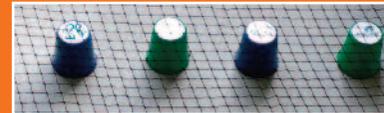
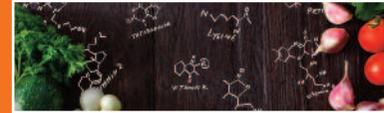


CLEAPSS
Design and
Technology

Future minds

Tomorrow's world explored today



Summer 2018

CLEAPSS D&T e-newsletter

Welcome to Futureminds 08.

The spring term was a busy one...

At the time of writing this edition of Futureminds, GCSE coursework is being sent off for moderation and revision classes are being scheduled. Year 10 NEA titles will be arriving soon and KS3 options are being run. Open days and induction days are being planned, and half term break is looming, how do we fit it all in?

Whilst it's a very intense period in secondary schools, across all year groups, in primary the annual assessment period is about to get underway, and in some primary schools the annual D&T or Art week is being planned.

However, here at CLEAPSS, we are also busy, there are a number of training days coming up, as some teachers get a slightly lighter timetable. We have also got a few audits lined up across the country. Dates and venues of courses can be found in the *Smallprint*, and on the website.



The new CLEAPSS Makerspace has proven useful. We have worked on a number of pieces of equipment, a 3D-printed GM tube holder and radioactive testing rig, a Petri dish holder, and a variety of other pieces that schools may find useful. The files and instructions for making these are going on the science website. And we made a drone!

Over recent months we have been doing a lot of work on developing materials related to drone flying. You will find two articles related to this exciting and engaging field in this issue. We are writing up our research and will have further new documents on the website by the

summer break. If you are interested in getting involved in drone flying, take a look.

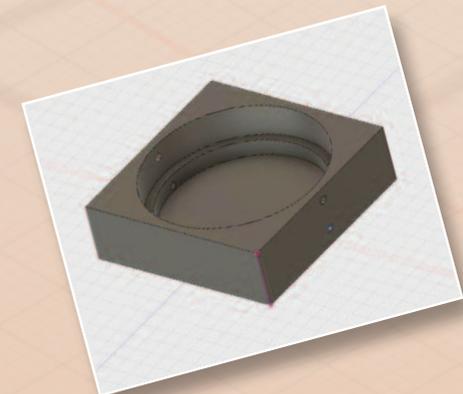
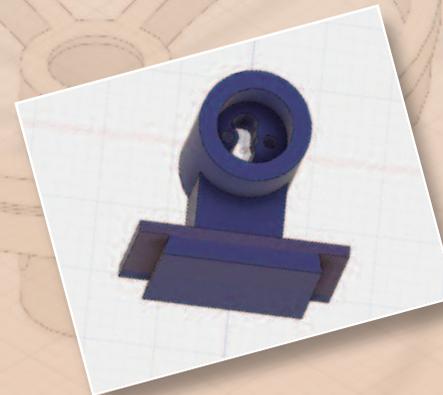
We have also had a number of interesting meetings with other agencies. The Institute of Food Science and Technology has provided an article about work to provide science resources that are related to food. Food teachers reading this may want to find out more, perhaps by working with the science teachers in school to develop some exciting practical work.

We have continued our work on 3D printing, and Phil at *Learnbylayers* has sent in an article

describing the teaching materials that are available to help teach use this new technology. In our new CLEAPSS Makerspace, you may have seen some of the equipment we have designed and made using the 3D printer and laser cutter.

The Food Teachers Centre has provided an article about its food science materials, which cover similar ground to the IFST above, but from a food teaching, rather than science, point of view.

The Textiles Academy has presented a view of the future, from the perspective of textiles teaching.



LOVE FOOD, LOVE SCIENCE

by Andrew Gardner Institute of Food Science & Technology

Larger than automotive and aerospace combined, the food and drink sector is the largest manufacturing sector in the UK. It will need 140,000 new, that's additional, recruits by 2024⁽¹⁾. With the loss of the Food Technology 'A' Level and the introduction of the new GCSE in Food Preparation and Nutrition, the Institute of Food Science and Technology (IFST) is finding ways to support teaching of food science. IFST has developed *Love Food Love Science*, an online resource for teachers to help them deliver engaging food science lessons. *Love Food Love Science* resources are aimed at new learners to explain basic food science concepts, and help students understand the practical steps involved in doing a food investigation using the scientific method (part of the new GCSE). The site contains videos, links and downloadable resources.



Alongside the food science resources, *Love Food Love Science* also helps teachers link up with real life food scientists to find support for lesson development, create links with the local food sector, and open students' eyes to career opportunities. Teachers can search the directory of *Love Food Love Science* mentors by either location or specialism, enabling them to find a food

scientist local to their school or an expert in the topic being taught at the time. Mentoring can be as simple as a quick phone call, or it might develop into an exchange of emails, a series of Skype sessions, or involve asking the mentor to present to a student group. In some cases, food companies will want to nurture lasting relationships with local schools established through the mentoring process.

As an industry worth over £100bn and employing 4 million people, the food sector offers a huge range of exciting careers. Young people might start their food careers in an apprenticeship role after completing GCSE's, Highers or A' Levels. About a quarter of food-related jobs need degree level skills, so students who take a science degree or, indeed, a food science degree accredited by IFST, are in high demand. Typically, graduates might start their careers in audit,

regulation, ethics, or technologist roles (sensory, retail, customer support, systems, factory-based, research or materials, laboratory), in nutrition, new product development, or process roles, and then go on to pursue any number of exciting, worthwhile and rewarding careers.

While the new GCSE in Food Preparation and Nutrition is a great option for some students, many will opt for the traditional sciences, so IFST is making food science relevant in these classrooms too. *Love Food Love Science* will soon also include food science resources for science teachers to use in their lessons. Longer term, IFST wants to promote the inclusion of more food topics into the science curriculum at KS3 and 4, recognising that food is an excellent vehicle to teach children science. It will also support priorities in public health, an innovative economy, and the need to move towards a more sustainable food system.

To find resources and links to mentors, visit www.ifst.org/lovefoodlovescience

To find out more about IFST, visit www.ifst.org

<https://www.fdf.org.uk/publicgeneral/stats-2017.pdf>



Love Food Love Science gives secondary school teachers access to credible food science and technology teaching resources and mentoring support. It is provided free by the Institute of Food Science and Technology, a charity and professional body representing food science professionals in the UK, across Europe and beyond.

Safe use of drones in education

by Dominic Surry, Skill Supply Ltd

The use of drones around the world has quite literally taken off with new and innovative uses coming to the forefront on an almost weekly basis. Industry and employment using drones is here to stay. At Skill Supply Ltd, for over 2 years we have been using small (mini) drones to develop team working and communication skills. Our Learning Through Experience workshops focus on a range of curriculum outcomes including Engineering Habits of Mind, Geography, Search and Rescue (mathematics) and Computing. Using block-based coding as well as hand flying experiences, with and without streaming live feeds, we mostly use the Parrot Mambo mini-drone and Tynker app.



Working with over 1500 learners from primary and secondary schools, university, and business backgrounds has afforded us a wealth of experience in using mini-drones safely.

Our safe systems of work include:

- Working indoors / undercover. There is no chance of a drone getting into aircraft flight paths or near people who haven't signed up to the activity. It also means that activities may take place at locations that CAA rules would normally prohibit.
- Charging batteries before and during sessions is conducted using manufacturers' USB chargers or in the drone, as specified by the manufacturer using USB lead. The area where batteries are charged is kept away from learners.
- Varied levels of physical barrier are used depending on the audience and surroundings:

Continued on page 5...



Safe use of drones^{ES} in education

...continued from page 4

by Dominic Surry, Skill Supply Ltd

- The use of a robust, custom 3m x 3m x 2m (l, w, h) pipe-based enclosure that is easily assembled in a classroom or hall. Inside, containment netting is suspended by small bungee net ties. The enclosure affords protection on all sides, including the roof, and prevents drones being flown out of the net. The setup is simple to use, lightweight and takes approximately 40 minutes to assemble. It also affords maximum protection for learners and the class environment.
- The use of 2m+ high, sturdy, netting barriers (drone / UAV containment netting) supported using photographic stands. This is fast to erect and, with learners staying behind the netting, affords a good level of protection. Because there is a residual risk of drones being flown over the top of the netting, learners are briefed not to fly closer than 30 cm from the top (failure leads to the activity being stopped).



- Learners briefed on staying an arm's length from netting in case of a drone being stopped by the net. Propellers and hulls could still inflict an injury through impact with the net.
- Learners are briefed, and test, an emergency motor stop (using tablet & code), and landing safely. Learners are also briefed not to take off when staff are handling the drones, changing batteries or picking them up to replace at a take-off pad. Skill Supply staff know that certain drones have an accelerometer-based crash detector to cut off motors. A short hit to the hull or bumper will quickly stop the drone's propellers.
- Learners wear a minimum of baseball caps and safety spectacles.



With these simple approaches we have kept our learners safe, developed some great learning experiences and outcomes, as well as provided some really engaging workshops that have been safely enjoyed by teachers and students.

3D printing has landed now it is time for the curriculum to evolve

by Phil Cotton Learnbylayers



3D printing has made its way into classrooms up and down the country, and around the world. It's no longer a novelty for a well-equipped DT department to have a 3D printer. With the new GCSE specs all mentioning additive manufacturing it is safe to say that 3D printing is here to stay and that all students should be exposed to the technology. Over the past five years 3D printers have evolved from quite basic, not very user-friendly, machines, to reliable high-spec automated machines that almost anyone can operate. Whilst the development in the industry has been focused on hardware and software, curriculum content has often been left behind.

Created and tested by teachers

After working with National STEM learning and Dave Parry from CLEAPSS for the past three years delivering 3D printing CPD to teachers, it was clear from delegates that there is a huge demand for 3D printing in education and the curriculum. I've heard many horror stories of 3D printers sitting in boxes not being used, as teachers haven't had the time to plan lessons where the equipment can be effectively utilised. With this in mind, I wanted to create a solution and make teaching 3D printing as stress-free as possible for teachers.

Learnbylayers is a complete curriculum for teachers and their students. There are over 150 resources to help teachers deliver high quality lessons in the classroom. The curriculum is split into three categories, Beginners, Intermediate and Advanced lesson packs, and are aimed at students aged

11–16. All lesson resources are fully editable, and schools have a lifetime license to use them. There are no annoying subscriptions. The resources have also been mapped against the Design and Technology subject content for KS3 and the new GCSE subject content.

Every lesson comes with a lesson plan, teaching Powerpoint, lesson worksheets, homework tasks, stl files, design challenges, video tutorials, and assessments with answer sheets. The lessons are based around AutoDesk which is a free software system for education. The Beginners use TinkerCAD and the Intermediate and Advanced uses AutoDesk Fusion 360. As they are all cloud-based students can continue their learning at home with ease.

What can students learn with **Learnbylayers**? Lessons focus on the theory of 3D printing and how to design models. The Beginners scheme of work introduces students to the basic concepts of how a 3D printer works and what materials are used. Then students learn how to create simple models and how to slice them using basic settings in CURA (the most commonly used slicing software).

The Intermediate and Advanced lessons build on this with more in-depth theory along with more challenging design tasks. Lesson topics include, an introduction to parametric modelling, materials and 3D printing, how to slice models, 3D printers and sustainability, 3D printing and manufacturing and many more. All the schemes of work come with differentiated design challenges so that all students in the class can access the learning.

Continued on page 7...



3D printing has landed

now it is time for the
curriculum to evolve

by Phil Cotton learnbylayers



Every lesson pack can be used 'straight out of the box' with little planning for the teacher. With an ever-increasing workload being demanded of schools, **Learnbylayers** can drastically reduce the time needed to introduce 3D printing to all year groups as the lessons are pre planned ready to go.

Since it's launch in late October the package has gained an international footprint. Currently it's being taught in schools in the UK, USA, Australia, New Zealand, Brazil, UAE, Kuwait, France, Netherlands, Singapore and Trinidad and Tobago with over 14,000 students attending schools where the **Learnbylayers** curriculum is taught.

As part of my ongoing work with STEM learning, teachers who attend the '[Using 3D printers creatively in KS3 and KS4 Design and Technology](#)' will receive a free copy of the '[Intermediate lesson pack](#)' which is an ideal follow on from the 2-day course. The course includes workshops on the theory of 3D printers and where they are used in society, how 3D printers work, Fusion 360 tutorials, dedicated health and safety sessions, and analysis of 3D printing projects at KS3 and GCSE. Teachers who attend will be able to go back to their school fully prepared to integrate 3D printers into their curriculum, and, with the free Intermediate lesson pack, have all the resources needed to start delivering lessons from day one.



Learnbylayers can be purchased alongside 3D printers as bundle packages. We have partnered with Kodak which has just released its first 3D printer onto the education market, and Technology Supplies, where it can be bought alongside selected printers. In addition, GoPrint3D is reselling the curriculum with its range of printers.

To find out more about the **Learnbylayers** curriculum visit www.learnbylayers.com and check out our social media channels @learnbylayers and www.facebook.com/learnbylayers



Food Science Tutorials for Food Teachers

by Barbara Monks M.Ed., B.Ed

Barbara is a Senior Associate of the Food Teachers Centre working as a volunteer to support food teachers. She has taught for many years and led the D&T Department at Hitchin Girls' School, Hertfordshire to achieve high standards in all areas. Barbara has a particular interest in food science because she feels it applies all the practical work taught in the food classroom from Key Stage 3 upwards, and helps students make sense of what happens when they cook.



She understands the way teachers have to adapt their teaching to suit the requirements of specifications and how teaching time needs to maximise learning opportunities. She has, over a period of years, co-written several books covering D&T Food, GCSE Food Technology and, recently, the Collins GCSE Revision for Food Preparation and Nutrition.

Through her work with the Food Teachers Centre, we have a thorough understanding that as the school year progresses the stresses of teaching change. It is this time of the year that some teachers might begin to feel worried about the food science aspects of the forthcoming examinations for GCSE. It is also this term that brings thoughts of planning for the next academic year. We are well aware that many teachers are working on new schemes of work for Key Stage 3 to include more relevant teaching in preparation for the GCSE and devising ways to develop their Key Stage 4, Year 10 scheme of teaching. As a Senior Associate of The Food Teachers Centre Barbara has been working with her colleagues to support teachers in their work.

Recently, by thinking of how best to develop training that allows flexibility of approach we have created a set of 3 Food Science Tutorials for food teachers. They are specifically designed to bring the world of food science into the classroom and will help teachers to include food science into their practical teaching. The training is divided into three separate tutorial modules to cover:

- **Proteins,**
- **Fats, and**
- **Oils and Carbohydrates.**

The food chemistry and applied food science of these topics is covered in through showing illustrations of key food science terms such as coagulation, caramelisation, gelatinisation, dextrinization, denaturation, the Maillard reaction, aeration, setting and shortening.

Continued on page 9...

Food Science Tutorials for Food Teachers

by Barbara Monks M.Ed., B.Ed continued from page 8...

The narrations explain the terms and gives clear direction to the visual aspects of these cooking processes. They also include ideas for food investigations, and how and when to pick up food science strands in food practical lessons. There are also includes learning checks and learning support resources during each of the tutorials to help teachers make the most of their sessions.

These fully illustrated, narrated tutorials provide the equivalent of a full day of training and cover all the food science requirements of GCSE Food Preparation and Nutrition. They meet the standards of the Food Teachers Professional Portfolio. This means that teachers can set aside time to use the narrated presentations when and where is most suitable, work at their own pace, and can of course re-visit the training at any time in the future. The resource comes with printable sheets that can be used in classroom teaching, for handouts, for group work or food investigation work.

You can purchase these resources from Food Teachers Centre singly (£40 plus VAT) or as a discounted set of 3 tutorials (£100 plus VAT). A recent comment on this resource was 'I have started the first one and it is brilliant' so hopefully many teachers will benefit from this new style training.

If you are interested in this training contact:

www.foodteacherscentre/resources

Food Teacher Centre summer term events:

2018 Events planner:

Food Teacher Professional Portfolio Year 3 (£FREE) Saturday 12th May - wait-listing

Food Science Face to Face – GCSE/Level 3 (£190) 29th June, London

Certificate in Culinary Skills – 3 day course (£FREE) 2-4th July. London. Requires both registration and completion of application (for funding reasons). Applications close 4th June

GCSE Boost – supporting your least able (£180) June-July, Liverpool, Bristol, Mansfield, Southampton, London

GCSE Best Practice (£180) June-July, Leicestershire, North West, South West, Manchester, Altrincham

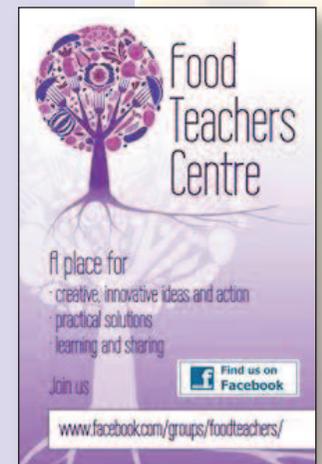
Barbara Monk's Food Science On-Line Tutorials (£100) anytime

Food Safety in Classrooms (£120) anytime or a One day course London 6th July (£150)

Schools Game Changer – practical skills (£25 donation) June-July

Food Technicians and Support Staff (£130)

Grow, Cook and Eat (Primary) (£120)



The Future of Textiles in the UK

by Dawn Foxall The Textiles Academy



The Future of Work: Skilling Tomorrow's Economy

What should we be preparing our young people for?

This question was on the agenda for the recent Commonwealth Business Forum debates (April 2018). The ebb and flow of global economic tides is increasingly turning in favour of the UK with a growing number of our textiles manufacturing businesses bringing back work to British shores. BUT, Textiles as a GCSE, has been removed from the curriculum offer when the industry needs to educate and train to get the business flowing in UK factories.



What was the Government thinking when it decided textiles technology was no longer viable as an important subject in our secondary education? In 2017 the Government removed the GCSE in Textiles, instead combining all of the technologies into a generalised technology GCSE. This act alone has directly suppressed each of the material areas, not just Textiles, but also Resistant Materials; Graphics; Electronics; Systems & Control and Product Design. The result is a narrowing of the number of students going into this field and vastly reducing the breadth of skills they previously would have gained, which would have enabled them to move on to higher education and employment.



In the short time since textiles became a minor element in this new Design & Technology GCSE, we are already losing textiles teachers and resources in our schools. This is so hard to fight and reverse as we have witnessed in the past, and yet we are in desperate need of skilled workforce to manage the levels of manufacturing we are seeing coming back into the UK. Recently a petition to '**Reverse the changes to allow for Textiles & Technology to be stand-alone GCSEs**' was started, with 2000 people signing in its first few days.

From ASOS frocks to F1 car parts, London bus seats to Lady Gaga Creations, we know we cannot live without textiles and the UK textiles industry is thriving!



The UK is not only at the forefront of innovative textile design, it provides employment to 880,000 people across the sector and accounts for £62 billion (6%) to the UK economy. Yet we do not think learning about textiles in school is purposeful enough to warrant time on the curriculum! We are surrounded by textiles technology, and it is vital to the UK economy and industry that textiles education is made freely available to all pupils in the UK to enable a growing industry to thrive with a skilled workforce.

Please sign the petition if you value textiles in education:

<https://petition.parliament.uk/petitions/216289>



AIRGINEERS

Airineers is a STEM challenge for secondary school-aged students who will need to design, build and learn to fly their own radio-controlled quadcopter, often referred to as a drone. There are two classes to the competition known as Micro and 3S and teams can choose to compete in either or both.



The idea for the Micro Drone project came about as a way of giving schools a fun, yet practical way of using their 3D printers and using CAD to create their own parts from scratch. Students are provided with the electronic parts but need to design the frame of the drone themselves. Working closely with Autodesk, Airineers created a set of instructional videos to show how to use Fusion 360 CAD software which is completely free for schools and for students to use at home. Once teams have designed and 3D printed their drone frames, it is a quick process for them to install the electronic components and test out the performance of their creations. Through an iterative design process, students will need to find the best compromise between weight and strength to ensure their drone can withstand the rigours of the competition.

The 3S class is a way of students experiencing the adrenaline rush of real drone racing in a safe environment. Teams will need to build their racing drone from a kit of parts before learning how to configure and fly it. In the competition, pilots will need to fly round a course of gates and flags to set the fastest time possible.

First Person View

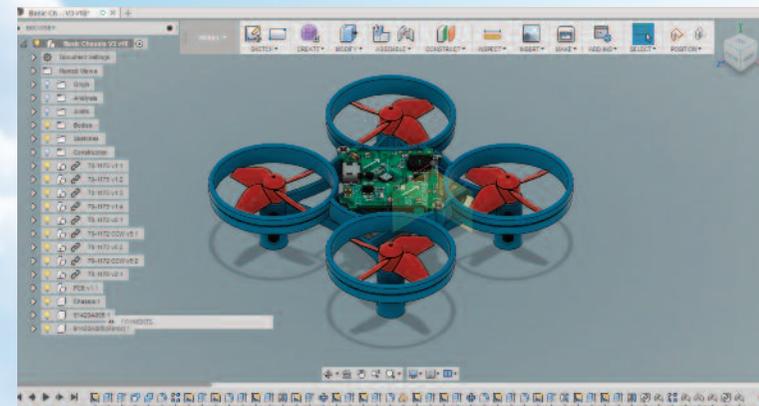
Whichever class the teams chose to compete in, they will need to learn to fly from First Person View or FPV. This means that the drone has a tiny camera and video transmitter mounted on it which sends a video signal to a pair of video goggles worn by the pilot. This gives the pilot the sensation of actually being in the drone and controlling it from onboard. Because this limits the pilot's field of view, they will work with a spotter who will help them to navigate around the course and warn them of any hazards that they should be aware of.

Stay Drone Safe

In recent times, there has been a significant amount of bad press surrounding drone use, and these cases always come down to pilots doing things that they shouldn't. Airineers are advocates of safe and legal drone usage and as such, have produced several documents to help teams taking part in the Airineers competition to understand the safe and legal use of drones. These can be downloaded from the safety page at www.airineers.co.uk and are vital reading for anyone taking part in the competition. Most of the information will also be useful to these using drones of any kind in their school.

Any schools interested in taking part in Airineers should visit www.airineers.co.uk for more information.

Airineers works in partnership with Rapid Education and Autodesk.



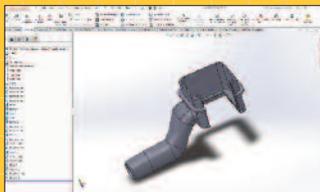
Real life engineering design scenarios in your department

by Alasdair Jones, TechSoft UK Ltd.

How much...!? As a technician, you might recall being shocked at the price of some small, hard to acquire widget needed to repair or maintain the equipment in your department, a safety sign, or a specialist storage container. Unfortunately (let's face it), all departments are on tight budgets these days, but with the equipment available to you there's no reason for maintenance and good organisation to go unchecked. And if you don't have the equipment, offsetting some of the department overheads, and helping out with maintenance elsewhere in the school might even be enough to persuade the bursar to invest in D&T...

This 3D printed bandsaw extraction adaptor was designed in SolidWorks 3D CAD (complete with flow simulation analysis) and manufactured using TechSoft's CEL Robox Pro 3D Printer.

N.B. Always consult your LEV service engineer before making modifications or improvements



Modern 3D printers such as the CEL Robox are compatible with high strength engineering materials such as ABS, and even composites containing carbon fibre and steel. 3D printing is now widely used commercially not just for prototyping, but for full-scale manufacture in aerospace industries.

This custom emergency stop mounting bracket for a pillar drill was manufactured from high strength plastic using a Roland MDX-540 CNC miller.



This nifty tool storage container was designed in TechSoft 2D Design V2 and manufactured from birch plywood using the TechSoft RouterCAM 1290.



These custom wall brackets for a drill and bandsaw (destined for new rooms with underfloor heating) were manufactured using TechSoft PlasmaCUT 1000, welding equipment and a metal cutting bandsaw from TechSoft.



This safety signage was designed in TechSoft 2D Design V2 and can be manufactured using the TechSoft LaserCAM, miller/routers such as the RotoCAMM MDX-40A or large format printer/cutters such as the Roland BN-20 or TruVis SG-540 – check out the Free Resources area at www.techsoft.co.uk to download your own!



Why not give it a go? There's no excuse!

CLEAPSS small print

Courses

Over the summer term we are running a number of courses, the most up to date information is on the website, but below are those already scheduled:

London

25/6 and 06/07 Health and Safety Management for Head of D&T

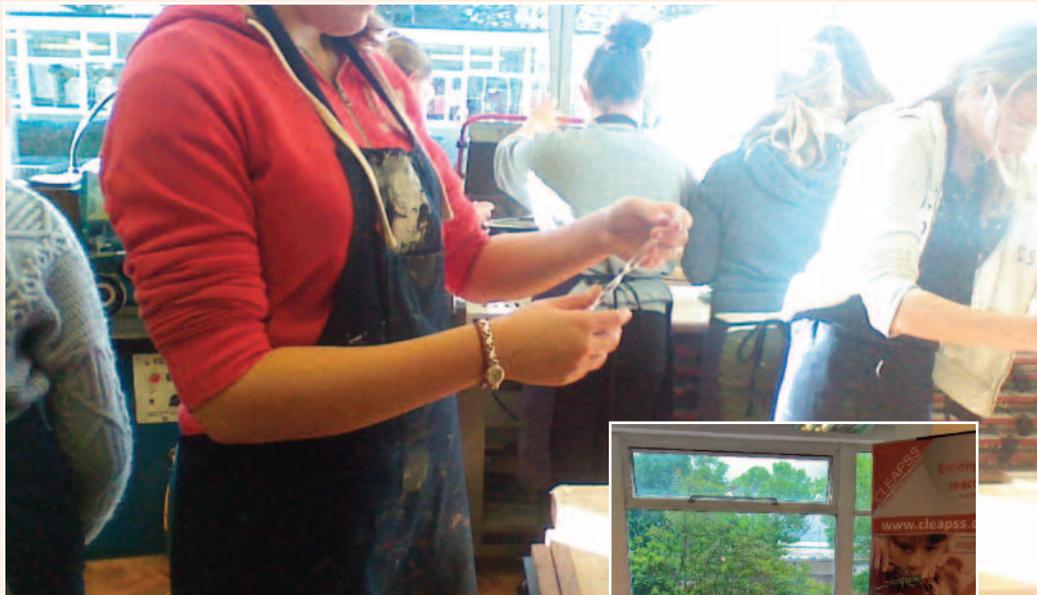
This course is designed for Heads of Design & Technology and others with responsibility for Health & Safety in D&T or those aspiring to such a role. The main emphasis is on how to carry out a D&T departmental audit and how to develop an action plan to address any issues that arise from this process.

29/06 Safe and Effective Technician

This one-day course is designed primarily for D&T technicians working in the resistant materials area who are new to the job, but will also be of use to experienced technicians. The course will cover essential health and safety and offer advice on the layout of the preparation area to ensure safe use of machines, safe storage of hazardous materials, methods of storing consumable materials, small components and valuable equipment.

11/07 Auditing D&T for Safety Officers

This course is designed for Safety Officers and others who may have to oversee the DT facilities in schools and other establishments. The main emphasis is on management issues, risk assessment and the monitoring of H&S practice.



Denbighshire

12/07 Auditing H&S in D&T

This course is designed for Heads of Design & Technology and others with responsibility for Health & Safety in D&T or those aspiring to such a role. The main emphasis is on how to carry out a D&T departmental audit and how to develop an action plan to address any issues that arise from this process.

We have also run the Department Safety course across a number of schools:

This one-day course should be attended by the whole D&T department including: subject lead(s), teachers, technicians and other support staff. Senior Leadership Team members with responsibility for the Technology department and/or health and safety would also find the morning sessions useful. The focus for the afternoon of the course will need to be agreed with the trainer in advance. The impact of the course can be further enhanced by conducting a safety audit of the department beforehand. This can be done internally (using CLEAPSS Guide G79) or by CLEAPSS (subject to an additional charge).

We are always interested in hearing from schools who wish to host D&T courses, so if you are interested, please contact CLEAPSS via the *Helpline*. If you wish to know more about our training, across D&T, Art and primary D&T, please get in touch.

Drone code:

This edition of Futureminds has a number of articles and references to the use of drones. The following is a drone code, developed by the CAA and a number of other organisations, that all drone users should be aware of:

- Always keep your drone in sight
- Stay below 400ft or 120m
- Always follow the manufacturers instructions
- Keep the right distance from people and property
- You are responsible for each flight
- Stay well away from aircraft, airports and airfields.

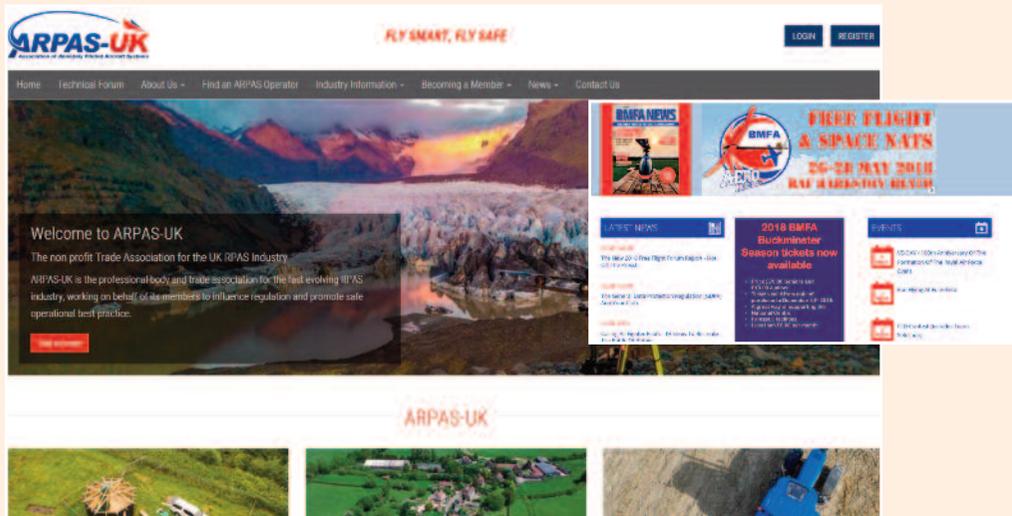
We are developing further guidance that also includes the safe construction and maintenance of the drone, and storage/disposal of batteries. This should be available before the end of term.

Anyone interested in drone flying may also consider joining some of the national organisations that support this exciting new area of D&T:

<http://dronesafe.uk/> CAA backed information and apps for amateur and professional drone flying

<https://bmfa.org/> The national governing body for model flying

<https://www.arpas.uk/> The trade association for remotely piloted aircraft systems



D&T End of year checklist

Consider the working temperatures in your practical spaces, as the summer starts to heat up, your rooms will too. Try to make sure you have good ventilation, without causing issues for other areas.



Remember, as the temperature rises, staff and pupils can dehydrate, so make sure you and your pupils have access to fresh drinking water. There is a lot of research that shows concentration drops as you get dehydrated, in a workshop or food room, this can be particularly important.

Some of the equipment and materials used in practical areas will need to be put away or decommissioned for the summer. Make sure that things are stored safely, don't place heavy items on high shelves. Remember to take care of flexes and plugs, when storing electrical items, cables should not be tightly wound around equipment as this can damage the insulation.



Chemicals stores should be checked and, where necessary, old materials removed.

In the last week of term, it would be a good idea to lightly oil bare metal surfaces of machines and hand tools. This can be done with thin lubrication oil, such as 3 in 1, wiped onto the surface using a piece of rag. Prior to oiling machines, ensure that the machine is off and the power is isolated. The person doing this should wear disposable chemical resistant gloves or barrier cream. The rag should be disposed of in a sealed plastic bag and placed in the bin as normal waste.

3d printers and other equipment that heat plastic should have any filament or material removed from the heated components. For 3D printers, this will mean heating the hot end and then removing the filament. Laser cutter beds should be cleaned and any small bits of material vacuumed out of the cutting area.



Ovens and grills should be cleaned and fridges emptied and wiped clean. Freezers may still have food in them, but ideally these should also be emptied, defrosted and then cleaned.

All food storage areas should be cleared and cleaned, to help to keep pests at bay. Bare stainless steel surfaces should be wiped with a light food oil.

Some textiles equipment will need servicing and lubricating, check with the manufacturer's instructions, or contact your service engineer for further advice.



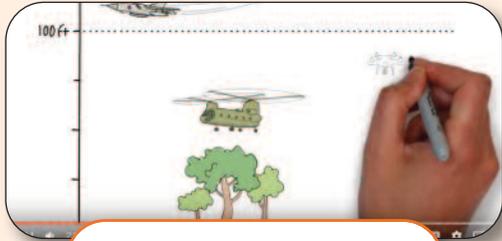
Food room sinks can have remnants of food waste in the traps, so it's a good idea to run the taps for a few minutes after the last lesson. If possible make arrangements for someone to run the taps every few days over the summer break, to make sure the traps stay wet, as they can dry out in hot weather, which can allow smells and pests to rise through the drainage system.

At the end of term, make sure all the power is locked off to the rooms, plugs are switched off and isolators are off. Cleaners and site staff will still have access to the rooms, so it is important that tool stores and equipment are locked to ensure that access is limited.

If you have any queries, contact the CLEAPSS
Helpline: 01895 251 496.

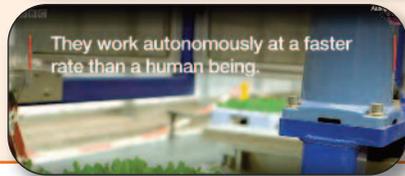


Some recent tweets

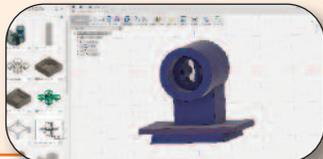
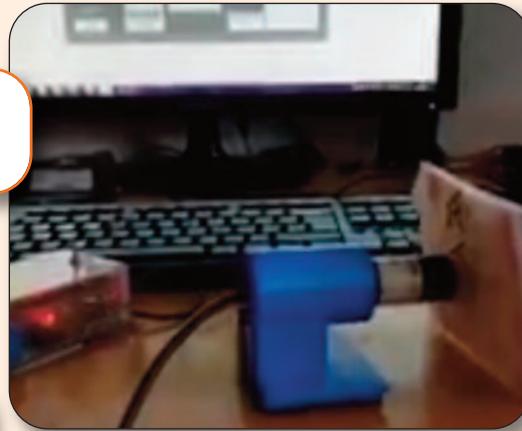


Great, simple short video about #Drone safety.
[youtube.com/watch?v=--OH6w...](https://www.youtube.com/watch?v=--OH6w...)

It's alive! 3d printed GM tube holder courtesy of CLEAPSS. Details and files soon. Designed by @CLEAPSS_DT



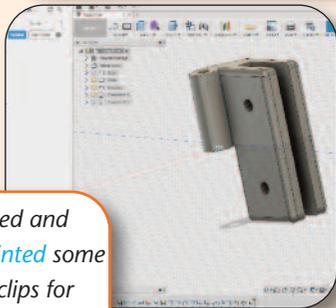
using #robots to plant and harvest, automating agriculture, great #DT discussion and modelling exercise. <http://www.bbc.co.uk/news/av/technology-43824607/meet-the-robots-that-can-pick-and-plant-better-than-we-can>



Busy week at #CLEAPSS, meetings about #Drones and making equipment, and test flying our drone



All sorts of uses for #drones. #CLEAPSS are working on new guidance for the summer. <http://www.bbc.co.uk/news/business-43906846>



Thinking about #engineering in #dt take a look at the #stem pages stem.org.uk/year-of-engine...

In #NottingHill today to do a safety audit, if you feel the need, take a look at the #Cleapss website:

designed and #3dprinted some hinge clips for safety screens



#NFER evidence for T Levels, interesting read for #DT and other subjects



New benching in place for the clean workshop at #CLEAPSS



In FutureMinds 9:

Over the summer we are hoping to publish our drone materials, so keep your eye on the website, we will have a short update in the next issue of Futureminds.

There will also be articles about the Food and Nutrition GCSE and the latest from the D&T GCSE.

We will also have articles from a number of suppliers and other agencies, with whom we work to help support practical work in schools.

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