototype made from modelling clay.



Expenses Update

Total awarded: £6,000

Date	Purchases	Cost
10/01/2020	Modelling materials – modelling clay x20, PVA glue and masking tape	£27.90
15/01/2020	50x USB kits for students to personalise	£140.00
Total expenditure:		£664.69
Remaining Balance		£5,335.31