CLEAPSS Design and Technology

Futureminds

Tomorrow's world explored today

Autumn 2018

CLEAPSS D&T e-newsletter

Welcome to Futureminds 09.

What a great summer, sun, heat, and lots of interesting stuff for Design and Technology, Food and Art.

Starting with Art, did any readers get to see the Summer Exhibition at the Royal Academy? An ex-D&T teacher from Hertfordshire, managed to get one of his pictures into the exhibition, which was curated by Grayson Perry this year. Congratulations to Martin Barrall, who has taught in various schools in Herts over the past 30 years.
https://www.martinbarrall.com/

The Food Teachers Centre ran some exciting training events and conferences over the summer, and, in its article, also lists a full calendar of events for this term and beyond.

In D&T, summer developments include the new Vocational Certificates and other technical qualifications. If you want to know which exams are approved to be equivalent to GCSE or A Level, visit the government website, which is updated as qualifications are approved. Do not assume that because one qualification is approved for 2018 or 2019, that it will be available automatically in 2020.

We ran training events during the summer term, including a number of departmental training days, which are proving very popular. Each day is designed to meet the needs of an individual department, starting with a theory session on roles and responsibilities, followed by practical risk assessment and then some refresher work on machines and equipment.

There is also an element of team building, as an aim of the course is to provide members of the department with the confidence to be able to rely on each other for support and further guidance in developing their skills. If you would like to know more, take a look at the courses section of the website (http://dt.cleapss.org.uk/Resources/Services/Courses/).

In July we held the CLEAPSS annual safety conference, which was, as always, a great day to hear from some respected speakers and see the CLEAPSS team in action. We also had drone flying, where delegates were talked through the latest guidance (GL262 *Drone Flying in Schools* http://dt.cleapss.org.uk/Resource/GL262-Drone-Flying-in-Schools.aspx) and got a chance to fly the CLEAPSS drone, under controlled and safe, indoor conditions.

We also had our summer get-together at CLEAPSS, where we dedicated a bench to Pauline Mead who had worked with CLEAPSS for 37 years, and died last year.

Samir (Physics Adviser) ran a training day for science teachers interested in working with Arduino devices. This also involved using the laser cutter and 3D printing facilities to make working equipment that the teachers could take away with them. We are looking at running a number of similar events over the next year, which will also be open to D&T teachers and technicians. Watch the website and twitter account for updates.

We have also attended a few interesting exhibitions and conferences. Of note was the TCT show at the NEC , which showcases the latest ideas in the world of additive manufacturing (3D printing). We saw some fantastic metal printing, as well as hundreds of FFF (Fused Filament Fabrication) machines. There is clearly plenty of scope for more creativity in 3D printing because a number of stands were just producing simple prints taken from Thingiverse. In our experience many schools could do much more.

We have made some changes to the CLEAPSS websites. All three sites, (science, D&T and primary) have loads of new resources. We have also added a technician's job advertising service to the science and D&T sites.

This new feature is for members to advertise for staff. The online form collects all the information required for the advertisement, this is then checked before it appears on the site. Details can be found in the smallprint at the end of this edition, and on the website: http://dt.cleapss.org.uk/Job-Service/Job-Adverts.aspx

by Sarah Parker, Warwickshire Education, Safety and Premises Services.

Mobile Kitchen Units in Primary schools

Are you considering purchasing a mobile kitchen unit to enable/extend the teaching of food technology without a permanent pupil kitchen available?

Many such mobile units are now available, and can come with a combination of oven & hobs, preparation areas, fridges and a hand wash sink.

When considering the purchase think about issues such as: -

Actual portability

How robust is the trolley? Will it withstand frequent movement between areas, over door sills? What are the door widths and are there any steps or other obstacles to consider?

Cookers are not built as 'portable' items and with repeated movement may become damaged.

The fridge unit will obviously only work when plugged in so will not remain at a constant temperature if moved around and therefore cannot be used to store ingredients.

Use by pupils

Most of the units for sale are designed for adult use only to 'demonstrate' cooking and not designed for pupils use (for example the cooker and sink unit height). There are some units with adjustable height work space areas available for an extra cost.

Hygiene

The hand washing unit needs to be kept clean between uses, to prevent problems with stagnant water etc. and has to be filled with pre-heated water for use. The volume of water stored would limit the number of hand washes before it needs to be re-filled.

Safety Standards

There are no British / European standards for 'mobile kitchen units'. For example, the cooker maybe compliant with EN 60335-2-6, but this covers the safety of stationary not portable electric cooking ranges.

Value for money

These units can cost between £3,000 - £4,300, an amount which could fund all, or part of, a permanent kitchen installation or refurbishment.

Risk assessments

Risk assessments on the use of a unit need to cover not only the curriculum activity but also the movement of the unit, and its location in each teaching area. The school's fire safety risk assessment would also need to be updated/reviewed to include its use.

For further information on food safety and food technology teaching see the ASE *'Be Safe!'* booklet (https://www.ase.org.uk/home/) a useful resource to have in school, and the CLEAPSS Design and Technology Website (http://dt.cleapss.org.uk/).

Further advice on fire safety can be sourced from the HM Guidance (https://www.gov.uk/government/publications/fire-safety-risk-assessment-educational-premises) or the WES Safety and Premises Service.

Wall Painting

by Yvonne Smallwood, science technician

A year ago, a family support worker who'd seen some of our artwork mentioned to us that Jacci Bullen, Play Specialist at Ormskirk Hospital, Lancashire, wished to have a mural painted on one of the treatment room walls. The idea was that the painting would be interesting and colourful, brightening up the ward and be a source of diversion for the children receiving treatment.

Jacci was great, collating ideas from colleagues and clients, in the end suggesting an underwater theme, as well as providing a list of particular things to include; starfish to count and seahorses to search for. We drew up a sketch incorporating these various ideas and were delighted when it was accepted.

Jacci approached a local paint supplier, Tony Owen from Crown Paints, and he generously supplied all the paints and varnish free of charge. We went to his shop in Southport and from a vast range chose a selection of high-quality paints of gorgeous colours. I asked Dave Parry at CLEAPSS about health and safety practices and regulations, to ensure that our chosen materials complied.

Dave went suggested a few things to consider, such as checking the Safety Data Sheets (SDS) of the paints, to ensure that they were safe to use with children, and that storage and disposal was okay. He also checked some other aspects of health and safety, so that we felt that we had everything covered.

The work done on the children's ward is amazing. The ward has a wonderful atmosphere and the staff are pleasant and were always encouraging. Jacci made us feel very welcome, making up a basket for us with tea, biscuits and thermal mugs, so we could keep fuelled. We were grateful to have the opportunity to paint the mural.
It was a great privilege.

It is possible that we may be doing another—so watch the space!

Do you Tutor Design and Technology?

By Robert Vine and Holly Bonnett, of Festool

Festool is a long-established, German power tool manufacturer. We have been working with CLEAPSS and are pleased to also be involved with educational professionals in many schools and colleges, as well as training providers.

Festool tools have been designed and manufactured in Germany since 1925 with the goal of making life easier for professional tradespeople.

The company think systematically, right down to the finest detail. Our philosophy that *"things work better when everything fits together"* is reflected throughout the product range, which seamlessly connect and can be used as a system.

All dust extractors, guide rails, multifunction tables and storage solutions, work effortlessly together to give superior results. With over 350 patents and more than 80 awards, proves that these principals are worth focusing on.

Our passion for quality goes beyond the tools we manufacture. We value the importance of helping train the next generation of professionals and tradespeople. Therefore, we offer a Festool Education Scheme to enable colleges and educational organisations to gain access to highly sophisticated, highly advanced tools. The Festool Education Scheme offers tools through tool loans and discounts. We hope that this ensures students can learn with the best tools from the very start of their career. Our team of dedicated, highly skilled experts support, lecturers and students with product training and are on hand to inspire and assist in students' development.

"Working with passion for people with passion. That's what we do". Gottlieb Stoll, founder of Festool.

To discover more about Festool visit www.festool.co.uk

For further information on the Festool Education Scheme, please contact: Robert.Vine@festool.com

Collaborative D&T work

Krysia Balance, the Whitby High School

For the last couple of years D&T staff at Brine Leas and Whitby High School having been working together to develop a range of mini projects for students in KS3. One of these projects is the 'penny whistle', based on engineering concepts.

At Whitby High School we operate a carousel rota across KS3 offering a range of disciplines in each year. Each project has a different focus based on the material area. Projects are developed to focus on two or three aspects of the design process, but all include health and safety, and the manufacture of a product.

It was felt that as students progress through the school their basic skills of marking out, use of hand tools and application of health and safety were not being developed and applied independently to the level we expected. Too much time was being spent on reviewing and repetition of use rather than developing new skills and pushing students for higher grades.

These concerns lead us to collaborating with the Brine Leas school to develop some practical teaching ideas.

The design input in the 'penny whistle project' is deliberately restricted so that students can focus on the marking out using engineers blue, the use of V-blocks, surface gauge, dividers and centre punch to mark out the position of the holes. The use of the pillar drill and cordless drill are demonstrated but these are linked to a production line technique and the use of 'poka-yoke' to continually improve accuracy and efficiency. Traditional skills of soft soldering are used to attach the mouthpiece to the body of the whistle.

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Collaborative D&T work

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Krysia Balance, the Whitby High School

The 'penny whistle' has undergone many changes with the most recent version using both jigs and formers to create the mouth.

The nature of the process means that students are encouraged to work together to support each other. Whistles are hand polished and cleaned prior to use.

All of the processes require students to be fully aware of their own health and safety and that of others in the room. They are required to undertake a risk assessment, have an understanding of the properties of the materials they are using, as well as the working environment.

As the whistles are completed, students are actively encouraged to evaluate them by playing them in D&T lessons. A range of popular songs has been downloaded from the Internet for students of all musical abilities. All students study music in year 8 and we are developing the project so that the whistle can be used in music lessons.

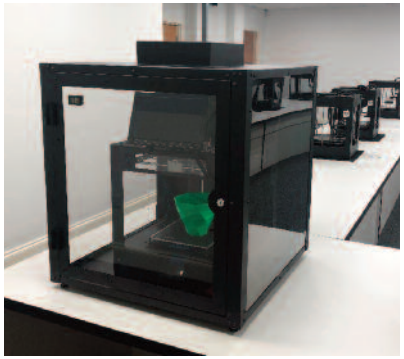
Brine Leas is working in collaboration with the Whitby High School design and technology department to further develop the project. Students at the Whitby High School have already made their first whistles and, as a result of feedback, the project has already been modified. We are looking at a range of further improvements to the project. One possible idea is a 'musical play off', East Cheshire vs West Cheshire'. We look forward to future challenges.

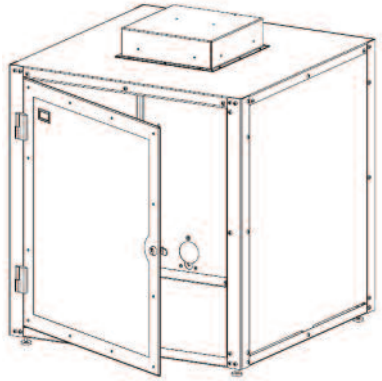
enclosing your 3D printer

by Dale Charnock, Secure Micro Solutions Ltd (SMS)

Over the past few years SMS has been involved in the testing of 3D printing machines and materials with CLEAPSS at the HSE labs in Buxton. The guidance ,which was written following these tests, is available on the CLEAPSS web site.

The results of these tests led SMS to develop a safety cabinet that encloses the printer and has filtered extraction to control harmful emissions.



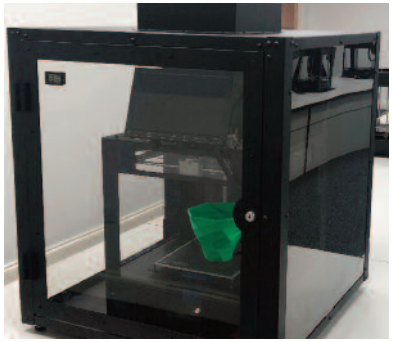


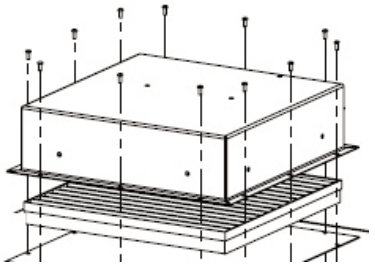
Manufactured in the UK and tested at the HSE labs, the SMS Safety Cabinet (SC) works on the principal of drawing in clean air through lower vents, and gently washing it over an operating FFF desktop 3D printer before exhausting it back out through a specially treated 'easily replaceable' high volume HEPA / Active Carbon Filter system. This removes the harmful emissions before the circulated air is returned to the room. Many different filaments were tested and found to produce ultrafine particles and volatile organic compounds (VOCs) during the desktop FFF / FDM 3D printing process. The SC filter system removed 99% of these during comprehensive 'real time' testing at the HSE labs.

The SC has many additional safety features. It is fully enclosed and has a lockable front access door which can prevent access to potential hazards present on most desktop FFF 3D printing machines, including:

- Trap or entanglement hazards (fingers, hair, clothing etc.) caused by mechanical parts and belts moving on an open or exposed gantry systems
- Burn hazard from the hot 'printing head' often reaching temperatures in excess of 250ºC and the 'heated build plate' sometimes reaching temperatures exceeding 100ºC

Additionally, the cabinet will help reduce noise from the printer and cooling fan during operation.





The lockable SC can be fixed to the desktop surface, preventing opportunist theft of the printer or the SC itself, and denies any unauthorised access to the machine.

The enclosed SC prevents gusting drafts of air caused for example by an open door or window. Such gusting drafts can seriously affect the final quality of any 3D printed model. The SC is constructed of steel and fire-resistant clear PETG sheet materials

A fully automatic fire extinguisher can be added inside the SC, triggered by extreme temperature within the enclosure.

Also an option is a heat detector unit that operates in a similar way to a domestic smoke detector, but emits a continuous piercing alarm if the heat in the SC rises significantly above expected levels (around 55 ºC)

With the addition of these two options, the SC would suppress the spread of any 'open hearth' fires in the case of a catastrophic machine system failure (most relevant to non CE approved and home DIY-constructed 3D printers)

LED lighting can also be added to enhance the SC, 3D printer and the model that is being printed. This is particularly useful for videoing 3D prints , and observing the machine in poorly lit areas.

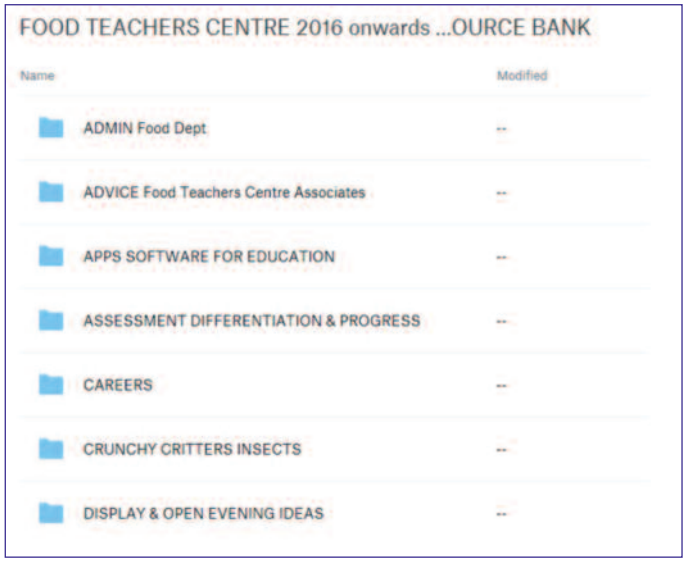
An independent heater system can also be added to establish an increased ambient printing environment temperature. This can prove beneficial for printing with some of the more exotic filament materials.

for more information click www.securemicrosolutions.com

FOOD TEACHERS CENTRE RESOURCE BANK

by Suzanne Gray, Food Teachers Centre

Food Teachers Centre is a UK-based self-help group for secondary teachers, founded by Louise T Davies in 2013 and supported by experienced associates. There are over 5,000 active teachers in the group. It provides a platform to exchange best practice and give advice and support to less experienced teachers, answering practical concerns and keeping them abreast of the latest curriculum changes. It is a one-stop shop for like-minded professionals who seek help through authoritative and accurate information.



Food Teacher Resource Bank

The idea of the Teachers Centre is a response to the lack of local and national specialist support and diminishing continuing professional development with the demise of local authority advisers, advanced skills teachers, lead practitioners and supporting organisations.

The Centre utilises new technologies and is a virtual centre not requiring a physical space, but providing the same high-quality service that our traditional teacher centres were recognised for. We use Facebook with a closed group for members only and a public page for others. We have our own website as well as Tweeting regularly.

The Food Teachers Centre offers:

- creative and innovative ideas and action
- practical solutions
- learning and sharing

Has anyone got.....? How can I do this.....? We all try to help when we can, but this group is now so large, and we have been going for nearly five years, so there are several thousand uploaded files in the Facebook group.

When members need a resource, the first port of call is the files section in the group. There is also a relatively new feature, where we can tag a discussion thread with a topic tag. We can then encourage members with particular questions to refer back to the relevant topic thread to find answers.

We also have the amazing shared library that we call our Resource Bank. All our files are backed up in there. Not only does this keep them safe for future use, but it also ensures that they can be located easily. My job is to upload members submissions to the Facebook group regularly, edit and categorise them with key words that make them easy to search for. I also review older files and remove those which may be out of date, or have information in which may have changed , for example, due to legislation.

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FOOD TEACHERS CENTRE RESOURCE BANK

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In order to upload to the resource bank, members put their work into the files on Facebook and I upload from there. That way we can ensure the safety of the Bank from viruses and other malware.

The files and folders cover all aspects of food teaching, focussing on skills; techniques; food safety; food science as well as the day-to-day running of a successful food room.

We encourage members to upload useful documents, such as copies of the letters they may have sent home regarding exam arrangements or praising students that may have had a successful lesson. A food teacher's life is very busy and full, and so any help with prepared letters, PowerPoint presentations, resource files, worksheets, etc, is always gladly received.

In many of cases, having the files readily available for all registered users means that with a little bit of modification, a file, PowerPoint presentation or document could be personalised to the member's school and available in seconds, ready to use. A very powerful support indeed.

Food Teachers Centre

Other upcoming events and activities include:

Food Boost Face-to-Face
Saturday 3rd November
University of West London, Ealing.
Keynote presenters - Louise Davies and Ross Morrison McGill
https://www.eventbrite.co.uk/e/food-boost-face-to-face-london-registration-49421122909?aff=efbevent

Food Safety in Classrooms:
Parklands High School, Chorley, Lancs, PR7 1LL
9.30 – 4.00 Tuesday, November 20th
https://foodsafetychorley.eventbrite.co.uk

Schools Game Changer REGISTRATION Open
https://schoolsgamechanger1819.eventbrite.co.uk/

Online Training:
Barbara Monk's Food Science Tutorials
https://winterfood-science-tutorials123.eventbrite.co.uk/

Flexible Learning and Accreditation in Food Safety
https://foodsafetywinter2018.eventbrite.co.uk/

DRONE RACING

by Lee Robinson of the British First Person View Racing Association (BFPVRA)

What do you get if you mix virtual reality and a drone? You get first person view (FPV) drone racing! A high octane, fast paced sport that is controlled remotely by a pilot using a radio and goggles to give the user a view from 'the cockpit' of the drone. Imagine formula 1 but with no wheels! Flying through the air at up to 80-100mph trying to complete a track as fast as you can.

A racing drone is a model between 130mm and 280mm diameter, with four motors and a number of electronic components all connected (either built by yourself or you can buy them assembled), a flight controller which is the brain of the drone, a camera and a video transmitter, add some propellers then plug in the battery and away you go.

Drone racing in the UK has become increasing popular over the last few years with more and more people getting involved in the hobby and starting to race. The aim of racing is to complete as many laps of a pre-built track, consisting of half-moon shape gates, elevated hoops and other structures, as quickly as possible.

All this is done whilst using a pair of goggles that look like a virtual reality headset, a controller to move the drone, and lots of concentration.

Build or buy?

You can build your own racing drone from parts available from various hobby shops across the UK. There are lots of online videos, which show what you need to buy and how to put it all together. There is a lot to learn, including how to solder, work with electronics and diagnose problems.

Let's have a rundown of some general parts needed to race;

- **Frame** – this is usually made from carbon fibre for its strength in crashes (which will happen a lot) and the ease of replacing broken parts.
- **Motors** – you will need 4 motors (you can run three motors and these are called tri-copters) to give your drone the power it needs to get up to speed.
- **Electronic Speed Controllers** – you need 4 of these, or you can get them in an all-in-one package. These connect to your motors to control how fast to turn, in what direction and for how long.
- **Flight controller** – this is the brain of the drone and controls the movement, take off, landing, etc.
- **Video transmitter** – this is a bit of electronics that send the video signal from your camera to your goggles so that you can see as if you were sitting on the drone.
- **Camera** – this is what you need to be able to view where you are going, in conjunction with the video transmitter, it sends the video stream to your goggles. The quality is about as good as a CCTV camera.

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DRONE RACING

by Lee Robinson of the British First Person View Racing Association (BFPVRA)

- **Receiver** – this is a small piece of electronics, that, once connected to your flight controller, will connect to your radio so the drone will react to your commands.

- **Radio** – you will need a way of controlling your drone, most radios are like typical remote-control radios for RC planes etc. There are quite a few on the market, some cheaper than others.

- **Goggles** – these allows you to see where you are flying when racing. There are two main styles: box goggles which have a single screen covering your eyes; and fat shark style, which have two screens but the images merge into one when you are viewing them because of the closeness of the small screens to your eyes. You also run a video module to receive the video stream from the drone.

Buy one fully built

You can buy prebuilt drones that will normally require just a battery, a connection to your radio and away you go, this is great to get going quickly, the downside is you may need to learn how to fix something if you break it, which may mean many nights watching YouTube videos.

Drone racing in the UK

In the UK, drone racing has risen in popularity over the last 12 months. There are a number of events held across the country for people to race against friends and rivals, to battle out who is the fastest pilot in the UK.

We have two main types of events: league events, which as you would expect is a table of pilots challenging for the number one spot in the table; and British Championship qualifiers which is another league where the pilots compete for a place in the UK championships and be crowned the UK champion. If you would like to know more about the UK drone racing scene then please visit http://bfpvra.org/ or search 'BFPVRA' on Facebook.

The importance of the PATTERN CUTTER

by Dawn Foxall, Textiles Skills Academy

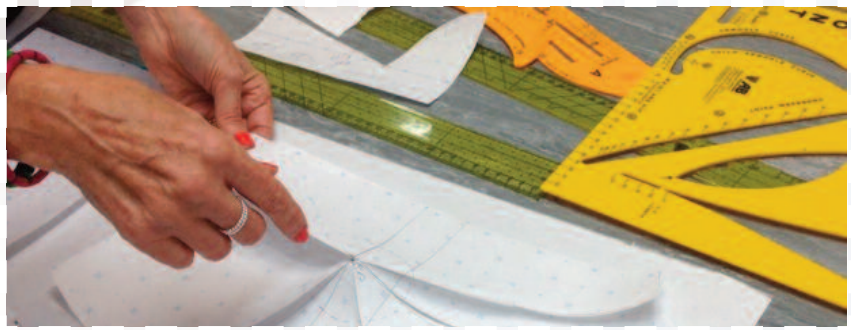
We are all aware of the vast array of job opportunities the fashion and textile industry offers, and its contribution to the economy (it provides employment to 880,000 people across the sector, and accounts for £62 billion (6%) to the UK economy). However, the role of pattern cutter which is incredibly important, often gets forgotten or sidestepped, as deemed not glamourous enough.

On the wave of a current worldwide boom in clothing manufacturing, the industry is in desperate need of highly skilled, talented and technical people, including pattern cutters and garment technicians.
Colleges have started to pick up on this, offering qualifications in the technical areas of manufacturing with creative pattern cutting at the

This is a highly paid and exceptionally important role, but the title Pattern Cutter does not evoke this, unlike the more glamorous 'Designer' title. In reality, the designer cannot do without the pattern cutter. No matter how good the designer, they will not succeed if not supported by a good pattern maker turning their creative ideas into wearable garments.

The pattern cutter works to translate the ideas and drawings of the designer into a workable pattern for the sample machinist to make up. The pattern cutter and designer, therefore, need to be in-tune with each other, developing a strong relationship to enable a complete understanding of the designer's ideas. It is wrong, therefore, to consider the designer and the pattern cutter as separate roles. They constantly work together and, ideally, support each other to produce the best results. Within the industry itself there has always been a hierarchy with the head designer taking the lead but in reality the pattern cutter is just as important.

This is not the easiest career path as it requires training and studying in both manual and computerised pattern cutting. It also requires an eye for good fit and knowing what works, together with an enquiring mind and an ability to solve puzzles. You also need to be able to work in a team and build relationships with, sometimes awkward, clients! Pattern cutting may not at first appear glamorous, but it can be the path to a very rewarding and limitless career.



Courses are available at:

Nottingham Trent University:
PGCert - Creative pattern cutting

University of the Arts, London (UAL):
BA(Hons) Fashion pattern cutting

University of Hertfordshire(UH):
Short courses in Fashion pattern cutting

Fashion Technology Academy(FTA)(Haringey):
L1 & L2 Pattern cutting courses for industry.

Morley College:
Short courses in Pattern cutting

London College of Fashion(LCF):
Short courses in Pattern cutting

The EBacc effect on the teaching of textiles in schools

by Dawn Foxall, Textiles Skills Academy

In the summer 2018 edition of Futureminds, I wrote about a petition to look at reinstating the stand-alone textiles GCSE. This ended in early October, but I continue to have some concerns that D&T departments, and textiles teachers in particular, may like to consider when looking at curriculum development.

At least one of the awarding bodies that offer GCSE D&T are offering support to teachers transferring from GCSE D&T to art & design. This illustrates an increasing move to take textiles out of D&T and move it into art. This could mean that students are missing out on access to vocational qualifications in a subject that is urgently required to support industry skills shortages.

The textiles industry is desperate for skilled people, particularly in garment manufacture, as the boom in fashion and textiles continues. This concern may not be addressed if textiles becomes a facet of art rather than a material in D&T.

FE colleges often offer courses that schools do not, such as vocational qualifications, which give students a greater awareness of the world of work in that material area. This is particularly relevant for the textiles industry. However, having textiles as part of the D&T suite of materials, rather than a minor aspect of an art GCSE, is more likely to enable students to become aware of the range of creative and technical opportunities the industry can offer.

A 2016 survey, based on statistics published by Ofqual, showed a fivefold decline in the number of pupils taking GCSEs in arts subjects in that year, and entrants for A-levels in arts subjects dropped by 4,300. This general decline in entrants, and the change to the new D&T GCSE, means that exposure to textiles careers advice and an awareness of opportunities in the textiles industry for pupils will also be declining.

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The EBacc effect on the teaching of textiles in schools

by Dawn Foxall, Textiles Skills Academy

The 'EBacc effect' is a common concern across all creative subjects, where pupils have their GCSE options for D&T or art limited, meaning fewer pupils have the opportunity to study textiles, either as a material in D&T, or as a creative pathway

These subjects provide a creative space for pupils to experiment and develop skills that they would not develop in a wholly academic curriculum. The implications are widespread, from lack of skills to lack of creative thinkers in all industries.

Andria Zafirakou (Global Teacher Award 2018) recently commented that creative arts subjects were being "squeezed out of the curriculum" at a time when they had never been more important. "They are not only essential for personal growth and self-understanding, but they also teach young people to think creatively, learn to communicate effectively and build resilience. All these skills will be important for the jobs that they are likely to do when they leave school."
Since the EBacc was introduced in 2010, more than a quarter of schools have withdrawn some of their creative subject courses.

A letter signed by over 100 influential artists published in The Guardian (May 2018) called on the government to reverse its decision to press ahead with the EBacc. It stated that this policy:

"Will seriously damage the future of many young people in this country."
"A good education fit for the 21st century, must be broad and balanced. The EBacc in its current form is not the way to achieve this."

"If we care about social mobility, wellbeing and economic growth – and if we want our creative industries to continue to flourish – we need to rebalance our education system so that the arts are valued just as much as other subjects. Every child should have equal access to the benefits that the arts and culture bring, not just a privileged few."

It makes economic sense for the government to re-evaluate what is happening to creative arts education in this country and its long-term effects. For schools, it is important that departments continue to promote the strengths, skills and knowledge that studying subjects such as D&T and art bring to the curriculum.

Join the conversation on the Textiles Skills Academy site or the Facebook page:
http://www.textilesskillsacademy.co.uk/

https://www.facebook.com/groups/textileteacherscentre/

Product in a Tin Competition

by Julie Boyd, Boyd Education

Will Your School Be Next Year's Winner?

Over the summer judging took place for our Product in a Tin competition. It was an exciting time with the postman overloaded with parcels, clearly wondering why we're so popular from mid May to the end of July.

Product in a Tin competition: how it all started

Our competition has developed a lot since it first started in 2013, particularly with the GCSE changes to be more in line with the broader materials approach of the curriculum, as well as also reflecting the focus on meeting real user needs. The idea was inspired by socks sold in a tin by Jollie's, with the tin providing a design restriction for students whilst giving them freedom to make what they wanted.

What students have to do

Students design a product that fits into a snack sized Pringles tin, either as it is, or by being folded, rolled or taken apart. The tin is a design restriction only and isn't part of the competition unless students choose to integrate it into their design. Products can be made from any materials but at least two D&T materials have to be used. On their application form students have to outline the intended user of the product, along with the needs it meets. They also have to justify their choice of materials. Find out more about what students have to do at https://goo.gl/mfzw1C

A focus on learning

One of the aims of the competition is to provide a bank of flexible teaching and learning resources that can be used to run the competition as a whole module of work, a homework, a club, an extension activity, or even as a context for a mock non exam assessment. The resources and ideas could also be used by teachers without actually entering the competition itself. (www.globalgoals.org). See resources to support the competition at https://goo.gl/LPJBQ8

The competition is a great way to get students thinking about an unfamiliar design context. It's also a great vehicle for delivering theory content whilst keeping things fun. The Pringle tin, for example, can be used to raise issues related to poor sustainability (students don't need to buy a tin as measurements are given). Students are also encouraged to think more deeply about users, user needs, and design problems beyond their own experience, for example, by using the United Nations 17 Global Goals for Sustainable Development (www.globalgoals.org). See resources to support the competition at https://goo.gl/LPJBQ8

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Product in a Tin Competition

by Julie Boyd, Boyd Education

This year's winners

This year's winner was Niamh, a year 9 student from St. Clement Danes School in Chorleywood, whose teacher Miss Georgiou did the competition as a module of work. Niamh's entry was a pair of earrings made from polymers, metal, paper and textiles. Recycled plastics were layered and machine stitched, then fused to a thicker layer of laser-cut polymer. This was then attached to silver earring hooks, along with paper beads made from magazines and inspired by traditional

Ugandan bead making. Her entry stood out because it was different and because of how the materials were combined. Her entry was also well executed and wouldn't look out of place in a shop. Niamh's application form reflected her design thinking and how she was inspired, particularly her explanations about her use of recycled materials and the inspiration from Ugandan beadwork. See some of the competition entries at our D&T Roadshows taking place across the country https://goo.gl/BCrN5B

The new 2019 competition with even bigger and better prizes!

The new competition for 2019 has the biggest prizes ever. The winning school will get a prize worth over £1200, consisting of 15 Crumble starter packs sponsored by Mindsets, along with half a day's training sponsored by us, as well as a sewing machine sponsored by Husqvarna Viking and Coles Sewing Centre in Nottingham. The student also gets prizes worth £75 for themselves. There are also 2nd and 3rd place prizes, plus 20 very small prizes for other entries that really impress the judges.

How to enter

We recommend teachers run an internal competition and select entries to submit. This allows teachers to acknowledge the work of students who don't want to part with their work as, unlike many competitions, actual work is submitted and not just the design. With this in mind, this year photo entries will be accepted. These can't win a prize but can be considered for inclusion on the website. As part of their entry students also have to complete an application form (closing date 1/8/19).

With thanks to Husqvarna Viking and Coles Sewing Centre who sponsored this year's main prize and Mindsets who join them as sponsors for the 2019 competition.

For more information visit https://goo.gl/mfzw1C or contact julie@julieboyd.co.uk

Compressors and the Pressure Systems Safety Regulations (PSSR)

"Our D&T department has a compressor. I've heard that the science department has to have its pressure systems examined every year. Is it the same with compressors?"

This enquiry was recently emailed to SSERC (in Scotland) following an article on the Pressure Systems Safety Regulations that was published in the SSERC Bulletin 259.

Model steam engines, pressure cookers and autoclaves used in a science department all require annual examination under these regulations. Pressure cookers used in food teaching also require annual examination, see MRAT 3.030 Pressure Cookers http://dt.cleapss.org.uk/Resource/MRAT-3-030-Pressure-Cookers.aspx

Most D&T departments will have some sort of compressor, such as an:

- air tools compressor
- air brush compressor
- tyre inflator
- grit blaster
- vacuum former/blow moulder
- pneumatics teaching equipment

Some of these compressors require an annual examination and others don't. Why the difference?

Firstly, all the pressure vessels mentioned in the science and food context generate steam. This means that the regulations requiring a formal examination apply.

Whether or not a compressor needs an examination depends on the energy the system is capable of storing. Physicists will tell you that the energy in a pressure system can be calculated from pressure times volume. These same physicists will doubtless be horrified that HSE guidance eschews SI units in favour of bar for pressure and litres for volume.

To work out whether a compressor requires a regular formal examination:

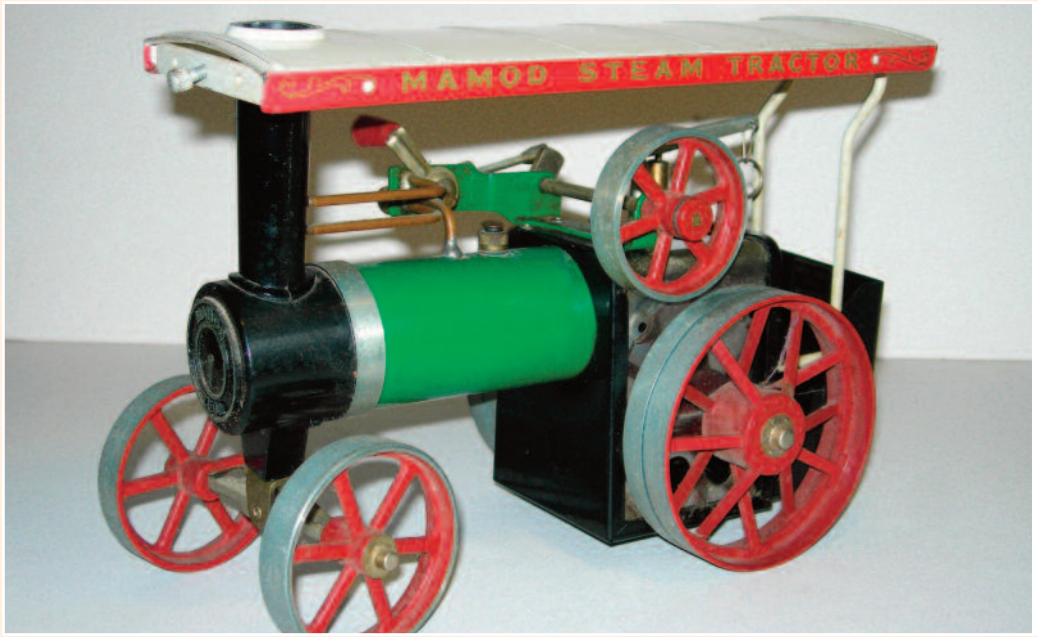
- Find out the volume of the receiver tank in litres;
- Find the maximum operating pressure in bar;
- Multiply them together.

If the answer is less than 250 bar litres, no formal examination is necessary. (Volume and pressure can be found from the manufacturer's data.)

If it is greater than 250 bar litres, the system must undergo a formal examnation that follows a written scheme of examination. For example, a compressor with a 50 litre receiver tank and a maximum pressure of 10 bar would need examining because 50 x 10 = 500, well above 250.

Note that some compressors do not have a receiver tank. These do not need annual examination.

This article refers solely to examinations required under PSSR. Other inspections and tests may be necessary, for example portable appliance testing (PAT), and regular checking by technicians. Remember too that all equipment should be in good condition and inspected visually before use.



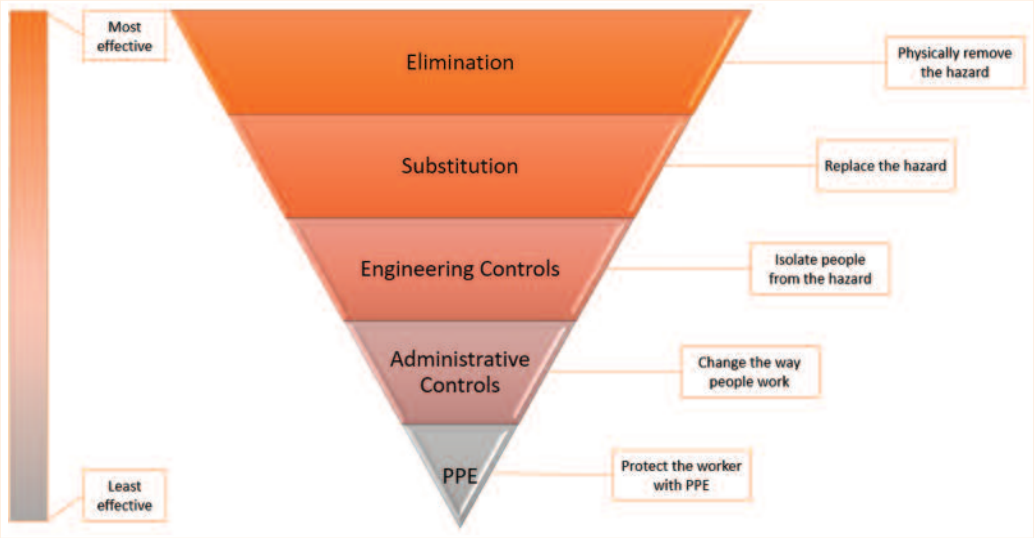
New guidance on the use of 3D printers

Readers of *Futureminds* will be aware that we at CLEAPSS have been interested in 3D printing for a few years now. We were also involved in the testing of machines and filaments carried out at the HSE labs in Buxton. This has lead to a guidance document, jointly developed by CLEAPSS and the HSE, entitled A Guide to 3D Printing in Schools and Colleges.

This is a significant piece of work, and clearly explains the need to consider extraction and ventilation when using a 3D printer.

The test results identified the need, under the COSHH regulations, for users to control emissions. The emissions contained both Volatile Organic Compounds (VoCs) and ultrafine particles.

Under the COSHH regulations, there is a hierarchy of control, the first control is 'elimination'. This means that where it is possible and practical to do so, the hazard must be eliminated at source. As the process of heating and reforming the filament in the 3D printing process, will create hazardous emissions, the control must be in place to ensure that the emissions do not escape the working area, to present a risk to users.



Working in a well-ventilated area, with low emissions, may be adequate control. But if you are unsure of the level or content of the emissions some mechanical control measure will be required.

Further guidance can be found in the document, which will be on the CLEAPSS D&T website.

At the recent TCT show, a number of filament suppliers were approached for advice about the nature of filaments they were selling, and what concern there was over emissions. None of those spoken to were able to provide any advice. One was able to suggest that ABS was not as 'safe' as PLA. Most of the suppliers were not aware of the chemical make-up of the filaments and none were able to present Safety Data Sheets (SDS). At the show there were in excess of 500 printers running, only two FFF machines were seen to have any form of extraction or emission control in place.

At CLEAPSS we have been working on our own emission control cabinet, which consists of a Perspex cabinet, with an extraction fan which draws the air from within the cabinet, through a carbon and a HEPA filter. Our first tests seem to show that the system does seem to be offering some level of control, but we have more testing planned.

The files for making your own version of the cabinet will be going on the website when we are satisfied that it is effective in removing VoCs and ultrafine particles from the emissions generated by the printing process.

The new Technicians Job Advertising Service

Over the summer we made a few changes to the website including adding a technicians job advertising service.

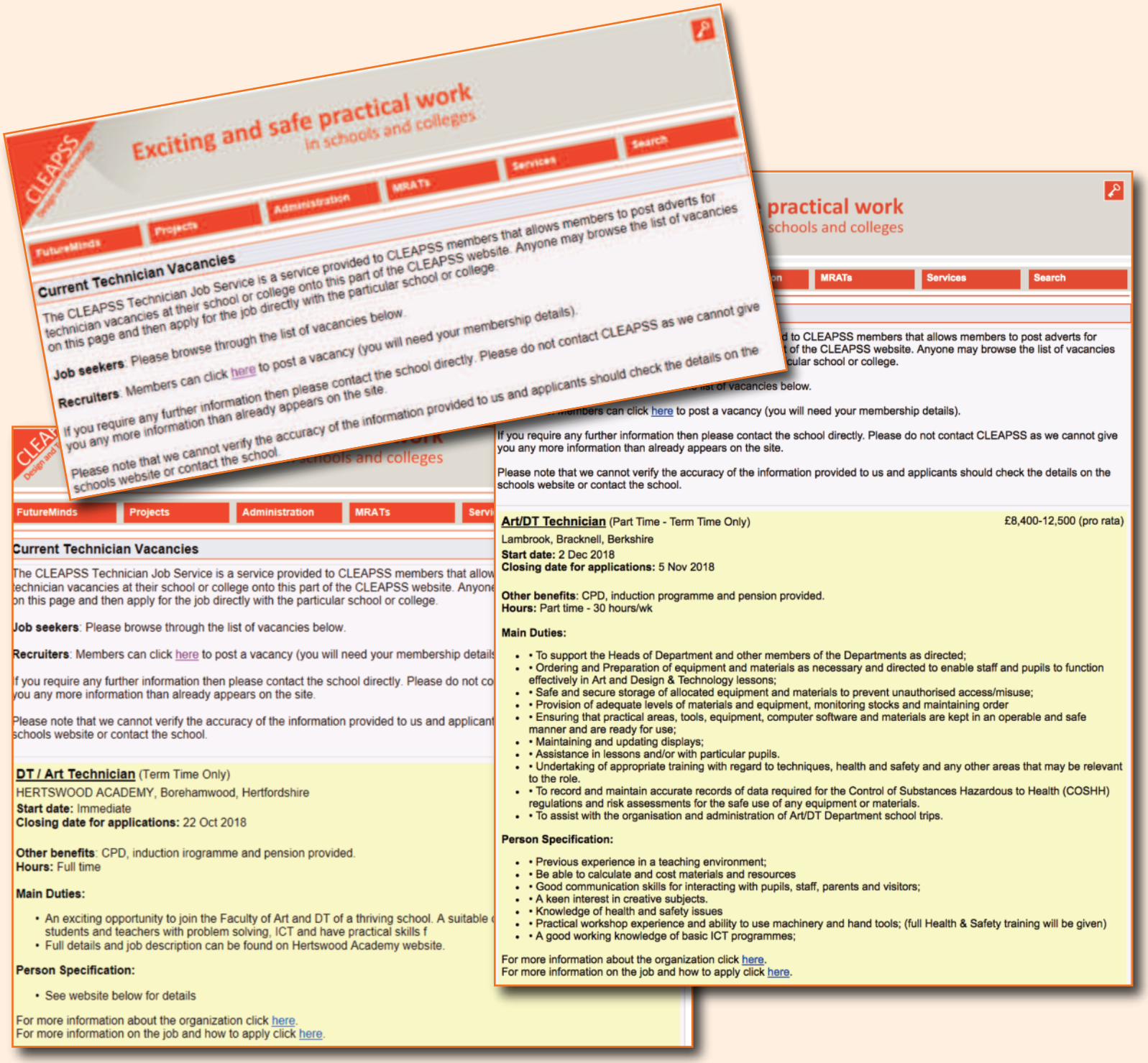
This service was first developed for the science site, but we thought it may also be a useful for D&T.

If a school wishes to recruit a new D&T, art, food or textiles technician, there are plenty of agencies that will charge for this service, for CLEAPSS members, this is available at no cost.

The person wishing to post the advertisement should go to the Technicians Jobs page and click on the link next to the recruiter title. This will open an online form that has a number of compulsory fields. Upon completion of the form, the data is encrypted and sent to CLEAPSS for checking. When the advertisement has been approved, it will go live on the D&T site until the deadline set by the recruiter.

Although the recruitment service is only available for members, the advertisement will be posted on the site and will available to both members and non-members.

We will also tweet about the advertisements and promote them in the email update.



Some recent tweets

What can a drone do? Take a look at the videos from #flyability youtu.be/s96Q2GXgoeE

#AutonomousVehicles debate for #DT, design ideas for driverless vehicles. design-milk.com/nuro-self-driv…

Anyone running a darkroom in school take a look at the new #CLEAPSS document: dt.cleapss.org.uk/Resource/GL292…

If you are using #drones in school, take look at our guidance: dt.cleapss.org.uk/Resource/GL262…

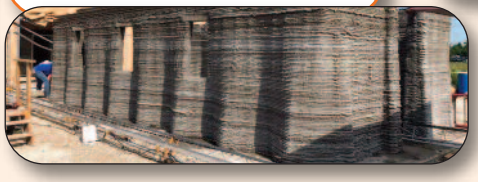
#TCT2018 had some really interesting ideas, but only one #3dprinter with a 'bolt on' extractor, note the small filter on the rear.

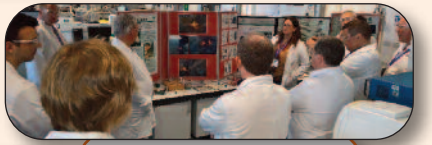
Lots of testing of 3D #fdm filaments in the @CLEAPSS fume cupboard this week, and hood testing.

Set up for the #isba conference, next to the coffee, can't be bad!

Interesting day at #TCT2018 loads of things to see, including innovative #dt ideas and 3D textiles

US military uses #3dprinting to build barracks. dezeen.com/2018/09/05/us-…





At #HSE labs today, working on #DSEAR and discussing loads of other stuff health and safety

In the next edition of *Futureminds*:

Reports from the ASE annual meeting and the BETT show

Updates from CLEAPSS work on new documents

Results from our testing of the 3D printer cabinet

Updates from the Food Teachers Centre

Updates from the Textiles Skills Academy

News of interesting and innovative practice in schools

If you have any ideas for articles or other information you would like to see in *Futureminds*, please get in touch via the *Helpline*.

Don't forget you will need the login and password for the CLEAPSS website to be able to access the materials, you should already have this in school, but if you are having difficulties, contact us
01895 251496, or via the website:
www.cleapss.org.uk

You can also follow us on twitter
@CLEAPSS_DT