CLEAPSS Design and Technology

Futureminds

Tomorrow's world explored today

Spring 2018

CLEAPSS D&T e-newsletter

Welcome to Futureminds 07, the first of 2018.

Once again, thanks to all of our contributors and readers for making our D&T e-newsletter so successful.

This edition includes an article from Julie Boyd about the NEA in the new GCSE, a report from Kevin Ormond on how he has developed H&S report cards in his department, Lesley Butterworth from the NSEAD has sent us details of some of the conferences and CPD they offer, Foodoppi put forward a range of thoughts around developing a maker space in schools, Kieran Middleton describes the inspiration he got from attending CPD, the Food Teachers Centre describes the enormous impact they have had on food teaching across the country and there are reports from some of the events we have been involved in over the last term.

In the *Smallprint* you will find an item about *new no notice inspections* in the food industry (not for food teaching), this is part of the *Go Home Healthy* campaign which we discussed in the last two editions of Futureminds.

We have also detailed updates to D&T documents that are live on the website, which will become a regular item in future editions.

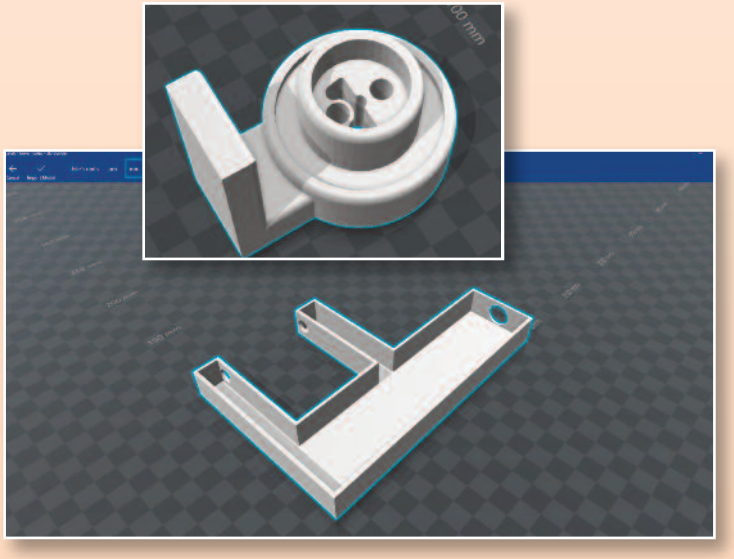
There is also a detailed ***Helpline*** response that we think may be of interest to all schools regarding the use of disposable gloves.

New facilities at CLEAPSS

Over the past term we have been making arrangements to develop the facilities at the CLEAPSS HQ. We already have extensive science facilities and a small workshop, but in January we started work on the 'annexe'. One room in the annexe will be devoted to clean D&T work. We have taken delivery of an HPC laser cutter, and are in the process of relocating the 3D printer and setting up a large-screen PC for CAD work. This will enable us to design and manufacture pieces of equipment, both for D&T and science.

You may have seen in previous editions of *Futureminds*, the variety of equipment we have already prototyped, including: light gates, a GM tube holder, radiation testing rigs, and a wind tunnel. We are currently working on an adjustable boiling tube and small vial holder, and a petri dish holder for investigations in chemistry.

We are always interested in ideas for items we could design and make that could make your jobs easier as teachers or technicians. Please let us know via the CLEAPSS ***Helpline***.



Report from the ASE annual meeting

In January, CLEAPSS decamped to Liverpool to attend the ASE annual meeting. This entailed loading a van with equipment and resources, and taking it all to the university of Liverpool for a three day event.

The conference is multi-faceted, CLEAPSS has a stand in the main display area, a set of workshops in the teaching hub, and takes part in a variety of primary events.

As this is a science event, there is little call for D&T, however we do have a large display in the teaching hub, including 3D printing, some food resources and a variety of publications and other materials. This year we also took the Greenpower Racing car being built at Ashlyns School in Hertfordshire.

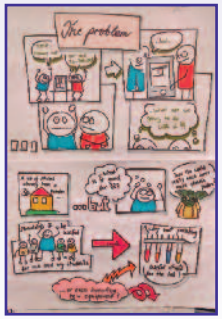
We also ran a primary practical activity giving delegates an opportunity to make slime, a steady hand game, some food chain mobiles and a popup Easter card. These were a real success. The primary teachers and others that took part thoroughly enjoyed themselves and plan to take these activities back to their schools for work with their pupils. All of the materials are downloadable from the primary part of the CLEAPSS website.

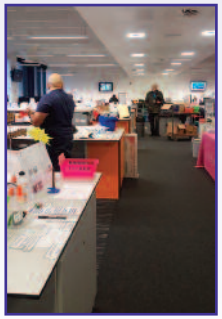
One topic where we did excel is 3D printed science equipment. Over the past couple of years, we have developed a number of designs for equipment used in science practical work. We showcased a homemade air track, a radiation testing rig and a number of small components used with other more commonly-found items. This generated a lot of interest from teachers and other visitors and is definitely an area that schools can build upon. Particularly because the NEA in the new D&T GCSE requires a real context for design solutions.

All of the items we design and make are available as STL or DXF files on the website, with a full set of instructions for schools to make their own versions.

This theme of making it for yourself was also something that other exhibitors had started to consider. We had a really useful meeting with two gentlemen from Holbein Gymnasium in Germany. They have what we would call, an extended project for their 17-year-old students, which requires them to design and make a solution for a real problem, in their case, using IT. The teachers set the problem of making a piece of equipment to help with a science experiment, using their 3D printer. Some of their solutions are already posted on *Thingiverse*.

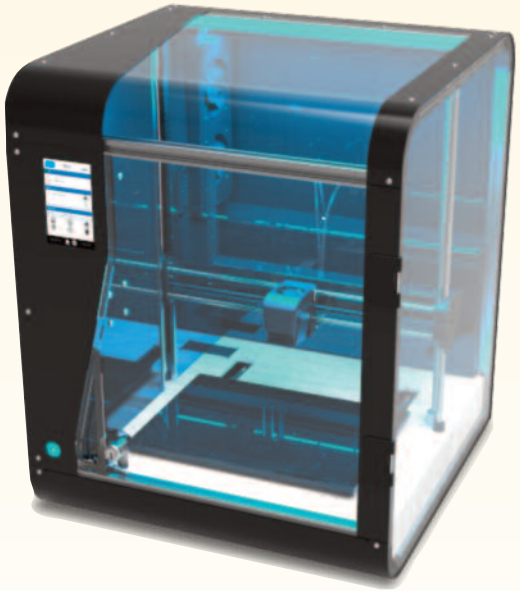
Once again the CLEAPSS roadshow was a great success, and we enjoyed showcasing some of our work that is not all about risk assessments and documentation.





Report from BETT

BETT is a chance to see some of the latest technology and related ideas that are available to schools. From our base on the CLEAPSS stand we met a range of exhibition visitors and colleagues from other educational suppliers.

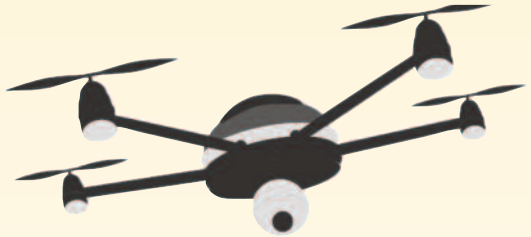


This year there was the usual interactive display units and software applications to improve classroom delivery or tracking pupil data, but there were also a few technological innovations that we found interesting.

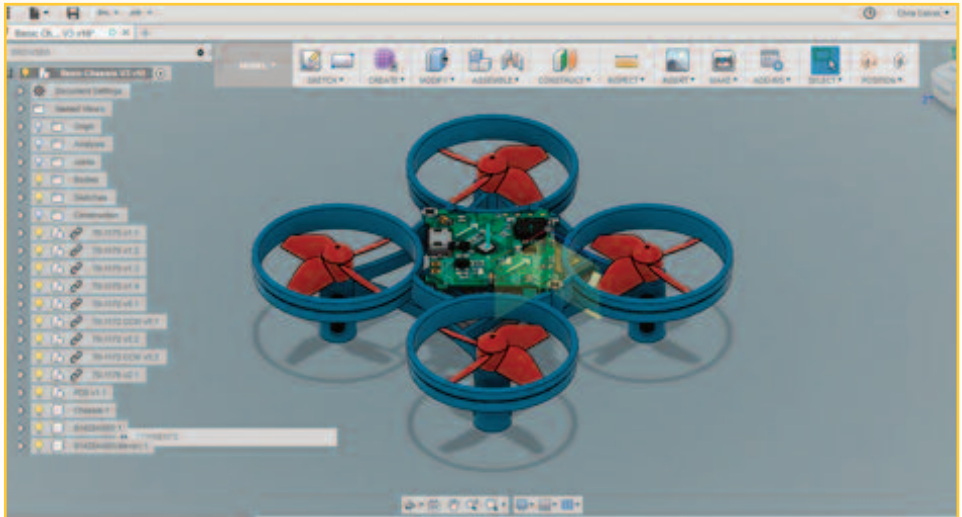
The *Arduino* and *Raspberry pi* exhibits showed how creative teachers and pupils can be with these devices, with everything from data logging to robotics. We saw a number of 3D printers that are now contained in boxes with controlled ventilation, or filtrations systems, and we spent a while talking about the new Robox 3D printer that has HEPA extraction built into the casing.

We also found a few things which raised a bit of a concern. One organisation was displaying robot arms, which appeared to be a really simple and well-made product. However, one of the arms was fitted with a laser and was laser engraving materials such as wood and plastic. This is not allowed in school, as it uses an unenclosed laser that could cause severe burns and eye damage, and the item being engraved is giving off toxic fumes and particulates.

We also saw a few exhibits of flying drones, either as project ideas as in *Airgineers*, or as remote vehicles. When asked about the safety aspects of flying drones, there was a significant lack of awareness from most exhibitors. Most of the exhibitors could talk about not flying near an airport, or keeping the machine in view of the controller, but there is still a lot of work to be done around keeping operators and others safe whilst flying. We have been in contact with various agencies, including Arpas (Association of Remotely Piloted Aircraft Systems) and the HSE to help with developing guidance for schools in how to manage the safety aspects of drone flying. We hope to have guidance ready on the D&T website for the summer.



PLEASE BE CAREFUL OF FLYING OBJECTS

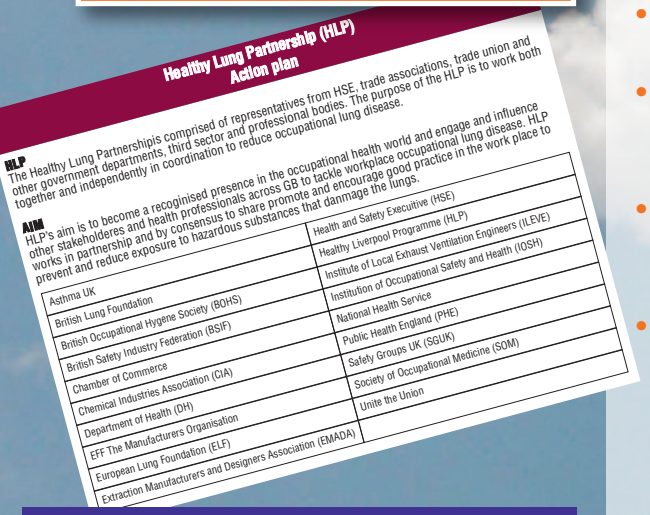


Healthy Lungs Summit

Last term, Joanna, one of our science advisers, attended this HSE conference.

The HSE has recently focused on improving Health, and the conference materials were very closely linked to the *#helpGBworkwell* agenda mentioned in previous *Futuremind* articles.

TOGETHER WE CAN SHINE A LIGHT ON WORKERS'S HEALTH
HELP US MAKE SURE WORKERS GO HOME HEALTHY
NOW AND IN THE FUTURE



Healthy Lung Partnership (HLP)
Action plan

HLP
The Healthy Lung Partnership is comprised of representatives from HSE, trade associations, trade union and other government departments, third sector and professional bodies. The purpose of the HLP is to work both together and independently in coordination to reduce occupational lung disease.

AIM
HLP's aim is to become a recognised presence in the occupational health world and engage and influence other stakeholderes and health professionals across GB to tackle workplace occupational lung disease. HLP works in partnership and by consensus to share promote and encourage good practice in the work place to prevent and reduce exposure to hazardous substances that danmage the lungs.

Asthma UK	Health and Safety Executive (HSE)
British Lung Foundation	Healthy Liverpool Programme (HLP)
British Occupational Hygene Society (BOHS)	Institute of Local Exhaust Ventilation Engineers (ILEVE)
British Safety Industry Federation (BSIF)	Institution of Occupational Safety and Health (IOSH)
Chamber of Commerce	National Health Service
Chemical Industries Association (CIA)	Public Health England (PHE)
Department of Health (DH)	Safety Groups UK (SGUK)
EFF The Manufacturers Organisation	Society of Occupational Medicine (SOM)
European Lung Foundation (ELF)	Unite the Union
Extraction Manufacturers and Designers Association (EMADA)	

Industry respiratory health links A-Z

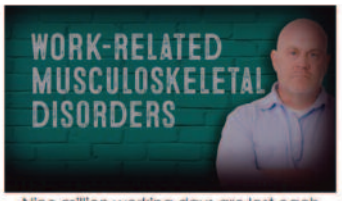
- Agriculture
- Cement and concrete manufacture
- Construction
- Engineering
- Electronics (Soldering)
- Glass and glazing
- Hairdressing
- Heavy clay and bricks
- Lung disease
- Molten metal (Founderies)
- Motor vehicle repair
- Plastics
- Printing
- Quarries
- Refractories
- Silicosis
- Stoneworker
- Surface engineering
- Textiles and launderies
- Waste management and recycling
- Welding
- Woodworking and furniture

Some statistics from the Healthy Lungs Summit:

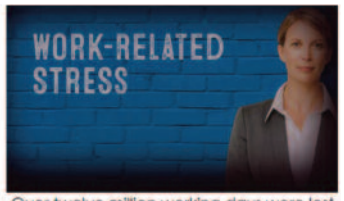
We breathe 440,000,000 times in a lifetime.

- Each year there are an 18,000 estimated new cases of breathing/lung problems and 12,000 lung disease deaths thought to be linked to exposure at work.
- Main culprits: Isocyanates, dust, including silica and flour.
- Main industries affected: Vehicle paint technicians, bakers and flour workers.
- 77% hospital admissions for lung conditions are from non-smokers, and 63% of lung disease deaths are unrelated to smoking.
- 5.4 million people in the UK suffer from asthma: 1/12 adults and 1/11 children.
- Occupational asthma accounts for 10-15% of all adult sufferers
  - If detected early and treated and if exposure is controlled, sufferers may recover
  - Too many people are diagnosed too late and suffer permanent damage
- Occupational asthma correlates to exposure, not atopy or smoking

Twelve thousand workers die each year from lung disease.



Nine million working days are lost each year because of musculoskeletal disorders.



Over twelve million working days were lost last year because of stress.

Links:
Go Home Healthy: http://www.hse.gov.uk/gohomehealthy/index.htm
Hazards by Sector: http://www.hse.gov.uk/lung-disease/a-z.htm
Healthy Lung Partnership: http://www.hse.gov.uk/lung-disease/hlp.htm

The HSE is working through its business sector plans to develop support and guidance to try and change behavior. One such development is the Healthy Lung Partnership (HLP). This coordinates activity to reduce work-related lung disease. Members include the HSE, other government departments, trade associations, trade unions and third-sector and professional bodies.

HLP's aim is to become a recognised presence in the occupational health world by engaging with, and influencing, other stakeholders and health professionals across Great Britain to tackle work-related lung disease. The partnership shares, promotes and encourages good control practice in the workplace to prevent and reduce exposure to hazardous substances that damage the lungs.

The HLP has developed an action plan and other materials and will continue to campaign to improve lung health and tackling lung disease in the workplace.

CLEAPSS already has a range of guidance regarding dust and fumes in schools, we would remind teachers to have a look at these documents and remember to use extraction or ventilation when working with hazardous materials.

Food Teacher's Centre

The Sugar Reduction Awards *by Louise Davies and Barbara Rathmill*

Our challenge at the FTC was to change what over 4,000 teachers were teaching in their lessons across the country, at a time when there was little money for training or new teaching resources. We needed an effective way to support them to update their lesson plans, choose recipes to teach, and plan how to deliver reducing sugar messages to young people.

In 2014, we set up an on-line community for food teachers, which we used as a platform to engage teachers in debate about how to achieve curriculum change in their schools. In response to the new national curriculum requirements of cooking 'mainly savoury' dishes, we ran on-line discussions, shared videos, posted exemplar work, developed new recipes, and guided teachers in how to manage new activities with their classes on reducing sugar consumption.

The on-line community has been very effective at reaching teachers, particularly those unable to attend training and who are least experienced or a lone teacher in a school.

We also ran face-to-face events, nationally, regionally and locally, and used these to promote a pedagogical change. We encouraged teachers to review their lesson plans, to change their recipes to reduce sugar and to give emphasis in their curriculum to healthier eating.

We created, curated and managed a cloud-based digital bank of lesson resources. These have been developed and shared so that all teachers can access for free, ready-made, high quality and thoroughly tested lesson activities and recipes. We have registered over 4,000 teachers for the resource bank. For a busy teacher, the resources are searchable and age-specific.

Our approach through the on-line community has been simple and effective as it reaches teachers everyday as they seek support in their jobs. It is accessible to all, and very engaging. During our on-line discussions, presentations, Q&A and Sunday On-Line Support (SOS) we work with teachers step by step and support them through change, sharing ideas and successes.

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Food Teacher's Centre

The Sugar Reduction Awards *by Louise Davies and Barbara Rathmill*

4,000 teachers have played an active part as a community, with a grass roots led change in lessons about sugar reduction. They have shared best practice, solutions and concerns. The team of 10 Food Teachers Centre Community Associates have lead a

national training programme with 5,000 teachers attending face to face training events in the last 2 years. We work with both experienced and new teachers, so that they are well supported in delivering well planned lessons that empower young people.

A recent survey of over 1,000 (approx. 25% sample) secondary food teachers showed that:

the number of schools placing significant or moderate emphasis on teaching savoury dishes increased from 90% in 2014 to 95% in 2017, and those placing significant or moderate emphasis on cooking sweet dishes reduced from 66% in 2014 to 33% in 2017.

In 2017-18 for the first time in a GCSE, the practical examination paper challenges students to investigate how to successfully reduce sugar in cakes. To achieve their GCSE, they have to demonstrate their understanding of the science behind sugar reduction, and the functional, chemical and nutritional properties of sugar. 2600 teachers have tuned into our guidance on this exam task.

The most impressive thing about our work is the rapid change achieved in the whole teaching community. We have reached more than 95% of food teachers, who impact on 2.5 million pupils, year on year.

This change was achieved by a team of 10 passionate volunteers, working tirelessly with schools. Our self -help programme brought the community together to develop and share new resources at no cost and for no commercial benefit. At the heart of this vision is the future health of young people.

We've achieved this with no government funding or financial support. Finally, its sustainable for years to come.

For more information about the work of the Food Teachers Centre, visit: http://foodteacherscentre.co.uk/

Using report cards for H&S in D&T

by Kevin Ormond, Principal Teacher STEM, St Luke's High School (Scotland)

Scottish schools are not members of CLEAPSS as they are supported by SSERC, but Kevin got in touch when looking for examples of H&S materials for pupil use. He had seen the CLEAPSS H&S passport on the website and wanted to know more about it

As part of the re-design of our first-year D&T course, we have introduced a new health and safety unit that gives pupils the opportunity to obtain a health and safety card. This card, issued to successful pupils, allows them to demonstrate that they can identify potential hazards and safely use hand tools and machines. It also records that pupils follow basic rules within the school workshop.

Although the safety card is issued on their performance within the workshop, pupils take an end of unit test which allows them to showcase what they have learned. Pupils who score 90% or above are given a star award and become the H&S advisers for their class group.

Although we have only recently introduced this unit of work, we have seen a big improvement in the safe working of pupils in the school workshop. They are now more observant of safe working and can identify possible hazards before carrying out a task.

The idea came about last year when we found pupils did not understand the serious implications of not following H&S in the workshop. As a result, we came up with the unit of work to cover the introduction to the workshop and the use of tools and machinery.

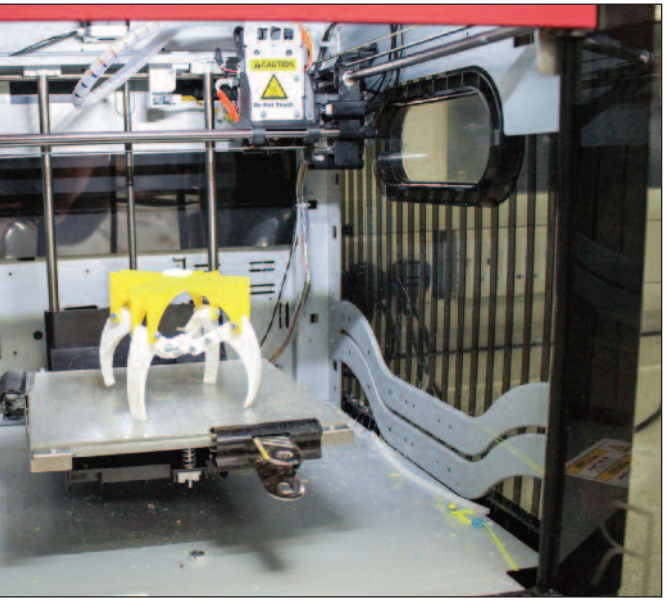
TECHNICIAN TRAINING

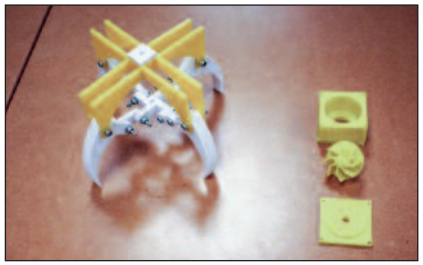
CLEAPSS provides considerable support to D&T technicians, and this article developed after some work with the STEM Centre in York.

How CPD at the York STEM Centre helped our 3D printing problems

by Kieran Middleton, Scarborough UTC

I started working as the IT Technician at Scarborough UTC when it first opened in September 2016. Being a Technical College, I found that my work in IT started to cross the boundaries into Design and Technology more and more. Especially with the introduction of CNC lathes, plasma cutters and 3D printers, which I'd not used in previous schools.





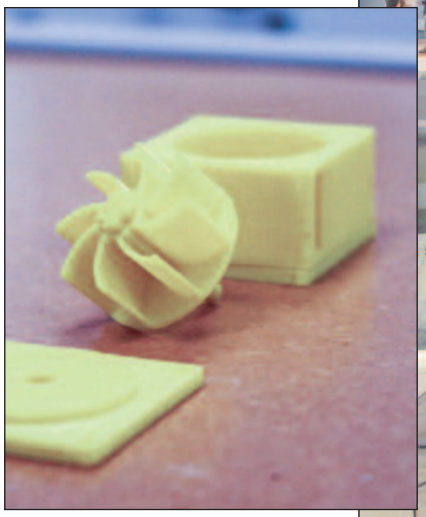
Like most other IT systems I was expecting the 3D printers to work straight out of the box, but found that this wasn't the case at all. The first batch of prints that we attempted with the students were Christmas decorations. Some printed out fine, but others failed. We had about a 50% success ratio. The errors were many, including the filaments not sticking to the bed, jobs collapsing half way through and a rough looking finished product.

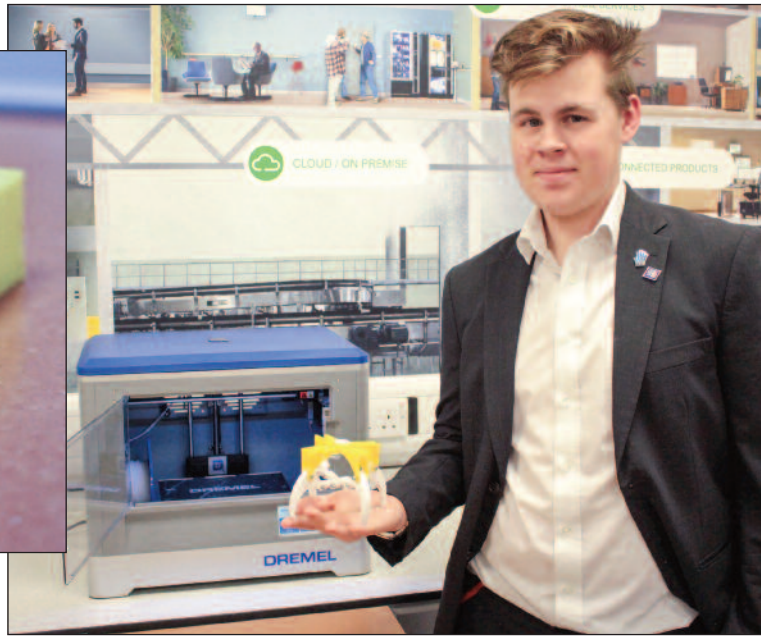
The biggest problem I think I faced was not knowing if it was my fault. Did I just not know how to use the equipment properly or were the 3D printers themselves faulty? I did a lot of reading on forums to quickly learn that the world of 3D printers isn't quite as clear cut and 'out of the box experience' I thought It might have been.

I saw the 3D printing for Technicians training at the York STEM Centre and thought it would be just the ticket to get me up to speed with 3D printing.

The course covered the basics, as well as how to create CAD drawings suitable for 3D printers. It also included basic machine maintenance, how to calibrate the bed and clean out blockages, and how to tweak your software settings to get a clean print.

The course was excellent and catered for those with little or no experience as well as those who had 3D printed before. I even took one of our own particularly temperamental 3D printers along with me in the hope that I could be shown how to get it working properly, Dave from CLEAPSS found the issues and explained to me how to resolve them. I now have a fully working printer!





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TECHNICIAN TRAINING

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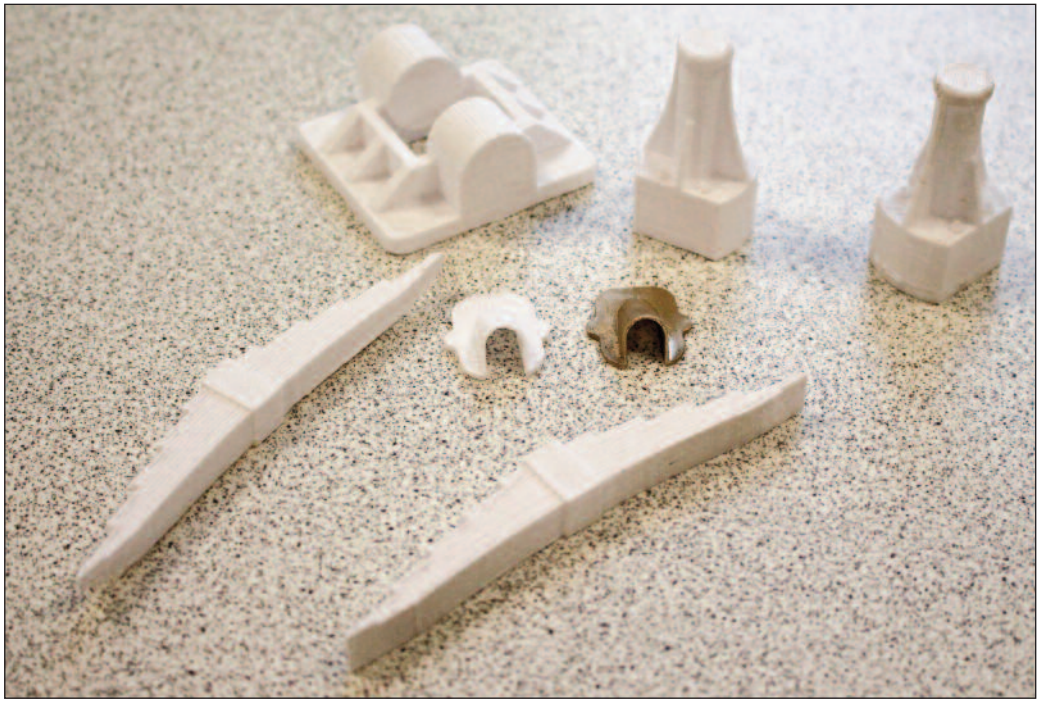
The best part about going on the course was not only sharing ideas with other technicians in the same boat as me, but gaining the confidence to tackle the problems I've been facing. The day after the course, armed with new knowledge I recalibrated all of our printers and altered some software settings. This was just in time for an enrichment session where some of our sixth formers wanted to create prototypes for a Navy competition we are entering later on in the year. All the prints worked perfectly, and in the pictures you can see one of our Year 13 students with a mechanical claw grip and a water pump, which he had designed on Solidworks and 3D printed for the competition on an XYZ Da Vinci and Dremel 3D20. There's also a year 11 student, who is building a 1/8th scale steam engine replica. He designed and 3D printed parts to make a mould that could be cast into brass for the model.

It's the first stage. I'm now confident the printers are working well and I know their limitations. I'm hoping the student will try and print the hinges on the claw next time instead of using bolts, and the steam engine models can be refined to reduce layering,

I'd highly recommend CPD at York STEM centre, if you're eligible for the ENTHUSE award, it won't even cost you anything!

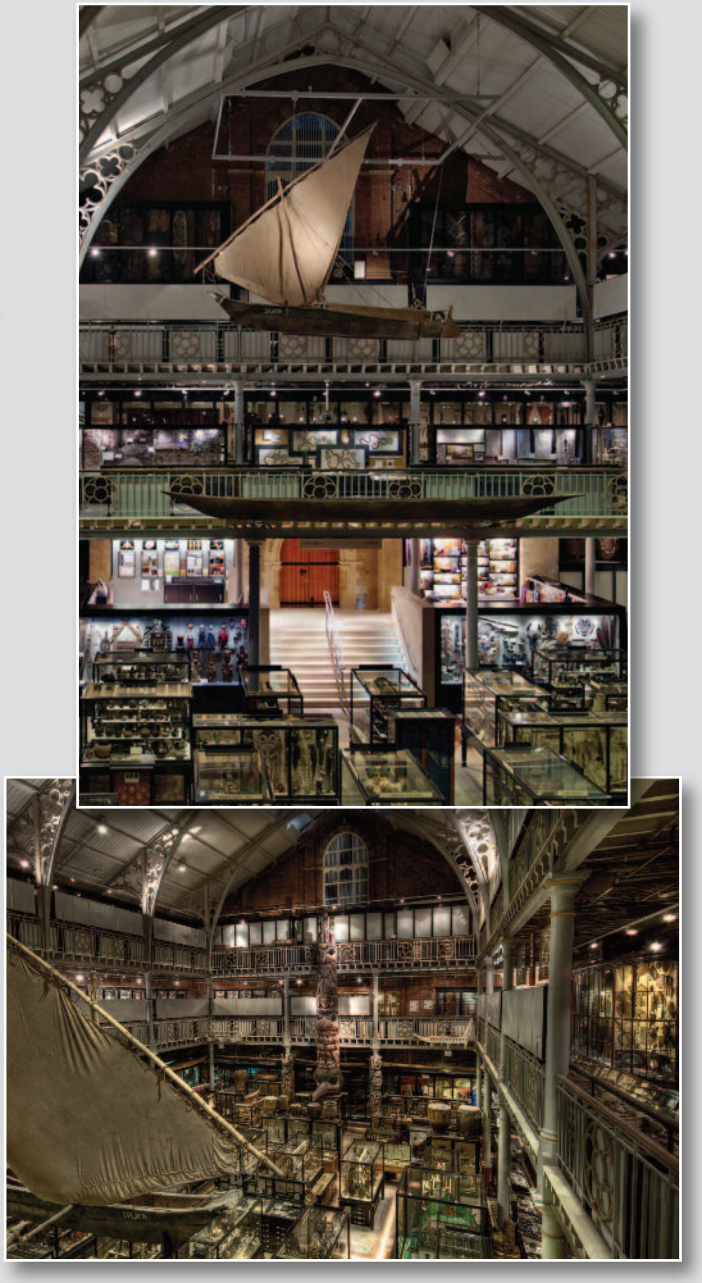
SCARBOROUGH UTC
A University Technical College for 14 - 18 year olds



Artist Teachers and Visual Citizens; NSEAD Conferences 2018

by Lesley Butterworth, General Secretary, NSEAD

The NSEAD national conferences give our teaching communities opportunities to network and debate and every year we gather to explore issues and share excellent classroom and gallery practice within art, craft and design, across all phases.



Location is key, this year we are privileged to be working with three museums and galleries in Oxford; the Pitt Rivers Museum, Modern Art Oxford and the Ashmolean Museum.
With such diverse collections, ranging from contemporary fine art practice to shrunken heads and classical sculpture we hope the depth, breadth and value of art, craft and design can be celebrated and embraced.
Friday 29 June finds us at the Pitt Rivers Museum exploring and considering artist teacher pedagogies and practices. The artist, or maker-teacher describes a teacher of art, craft and design who continues to engage in their own creative practice alongside their teaching career. NSEAD supports this ambition through the development of M level courses in partnership with universities and contemporary galleries, and by creating spaces and opportunities to debate the value, through research and evaluation, of the role of the artist teacher within and outside the classroom.

During the early evening we move onto a reception at Modern Art Oxford where we will participate in a workshop based on a current programme 'She who writes Herstory rewrites History' that includes artists, educators and academics debating equality in art education. If art and art history in secondary schools are under threat today, while at the same time visual culture is increasingly vital and prolific, what ideas and artists could young people be learning about to demonstrate the power of art and equality? How can we better share and discuss the idea that art is as much about her-stories as his-stories?

Saturday 30 June we conclude with a day at the Ashmolean Museum where we explore the attributes of and contributions by art, craft and design to visual literacy and the 21st century visual citizen. The day will be a mix of presentations and practical workshops, to include the chance to work with Anna Dumitriu, a British artist whose work fuses craft, sculpture and science to explore our relationship to the microbial world, technology and biomedicine, and Jon Lockhart who is currently working on a PhD at the University of Reading 'Crippling the Blacksmith. Meaningful Collaborations in Art and Technology.'

We invite everyone who shares our interests, concerns and values to join us in Oxford in June this year. Alongside the conference programme the opportunity to network with like-minded colleagues, engage with the collections and exhibitions of three cultural venues and enjoy two conference suppers should provide a vibrant weekend!

NSEAD continues to celebrate the work of CLEAPSS in providing a clear framework to support experiment in a safe environment.
For more information about the extensive membership benefits of joining NSEAD please look on our website www.nsead.org or get in touch with lesleybutterworth@nsead.org.
For information about our conferences follow http://www.nsead.org/cpd/conferences.aspx

Non Exam Assessment in D&T:
Top Tips on Managing the Controlled Element of the NEA

by Julie Boyd, Boyd Education

Design and Technology teachers and students are familiar with the controlled assessment project that has been part of the GCSE qualification for a number of years. With the introduction of the D&T GCSE (9-1) the controlled assessment has a number of new elements including a new name, Non Exam Assessment (NEA). This is a starting point of a contextual challenge set by the exam boards with students writing their own design brief, as well as an increased focus on user needs and iterative design.

These new elements pose a number of challenges but it's important teachers and students are also aware of the tighter regulations on how the NEA must be supervised. For some schools the strategies used to deliver controlled assessment for the legacy GCSE may need to be reviewed with the new rules in mind. In this article Paul and Julie Boyd from Boyd Education share tips and ideas on how the tighter restrictions of the NEA can be managed to reduce pressure on both students and teachers.

What are the regulations when completing the NEA?

Different exam boards have slightly different interpretations of the JCQ regulations (https://goo.gl/d8tKV2) and it's important teachers check on the specific details for their particular exam board. The following key points are taken from the AQA GCSE specification. Full details can be found in the specification itself but the points give a general idea on some of the regulations teachers need to bear in mind:

- Students are free to revise and redraft their work, but teachers can only give generic written or oral feedback, for example, giving general advice on what resources might be used, as well as giving general reminders of key sections that might be included.
- Teachers cannot correct a student's piece of work with specific guidance.
- Teachers cannot provide templates, model answers or writing frames.
- Where it has been necessary to go beyond the allowed level of support teachers have to record this additional input and take this into account when marking work.

Is the folder page limit and the number of hours allowed for the NEA, part of the new regulations?

Both the page limit and the number of hours for the NEA are for guidance only (and indeed some boards don't give limits). The guidance is provided to help teachers understand the type of work and level of challenge for the NEA.

Whilst the folder length and number of hours is not enforceable teachers are advised to use these guidelines where they exist as spending more or less time on the NEA could potentially disadvantage students. OCR sums this up as "it should be noted that excessive time spent on this component could be detrimental to the level of the learner's work if it were to lose relevance and focus to the context and brief." In addition, increasing this time might also lead to a reduced amount of time being spent on preparing for the written exam.

continued...

Non Exam Assessment in D&T:
Top Tips on Managing the Controlled Element of the NEA

by Julie Boyd, Boyd Education

What strategies can teachers use when approaching the NEA restrictions?

On their CPD courses Paul and Julie Boyd recommend a number of strategies that help teachers and students be better prepared for approaching the NEA in a manageable way:

- Despite its name, the NEA is an exam so treat it as such e.g. 'exam in progress' signs in the corridor for NEA lessons. This helps emphasise the importance of the NEA to students and others in school. Teachers might even want to consider doing some types of lessons, or parts of lessons, in silence.

- Consider how you support students with feedback. In particular Boyd Education courses look at the use of a coaching approach for reviewing and feeding back on work.

- Use strategies that model good use of lesson time e.g. cuttings for mood boards can be collected as homework with the presentation and analysis done in school.

- Consider how best practices in the NEA can be modelled e.g. on Boyd Education courses delegates are introduced to the idea of 'parallel lessons' where content relevant to the NEA is taught separately and then students independently apply this learning to their own work during follow up lessons.

- Although the amount of feedback the teacher can give is limited students can self-assess their work against exam board criteria and can also assess each other. The use of student 'experts' in key areas of the design and making process can be helpful with this. Boyd Education courses look at a number of ways of developing these self and peer review skills, including the use of Bloom's Taxonomy for students to create success criteria.

- Review your KS3 curriculum and build in activities that model a faster pace of work, the ability to work under a time pressure, along with thinking strategies and independent learning strategies that help students solve their own problems. The 'speed designing' strategy delegates experience on Boyd Education courses is particularly successful in achieving these. These courses also consider strategies that help students develop a better understanding of the bigger picture when designing rather than seeing individual pages in isolation e.g. understanding what might come under the heading of 'research' rather than just knowing about individual sections such as mood boards and product analysis.

What information does your school need to be aware of about the NEA?

It's important that your school is aware of the stricter NEA regulations and the impact they might have on school policies, in particular those relating to marking work, feeding back grades to students and parents, and giving students help and advice.

The NEA contexts are released on 1st June in year 10 and the work cannot be started before then, which is much later than many schools have started the controlled assessment for the legacy GCSE. It's essential the school understands that students who are removed from lessons for any reason may be severely disadvantaged as it may be logistically impossible for them to make up lost time.

Departments might also want to consider sharing this information with parents, so that they understand what support their child can be given and how important it is to attend lessons.

For more information on support for the new D&T GCSE and A levels, including CPD courses and resources that support the NEA, visit www.julieboyd.co.uk

TEXTILES HEALTH AND SAFETY

by Dawn Foxall and Julie Messenger

Textiles Skills Academy is working with CLEAPSS on the production of a user-friendly, on-line video course for teachers working with Textiles, with specific content on health and safety. The main aim is to raise awareness of the issues that can affect staff and student's health in a textile context.

The video-based course has been planned to ensure that teachers, technicians and subject-specific teaching assistants know what to consider when developing practical activities for working with textiles. It will cover both 'wet textiles' i.e. dyes and paints/printing inks as well as 'dry textiles' i.e. fabrics, threads and relevant machines, such as sewing, over locker and embellishing machines, for classroom use.

The course will look in detail at sourcing, understanding and adapting risk assessments and will include guidance on the 'Control Of Substances Hazardous to Health' (COSHH) information needed within a specific textile teaching context. Course members will analyse textile processes used in project work and, using Applique as an example process, how to implement effective risk control measures.

The course is intended to ensure that staff have been trained to use textile-based resources and wet and dry textile practices in a safe way within either the Art Textiles or Design and Technology classroom context. Completing this course will help significantly to ensure all staff and students work in a safe manner.

Watch out for more information from Textiles Skills Academy through email, Facebook and other social media and in future editions of *Futureminds*.

TEXTILES SKILLS ACADEMY

Creating a Maker Space in Your Classroom

By Aisling Larkin of Foodoppi.

January is all about new beginnings and new resolutions. As educators we all know the value of creative, active learning but it can be tricky to achieve all the time. Budget constraints, lack of resources, no extra time and no clue where to start are all real barriers to change.

A great place to begin this new year is by creating a Maker Station in your classroom. STEM or STEAM integration in a cross curricular way is a great, easy introduction to getting students to think differently, outside the box even. By creating little projects or a space to 'tinker' students can really develop their exploratory and critical thinking skills. When it comes to school evaluations and inspections from a science perspective having an emphasis on design thinking and working scientifically is becoming a priority.

A small corner of the classroom dedicated to this can be a great way to reinforce these skills.

Here are our Foodoppi top tips for how to create a new learning space in your classroom:

Maker Space Inspiration

Think about possible experiences the students can have first and foremost, not the furniture or the resources needed. Think about what are the desired learning outcomes? What other areas like this are there in the school? Reading corner or library? How do they work? What is most successful about them? How will you measure the success of the maker space? Is it possible to do this during break or lunchtime? Should we do some CPD to really utilise the space?

Go Solo - this is your classroom and your group of students. At this stage of the year no-one knows them better than you. Sometimes that old adage "too many cooks…" can be true. You think, assess and evaluate what is best for your group. Feedback will always be welcome after you have researched and planned.

Collaboration - the maker space should be created as a collaborative space where they students are in charge of their own learning. This is not a desk from which you teach. Your role here will purely be to facilitate the ideas and

continued...

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creativity of the students. This will empower them to take ownership of their own active learning and discovery.

Lean and Clean - try not to have it overloaded with 'stuff' like posters and handouts. It needs to be a working space but also a blank canvas where thoughts and ideas can develop. Bright colours can help evoke creativity (green & orange) and include storage to assist with organization of materials.

Learn a new vocabulary - when planning your maker space think concepts like agile, flexible, integrated, adaptive, design thinking, multiple intelligences, empowerment, success, failure, positivity, acceptance, differentiation, collaboration, team work.

Have access to some technology - an iPad / tablet, 'makey makey' kits, construction kits, CAD modelling etc.

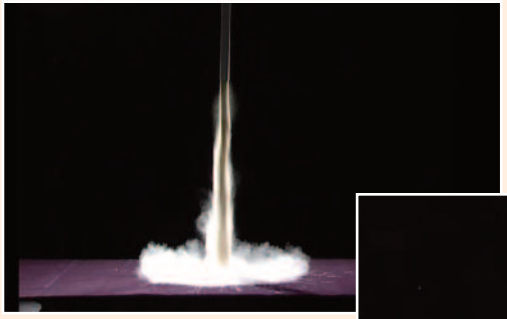
Involve the students - never EVER underestimate their potential for brilliance! This sort of approach has proven successful in primary schools for many years, but brining this flexibility and creativity into secondary learning has been a little slower to develop. Pupils find that having space to experiment and explore new ideas can be a great motivator.

To see some inspirational teaching ideas for primary and secondary visit: http://foodoppi.com/

CLEAPSS small print

HSE Campaign

Over the past year or so, the HSE has been developing its strategy for a healthier Britain (see *Futureminds* 04, Summer 2017). This work covers three main areas; work-related musculoskeletal injury, work-related lung disease and work-related stress. As part of this campaign, on January 2nd, the HSE released information regarding its new regime of unannounced inspections of food providers. Although this will not directly affect food teaching facilities, it is an important development that schools should explain to pupils.



The food manufacturing industry presents two significant concerns:

- occupational asthma from exposure to flour dust in bakeries, cake and biscuit manufacturers, and grain mills
- musculoskeletal disorders (MSDs), predominantly lower back pain and upper limb disorders from manual handling activities and repetitive tasks

Further information can be found on the HSE site:

http://press.hse.gov.uk/2018/hse-food-manufacturing-inspections-target-the-causes-of-workplace-ill-health/?_ga=2.38504736.262387922.1516092017-549740508.1516092017

CLEAPSS document updates

At CLEAPSS we are continuously adding to and updating information for schools through our science, primary and D&T websites Make sure you check the site(s) regularly.

Over the last term we have reviewed and updated a number of our D&T publications:

- The complete set of MRATs have been rebuilt, to include minor amendments that had been made to a number of the MRATs
- MRAT 1.088 Additive Manufacturing: 3D printing - following the results from our work with the HSE, we have updated our advice regarding the management of 3D printers. Schools need to have a risk assessment that includes how to manage the potential risk of fumes and particulates in the air from the 3D printing process. The solution may be to provide ventilation, or to have forced ventilation.
- MRAT 1.089 Plastic Dip Coating – this had been missed off the previous complete list
- Part 3; Work in Food Technology – this was checked and uploaded, as it had been missed from the transfer across of documents from the old website.
- LEV testing with smoke – this is a short compilation video of some simple tests using a smoke pencil to show the effectiveness of LEV devices in D&T workshops.
- Use of a hood when extracting welding fumes – this short video shows how important it is to reposition the extraction hood so that it captures fumes and smoke, and draws it away from the operator's breathing area.
- GL254 Ceramics in schools – this pulls together our advice and guidance materials into one document that can be used by managers of areas where ceramics are used. It covers equipment, materials and processes that we see in schools when carrying out our audits.

Use of disposable gloves in school:

We had a helpline recently that required a team approach to developing appropriate advice.

The school had raised a helpline, because a pupil had developed red marks and hives on their hands following the use of rubber gloves. The gloves had been used to protect the pupil from dust when working in the 3D Art lessons. The school was concerned about the discomfort the pupil had suffered and asked CLEAPSS to suggest alternative ways of protecting the pupil from dust.

Our advice was:

Firstly it is important to get proper medical information about the student. S/he may be allergic to the glove material. The risk assessment for future work will depend in knowing such details and the pupil's doctor may be able to advise further on limiting exposure. It is possible to get disposable gloves in nitrile and other materials.

If you aren't able to get full details of the composition of the gloves from the supplier, please send us full details including catalogue numbers, batch numbers and rough dates of purchase and we can try to find out more.

We are not keen for gloves to be used more than absolutely necessary. Our guidance in science explains this: see GL120 *About Hazcards* for a summary. For some of the activities described, it may be possible to carry them out without wearing gloves. For example, if students are not mixing materials from powder, not immersing their hands in relatively large quantities, and working in such a way that the risk of contact with the hands is low, it may not be necessary to wear gloves. However, if someone has sensitive skin or a condition such as eczema, broken skin or wounds, or is allergic to a substance, they may need gloves. If any student reacts badly to exposure, this needs to be investigated medically and measures taken to reduce the risk for future work.

Always examine your practice to see if you could adapt it to reduce the risk of skin contact with hazardous materials.

See the following documents for more-detailed advice:

- GL245 *Ceramics in schools*: this summarises and updates guidance from various model risk assessments in technology (mRATs), eg:

- MRAT 4.002 – there are a few glazes still being used that rely on old chemicals, but this is becoming rare. We now advise moving over to safer glazes than some of those listed, and students would not normally mix them from powder. Gloves may be needed if they immerse their hands in the glaze but not for general painting or application if skin contact is unlikely.

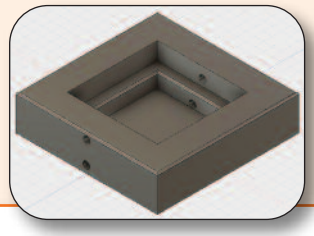
- MRAT 1.065 – Proper use of any spray paint will involve directing the paint away from the operator with good ventilation and, particularly if oil-based, spirit-based and other solvent-based liquids or large quantities are involved, into a contained area with extraction. There may, however, be some risk of drips from the spray can or an air brush, so wearing gloves may be sensible.

- MRAT 4.009 – gloves may be advised when mixing large quantities but again, the technician will usually do that. Nobody should immerse their hands in the mixed material. We advise against this in all our guidance. For working with the plaster of Paris, we advise using a barrier cream. Similar advice would apply with Polyfilla®. You might consider gloves if a student is using very large quantities.

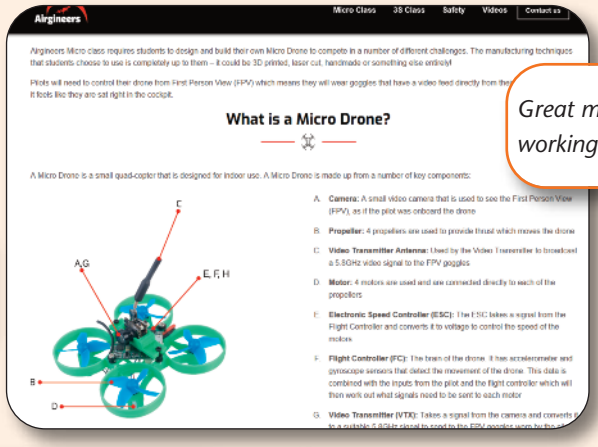
Following these suggestions may significantly reduce your need for gloves. When they are needed, you can use disposable gloves unless the hands will be immersed in something that might affect the skin (this might include protracted wet work) or you are using a chemical which is likely to damage the skin. In such cases, chemical-resistant gloves would be needed. You need to ensure that gloves are in good condition, and with chemical-resistant gloves, it's tempting to keep them when they are no longer in good condition. The heavier duty ones are also clumsier to use.

So, try to eliminate the need for gloves whenever possible, and ensure that students know how to put them on and remove them safely, using the guidance available on the website (PS050 Gloves as PPE).

Some recent tweets

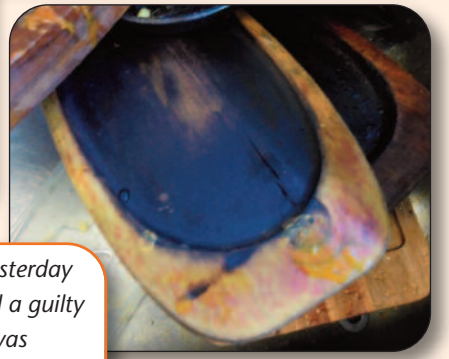


Working on a number of new pieces of equipment, now that we have added a laser cutter to our workshop



Great meeting with #airgineers last week, working on #drone safety advice

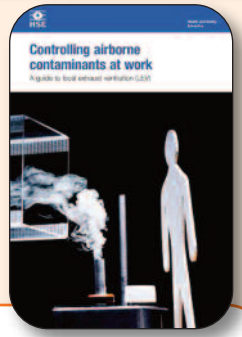
I came to see this amazing display of innovative practical work @CLEAPSS @CLEAPSS_Primary @CLEAPSS_DT #goodpracticalscience exemplified



At Bham Magistrates' Court yesterday (Jan 4th) the company entered a guilty plea – and a fine of £50,000 was imposed along with £670 costs and £120 victim surcharge. This poses an interesting discussion on food hygiene for #DT

Thanks for the poster #holbeingymnasium

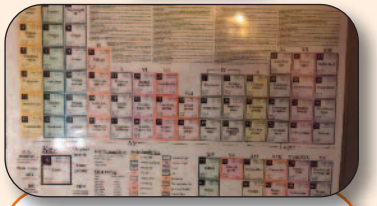
Steve chatting about practical science on G82 #CLEAPSS stand at #Bett2018



#HSE have a revised version of #HSG258 available. books.hse.gov.uk/bookstore.asp?

More footage from new version of @CLEAPSS cloud chamber we are working on. Coming soon. Excuse the scratches on base.

2018 spotlight on #engineering get involved at gov.uk/government/new…



An alternative periodic table for those who are fans of real ale. Probably not one to share with the students...

In FutureMinds 8:

In the summer edition of Futureminds, we will have articles to update you on the support available for food and textiles teaching, examples of the equipment and items we have made to help with practical activities in D&T and science using our new workshop facilities, news about some new documents we are working on, including our work with Airgineers on drone racing. We will also have news about courses, audits and interesting things we have seen in schools over the year.

If you have any ideas for articles, 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 alrady 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