CLEAPSS Design and Technology

Futureminds

Tomorrow's world explored today

Autumn 2016

CLEAPSS D&T e-newsletter

Design and Technology from CLEAPSS

Welcome to *Futureminds 3*.
We are delighted to report, that the first two editions of this our new electronic D&T newsletter seem to have been well received. We also had lots of positive comments about the few printed versions we distributed at the annual CLEAPSS safety conference, although our audience also appreciated the electronic nature of the newsletter.

In this edition, we were hoping to be able to give teachers an update on the development of the new GCSE for D&T. However, but as you will probably be aware, all of the specifications put out for consultation in the summer were withdrawn for redrafting. The Awarding Organisations are presently submitting revised specifications, so we hope to be able to give a more detailed update in the spring edition of *Futureminds* as well as supporting colleagues who are now teaching food with the new GCSE specifications. We are planning with colleagues in schools, articles for future editions describing the impact of these curriculum changes on practical work. If you would be interested in developing an article, please get in touch dave.parry@cleapss.org.uk

CLEAPSS D&T training

Over the past year we have carried out a number of training days for a variety of D&T teachers, technicians and safety officers across the country. We are grateful to the venues for hosting a training event, and to those schools which allowed us use their D&T department for auditing and maintenance training.

Although each of our training days are different, they share a common format. The morning is spent going through the theory of H&S, including responsibilities, legislation and appropriate codes of practice. The afternoon is spent in practical activities, looking at equipment and resources, or carrying out a short audit of facilities.

The basis of all the training is relating the role of the teacher or technician to the expectations of the employer. This has, for many schools, been a significant change as they move from local authority control to becoming an academy. The employer has become the Academy Trust, or in some cases the Chair of Governors.

Local authorities often employed advisers or other support staff to help and oversee the development of D&T in schools. They may have visited schools, carried out departmental reviews, and generally had knowledge of what was going on in their schools. Over recent years this has become less of a priority for local authorities and support for D&T has reduced and some Academy Trusts offer no specific D&T support. And many academy Trusts also offer no specific D&T support. It is important that Heads of D&T continue to develop the curriculum whilst retaining or developing safe working practices. This is the focus of our training, and is often the central theme of school enquiries to the CLEAPSS ***Helpline***.

Despite changes in D&T support offered by local authorities or Academy Trusts, the employer retains the same health and safety responsibilities as were outlined in the original Health and Safety at Work Act (1974). So too do all employees under this and subsequent legislation.

Employer's duties are to provide:

- safe working conditions for their employees
- safe conditions for others
- a safety policy.

Employee's duties are to:

- take reasonable care for their own and the safety of others
- to co-operate with their employer
- not to misuse equipment provided for health and safety
- to inform the employer of any serious defects and failings in H&S arrangements.

At CLEAPSS, we offer advice and support for schools and employers to help both to keep up to date with current H&S guidance. We also provide detailed support materials that promote exciting and innovative practical work in schools adhering fully to appropriate guidance, legislation and Approved Codes of Practice (ACoP).

The most relevant code of practice for D&T is **BS4163:20014 Health and Safety for Design and Technology in schools and similar establishments.** On the training days we usually spend a little while looking closely at what it means in practice. One of the most popular sections of the document is that on room/group size!

We also look at how to adapt the CLEAPSS *Model Risk Assessments* (MRATs), which are available from the website. These form the basis for in-school risk assessments because CLEAPSS has already done the all preparation work. We also explain what and how to record H&S information in schools, and the value of 'point of use' documents (eg scheme of work), rather than files of printed materials stored safely on a top shelf in the head of department's office. We have been demonstrating a teacher's planning and recording spreadsheet, a copy of which is is available on the website (E171 *Using Model Risk Assessments in D&T*). In one school we came across the use of QR Codes to help with maintenance and teaching. Each machine or item of equipment had been assigned a QR code. You can read more about this on page 9.

The practical afternoon is usually based on using the CLEAPSS document DL79 *Auditing Health & Safety in a Secondary School D&T Department* (see the website). This contains useful information about all D&T facilities and includes a number of checklists, and diagrams showing the working spaces around machinery and equipment in workshops, food rooms and textiles rooms.

By the end of the day delegates can return to school fully aware of current H&S requirements and how these can be integrated into effective and exciting D&T teaching.

Some comments from course evaluations:

"I thought the day was a great success. I don't think we've ever got so many heads of department in one place before and from the feedback they found it really useful"

(Senior Health and Safety Advisor Dorset County Council)

"Just to say that the feedback that I have gathered has been very positive and that the way you delivered the training was pitched just right. Others mentioned the fact that your knowledge of the subject and that you have encountered many similar experiences that they are experiencing made it all the more relevant. We now have a clear vision of what needs to be addressed and how to proceed. Thank you."

(Community Services Manager Wales)

If you are interested in hosting a training event, please get in touch, as we are always looking for venues.

HOW TO CHOOSE YOUR PROVIDER FOR WORKSHOP MAINTENANCE

by Matt Evans at Technology Supplies

Machine and equipment maintenance is essential for teaching in a safe and compliant workshop as detailed within BS 4163: 2014. Everyday maintenance can be carried out by your department, but it's often hard to choose a competent and reliable company to carry out the more stringent requirements. So how can you ensure you get the professional service you require? Cost is always a factor but what else should be considered?

1. Check the range of services offered

Some companies offer a limited service, while others offer bespoke packages to meet all your requirements, including machine maintenance, audits, repairs, LEV testing, heat bay equipment, fume cupboards, garage equipment, and laser cutters.
A provider who can cover everything on a single visit is likely to save you time and money.

2. Ensure the company is able to prove their competence

Accredited training provides certificates which the staff should hold. This will provide you with a better understanding of the size and competence of a company's operations. Relevant accreditation will also ensure your maintenance is being carried out to standards required under numerous regulations.

3. Find testimonials for their work

Many companies are able to claim a certain status, and be positive of their own work, but what really matters is the response from the customers themselves.
Ask your supplier for not just some testimonials, but also a description of the type and scale of workshops they work on, and how many schools and colleges they currently support. And don't just take their word for it!
A quick phone call or email to an existing client could point you in the right direction.

What next?

These are just a few pointers to finding the maintenance provider most suitable for you. You can get more information by reading the full *Maintenance Guide* at: technologysupplies.co.uk

Technology Supplies provides a national sales, installation and maintenance service for D&T. For further information or a free quotation, contact the team using the details below.

Technology Supplies: 0845 567 0000

maintenance@technologysupplies.co.uk

technologysupplies.co.uk/servicing-maintenance

Read the full guide at technologysupplies.co.uk

TECHNOLOGY SUPPLIES LTD

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. 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.

The Food Teacher's Centre by Barbara Rathmill

In June we held our summer conference ***Inspiring Learning***, at the University of East London in Stratford. It was well attended, with over 200 delegates having the opportunity to hear from Diana Choulerton (Chief HMI for D&T) and others about the national picture of D&T, Food and Textiles. There were also speakers from OFQUAL and the awarding organisations, with workshops covering the new GCSE specifications and practical advice for teaching food and textiles.

During the lunch break delegates had the opportunity to meet Stefan Gates – off the telly! He had brought along his food testing robot which was able to use a digital microscope to study *Maltesers* and it also had a *Malteser* firing gun!

Since September 2015, Ofsted has been focusing upon how well-being, health and healthy eating are taught throughout the school. Practical cookery is now a part of the breadth and balance of the curriculum, which inspectors consider under "leadership and management". As it's an "extremely important area" inspectors will assess if pupils develop knowledge of a good diet and useful practical food skills.

We addressed this at the conference, and continue to address through our CPD offer and online support.

The Food Teacher's Centre has nearly 4000 online members and is continuing to support secondary food teachers, offering excellent CPD to meet the curriculum demands.

FREE Events include:

- SOS Sunday online support – discussing current issues such as schemes of work and the obesity strategy.
- Monday Q & A (online) where experts join the community to support teachers, including Chilled Education and Grain Chain.

Food Teachers Centre

Other CPD events

- Food Technicians and Support Staff training. A one-day course for Secondary Food Technicians and Teaching Assistants to share best practice, top tips and great ideas when working in the food room.
- Teach food (non-specialists) offering two courses for KS3 and GCSE. This course is designed as a four-day training and is delivered as two days back to back for both a KS3 and KS4 focus.
- Outstanding Food - Focusing on the School Food Plan and the Ofsted Framework. Helping develop strategies to embed health and wellbeing across the school and to deliver better food lessons throughout the year.
- Teaching Food Science Part 1 – A recipe for Success. How to include each of the key food science concepts paired with relevant key cookery techniques in a realistic, creative and engaging way.
- Teaching Food Science Part 2 – Successful Non-Examination Assessment 1. This will be an immersive experience, featuring a series of fun activities, full of ideas for teaching the NEA 1.
- Feed the Future – delivering Provenance and Sustainability in the classroom. A new course for 2016 / 2017, which brings to life teaching food journeys from field to fork.
- Inspiring learning (Food and Textiles) a Saturday event, follows the success of last year's event.

The Food Teacher's Centre is also working with partners to deliver CPD:

Cultivating a healthier school (primary) with the Royal Horticultural Society, providing a practical course putting pupil's health and wellbeing at the centre with an ethos and culture of great food. This includes learning about seasonal produce, as well as how the fresh ingredients can be used to create healthy and nutritious food.

We are also working with the British Nutritional Foundation to deliver The **Food Teachers Professional Portfolio Programme** all our CPD is certificated and mapped against the standards.
www.foodteacher.org.uk

This framework provides a set of standards that will enable food teachers, at all stages of their careers, to audit, plan, organise and record their professional development.

All the Food Teacher's Centre Events are mapped against the set of standards and are certificated.

More details of all our events can be found at
www.foodteacherscentre.co.uk

or email
info@foodteacherscentre.co.uk

THE NATIONAL CENTRE FOR EDUCATION IN ART AND DESIGN (NSEAD)

BY LESLEY BUTTERWORTH, GENERAL SECRETARY NSEAD

Our Material World

The glorious material world of art and design: portfolios, chalks, crayons and pastels, realms of different papers, sketchbooks, paints and clay, wool, masking tape and glue is brought home to me every day I walk into our office, past the spaces used by Artway, who provide art materials for schools, colleges and universities.

The National Society for Education in Art and Design is the leading voice for art, craft and design education throughout the UK. It is a membership organisation, a professional subject association, an independent trade union and a learned society. Our aim is to advance art, craft and design education through our values and with our community of members and supporters. As a teacher or educator working with art, craft and design we will have something for you.

Defined, but not constrained by, its material world and its processes, and unlike any other subject, art and design has unique elements and deep learning opportunities. Whilst remaining within obvious health and safety parameters, our subject has its own rules of engagement that promote risk, in creative terms, and exploration. We explore the creative tension between learning skills and techniques and all that can be achieved with materials, we mix, blend and experiment to find out how far these materials can be stretched and challenged. The 'happy accident' that promotes and exposes innovation is a fact of life in the art and design room.

Art and design enables participants to engage with and explore visual, tactile and other sensory experiences, and how to recognise and communicate ideas and meanings. These opportunities enable participants to work with traditional and new media, so that they develop confidence, competence, imagination and creativity. Through these opportunities they learn to appreciate and value images and artefacts across times and cultures, and to understand the contexts in which they were made. Experiences in art, craft and design enable them to learn how to reflect critically on their own and others' work. They learn to think and act as artists, makers and designers, working creatively and intelligently. They develop an appreciation of and engagement in art, craft and design as critical consumers and audiences and an understanding of its role in the creative and cultural industries that shape and enrich their lives.

As a collaborative subject, art, craft and design supports and services other subjects, industries and sectors, having a crucial role at the heart of Science, Technology, Engineering and Mathematics, proving that moving STEM to STEAM fosters creativity, innovation and economic growth. Returning to the 'happy accident,' engagement in art, craft and design develops this as a transferrable skill, mindful that post-it notes, penicillin and vulcanized rubber were all discovered in this context.

We 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

Ink and Bleach

Mrs Nicola Powell, Head of Art and Design Technology Faculty, Cove School

During the summer break we decided to develop some new ideas for our students. One of the ideas included using ink and bleach to make interesting images.
As we were aware that there are potential hazards in using bleach, we contacted CLEAPSS to make sure we developed a safe working method.

We wanted our new Year 10s to start their GCSE Fine Art course with something exciting and completely different to anything they had done before. They are spending the Autumn Term experimenting with 6 different techniques and working from a varied range of still life inspiration. This first part of their GGCSE course is designed to develop their drawing and painting skills and to ensure they are ready to start their major project in the Spring Term.

The idea we had developed was to draw/paint fish using a combination of emulsion paint, ink and bleach. Once the pupils had overcome the fact that they had real fish on the table and admitted the smell wasn't actually that bad, they used cardboard scrapers and white emulsion paint to create the very basic shape of the fish on the paper. They then used the black and blue ink to add in the details and shadowy areas of the fish. The bleach was used last (following all the safety guidance) to add in highlights and finer details. We found that the bleach worked best on the blue ink and that the black ink looked good on top. Some pupils experimented with bubble wrap to add the effect of scales.

I was incredibly impressed by the artwork produced and as soon as I had marked the work I got a display up in the corridor so everyone could see how well the Year 10s had done in their very first GCSE lessons.

CLEAPSS advice:
Bleach can be used in school, as long as some precautions are built into the lesson:

Bleach should be diluted to less than 5% chlorine (some household bleaches are 10% chlorine, so should be diluted over 50% water to bleach) dispensed into a small container by the teacher or technician

Suitable applicator to be used – not natural brush (bleach dissolves hair)

Wear protective gloves (nitrile)

Wear eye protection

Use in a well ventilated space

No eating or drinking in the room

Bleach can destroy paper, due to the chlorine, so you may need specific papers.

If you are unable to use bleach, then you will need some other solvent – and without knowing which inks you are using this is difficult to suggest – some inks are water based, so water may be an alternative to bleach.

Quink, or other fountain pen ink, seems to be the most common used for 'ink and bleach' technique. This is soluble with bleach, so that seems the appropriate method to achieve some very interesting outcomes. However similar outcomes are able to be produced using water soluble inks and water – one interesting suggestion was to use coloured water (add a little water colour paint to the water).

A useful website: https://quinkandbleach.wordpress.com/tag/ink-and-bleach/

Using QR codes to help manage D&T

by Aled Ballard Head of D&T The Collegiate Academy, Smethwick.

The DT department has recently had some refurbishment. The main workshop has some new equipment and a mix of older equipment. The department is relatively well equipped and has IT facilities throughout.

There are a number of innovative approaches being developed in the department, and pupils are encouraged to take part in competitions such as the Formula 1 challenge. The subject is compulsory at KS3 and KS4 and is very popular at A Level.

In relation to H&S the head of department (HoD) has put in place an online system for monitoring maintenance and organising the work of the technician. There is also an online resource for pupils to access, either in school or remotely. The system is hosted in Office 365 and One Drive.

The system consists of:

- QR codes attached to every piece of fixed equipment and to some portable devices. They are also affixed to cupboards and other storage facilities. The technician or other members of staff can scan the code to get information related to the resource.

- A shared calendar identifies when a maintenance check should be carried out. The calendar can be updated and checked remotely by the HoD.

- The technician receives a reminder on their iPad that a particular piece of equipment is due to be checked or serviced. Scanning the QR code brings up a checklist or maintenance schedule for the item which can be completed by the technician as they carry out the work. The HoD can then check that it has been completed.

- The technician can 'sign off' that the check has been done and the HoD can sign off that he is happy with it.

- If, at any other time, somebody has to carry out any remedial work, such as changing a blade on the band saw, the person doing so can scan the QR code and indicate on the records what has been done, when and by whom.

The pupils can also scan the QR codes, but they access a different resource. They get access to information about the use of the item. This part of the system is used for teaching. Pupils are told in the lesson to look at the online resource and work through the information it contains. Each page has images or video of the item

in operation, some text, some aspects of the associated risk assessment and, in many cases, a set of questions that the pupil should be able to answer if they have worked through the rest of the information. The teacher is then able to start the subsequent lesson with an expectation that the pupils are already aware of the important aspects that they need to consider when using the item.

High-risk machines, such as the band saw and circular saw are controlled via a key switch and only relevant trained staff have keys. This is also indicated on the online materials, stating who is allowed to use the machine.

Rooms are controlled by swipe card access and are locked when empty, the power in the workshop is turned off when the room is not in use.

A Level students are allowed to use the band saw if they have completed and passed a training programme. Subsequently, their name is added to the list of approved users. This puts the onus on the student to seek out the training if they wish to use the equipment.

Staff are expected to have relevant H&S references in their lesson plans and project schemes. The HoD has provided risk assessments for all practical activities, but these can be amended by individual staff to meet their particular needs.

The system took around 10 hours of concentrated work to set it up. CLEAPSS reckons that it can be readily managed during a half term break. If you wish to get in touch with Mr Ballard contact him through CLEAPSS.

Textiles Skills Academy

by Dawn Foxall

A lot has happened over the summer months at Textiles Skills Academy including launching a new website, running some fantastic events and courses around the country, and making new industry contacts to develop and bring exciting new events for the autumn term.

First we teamed up with Fashion Enter and held an 'Industry Perspective' day with Jenny Holloway and her team giving a wonderful insight into garment manufacture in the UK, including a tour of the factory which produces for ASOS, M&S, Finery and many more. On site, they have a design hub for young designers and training school for apprenticeships in various skills plus training for buyers and merchandisers from New look and Top Shop. A return visit is planned for 13th October so get yourself booked on for a great day of learning and wonderment.

We have also been 'up North' to Textile House in Huddersfield, the home of **Textile Centre of Excellence** and will be running an 'Industry Perspective' day there on 7th November visiting 5 local factories to see the whole garment process from raw wool to finished tailored suit.

Working in partnership with the Food Teachers Centre we put on a joint event – '**Inspiring Learning**' which was held in June at University of East London in Stratford. The event was a huge success with over 150 delegates attending to hear OFSTED, Department for Education and all the exam boards talk about the latest reforms to qualifications.

With the success of this joint food & textiles event, Food Teachers Centre and Textiles Skills Academy are taking it on the road. We are bringing a few of the top features of this training day to a venue near you throughout 2016-17. The roadshow starts in Tonbridge, Kent on 26th Nov then moves to Shipley, near Bradford on 2nd Dec. For full details of the course, venues and dates go to either Textiles Skills Academy or Food Teachers Centre websites.

In 2016 new GCSE changes affect food and textiles more than any other GCSE. Most GCSEs in your school have undergone change, but these have not involved creation of a new exam (Food Preparation and Nutrition), nor a change on the way that textiles taught and assessed under a new D&T route. **Diana Choulerton** (HMI National Lead for D&T) from OFSTED presented about the latest national curriculum and OFSTED requirements and you can view a video of her presentation on the Textiles Skills Academy website.

Other news is the collaboration with pattern drafting guru Anastasia Vouyouka and her company **Fashion Express**, to develop pattern drafting online software to use in the classroom. This will include affordable tools and license for use in school and a series of workshops starting in October will support teachers in developing lesson plans to deliver simple pattern drafting and adaption for KS3/4 students as required for the new qualifications. You can no longer use a bought pattern and shorten it.

For information on all our events and courses please go to: www.textilesskillsacademy.co.uk

Sustainable Fashion or Save the World with a Great Fitting Pattern!

by Dawn Foxall

On a recent trip to Greece to meet with pattern drafting guru Anastasia Vouyouka, whose methodology creates perfect fit patterns, the issue of unsustainable fast fashion was raised.

Fit is the most important factor when developing a garment but this has disappeared from our high street with the emergence of mass-produced, ready-to-wear fast fashion since the 1980's. Unlike our recent ancestors, we appear no longer concerned that a garment does not fit correctly. Users often seem happy to buy ill-fitting and badly-made clothing at low cost. Although there are rational political and economic reasons behind this trend, pupils should be taught to become discerning consumers, and so should be made aware of the implications of purchasing or using poorly designed or manufactured garments.

In the world of fashion we discuss 'Zero Waste' although the industry continues to over-produce cheaply made disposable products of which 60% ends up in landfill. In the UK, we mourn the loss of skilled labour.

Growing awareness of the unsustainability of the mass consumption of disposable products is starting to emerge. The trend for fast fashion beginning to fade and we are seeing resurgence in the need for craftsmanship, British Made, eco and ethical manufacture. The cycle of importing and consuming is not easy to stop, as this is how our world continues to evolve, but the slow fashion movement is starting to rise as young people search for products that last, are ethically produced and environmentally sound.

Coming through this is the need to return to better manufactured and better fitting garments that are less wasteful, carefully considered and ethically produced. There is a need for skilled workers to once again take pride in their work and be rewarded accordingly. We yearn for garments that will fit beautifully, feel comfortable and look wonderful. And this isn't just for the elite few. It can be made possible for all if we stop making fast fashion fashionable and educate the young to understand that a garment can last a lifetime if made well with passion.

For information on all our events and courses please go to: www.textilesskillsacademy.co.uk

Make your own *"motorised vehicle"* in 10 easy steps

by Caroline Alliston, Technology for Fun

Follow this 10-step guide on how to make your own pulley-driven vehicle. This is suitable for KS2 pupils exploring electric circuits, pulleys, wheels, axles and bearings. It is also suitable for KS3 students investigating series circuits, friction, average speed and energy transfers; simple machines giving bigger force at the expense of smaller movement, and vice versa.

What you'll need

Components and materials:	*TTS Catalogue Code*
Battery holder with 2 AA zinc chloride cells fitted (do not use alkaline or rechargeable cells, because if accidentally short circuited these can get extremely hot)	TBH-2-10
Battery snap	TS-50
Toggle switch	TTOGSW-5
Motor	TM-10
Motor mount	TM-CLIP
3 crocodile leads	TCL
Rubber band ~ 1.5 mm x 1.5 mm x 8cm long	TRB
Small plastic pulley	TP-10
Wooden pulley 34 mm diameter	PUL-34
4 wooden wheel 35 mm diameter	TMDF-35
2 jumbo plastic drinking straws 6 mm diameter	PJDS
8 cable ties 20 cm long	N/A
16 card triangle axle supports	TTRI-T
Balloon	TBB
Wooden dowel 5 mm diamter x 30 cm long	TWD
Square section wood 8 mm x 68 cm long	
Tools:	
Ruler	TTR
Pencil	NOR2H
Pointed scissors	
Junior hacksaw and vice	TTH10
Sandpaper	SPAPERF
Low melt temperature glue gun	TPLGG

Step 1.
Make the circuit and check the motor shaft rotates when you switch on.

Be careful not to short-circuit your battery (i.e. connect the wires from your battery directly together). They must go via the motor. If you tie the wires from your battery snap in a reef knot, you are less likely to accidentally short circuit your battery.

Step 2.
Cut two 20cm lengths and three 9cm lengths of square section wood. Smooth the ends with sandpaper. Set one of the 9cm lengths aside. Use the glue gun to make a rectangular frame with the other four lengths as shown below. Reinforce the corners with card triangles and attach four card triangle (Jinks) axle supports; try to make them symmetrical.

Step 3.
Cut two 15cm lengths of dowel to make the axles, and smooth the ends. Push a wheel onto the end of one of the axles; it should be a tight fit. Cut 13cm length of straw to make a bearing, and slide over the axle. Slide the axle and bearing assembly through a pair of axle holders; you will need to enlarge the holes in the axle holders very slightly. Don't make the hole too big as the straw needs to fit tightly. Check the axle rotates easily in the straw.

Step 4.
Glue the straw to the axle holder to stop it sliding about when in use (without getting glue on the axle). Take the axle out of the straw and fit one of the wheels. Put it back and fit the second wheel. The wheels should be a tight fit on the axle. Adjust so that there is roughly a 1mm gap between the wheels and the ends of the straw. Hold the frame and spin the wheels to check the wheel/axle assembly still rotates freely.

Step 5.
Slide the wooden pulley to the centre of the second axle; it should be a tight fit. Fit the rubber band over the pulley. Cut two 6.5cm lengths of straw. Enlarge the hole in the axle holders very slightly until the straw will just slide in; it should fit tightly. Slide the axle assembly into the two axles holders as shown.

Step 6.

Slide on the two straw pieces, then fit the wheels. Adjust until there is roughly a 1mm gap between the ends of the straws and the pulley and wheels. Hold the frame and spin the wheels, to check the wheel and axle assembly rotates freely, whilst the straws remain stationary. Glue the straws in place, without getting glue on the wheels or axles.

Step 7.

Press the small pulley onto the motor shaft, and clip the motor into the motor mount. Fit the rubber band onto the small pulley and position the motor so that the rubber band is just tight but not stretched. Mark the centre line of the motor on the wooden frame as shown below on the left. Make another mark 1cm further along the frame, as you will need to tension (i.e. stretch) the rubber band. Glue the final 9cm length of wood across the frame with the centre in line with your second mark as shown below right.

Step 8.

Reinforce with card triangles, but before gluing cut about 1.5cm off the card triangle where the motor will fit, so that the motor has a flat surface to mount onto. Place your motor chassis the right way up (i.e. so that the wheels are on the bottom), and stick your motor assembly to the top of your crosspiece so that the two pulley centres are exactly in line, and then cable tie it firmly in place. Fit the rubber band onto the pulley.

Step 9.

Work out where to attach your battery and switch, making sure nothing will interfere with the rotating parts. Glue and cable tie the components firmly to the frame. Tidy up your wires, making sure the crocodile clips don't touch, and cable tie these as well. Trim off the ends of the cable ties.

Step 10.

Try out your motorised vehicle on different surfaces. You may find the driving wheels slip on a smooth surface, in which case you can cut sections of balloon and fit them as tyres. You can time your vehicle over a known distance to calculate the speed. You can also use a ramp to find out how steep a slope it can climb. You could try different wheel sizes and compare the performance of the vehicle. If you want your vehicle to go in the opposite direction you can swap over the crocodile clips on the back of the motor.

To view other guides and ideas visit http://blog.tts-group.co.uk/

CLEAPSS small print

Checking your rooms

As the new year begins, this is an ideal time to assess the general safety of your room.

The CLEAPSS guide *G79 Auditing Health & Safety in a Secondary School Design and Technology* is available from the website. We use this, and you can too, to audit your D&T rooms, food rooms and Art studios.

We would recommend that all D&T departments carry out a full audit each year.

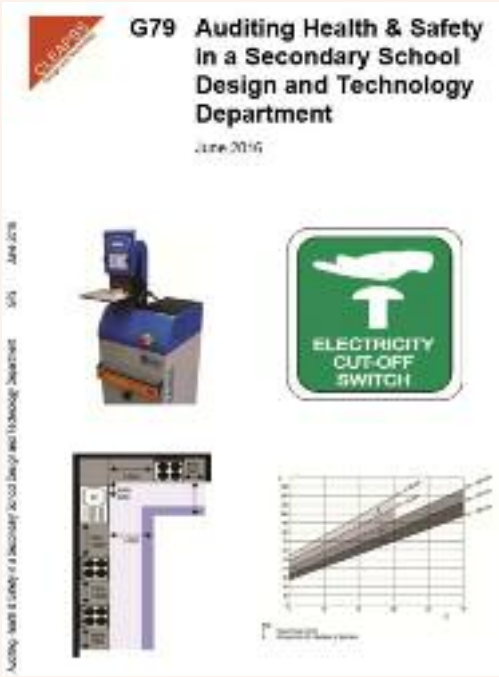
For non-specialist rooms or normal classrooms, schools should also carry out a safety audit, the Health and Safety Executive (HSE) has a useful audit tool for this: the Health and safety checklist for classrooms available at: http://www.hse.gov.uk/risk/classroom-checklist.pdf

Members of staff can use this checklist to help ensure ordinary classrooms meet minimum health and safety standards. However, the results and findings from completed checklists will provide a useful resource to the school management team when reviewing their whole-school risk assessments.

Storing metals

The HSE has also produced a new guide: Safety in the storage and handling of steel and other metal stock: http://www.hse.gov.uk/pubns/priced/hsg246.pdf

This is quite a long read, but the basic elements are already covered in our materials. *Model Risk Assessments* (MRAT) for working with metals and other documents including G79 (mentioned above) are available from the website www.cleapss.org.uk If you would like to know more, or have any questions about storage, please get in touch via the ***Helpline***.




HSE

Health and Safety Executive

Health and safety checklist for classrooms

How this checklist can help you

School premises are a valuable resource for local communities and are increasingly being used for extended services.

Health and safety in a school is about taking a sensible and proportionate approach to ensure the premises provide a healthy and safe place for all who use them, including the school workforce, visitors and pupils.

Because written risk assessments are not required for every classroom activity, this checklist is being made available for use as required. It is not mandatory, but is intended as a helpful tool. Schools may choose other

It can be used by class teachers, teaching assistants, premises staff or department heads – those running the school can decide how best to use the checklist in their school. It can be used as required, for example at the start of a term to provide reassurance to teaching staff that the most common areas of risk in the classroom are being adequately controlled.

It is designed to be helpful and quick and easy to use but there is no obligation on staff to use it. If an issue is not relevant to a classroom, simply mark it as 'N/A' (not applicable) and move to the next question. There is space at the end to list any additional issues.

Further information


HSE

Health and Safety Executive

Safety in the storage and handling of steel and other metal stock

HSG246 (Second edition)

Many accidents, some resulting in death and serious injury, continue to occur during the storage and handling of steel and other metal stock. They cause enormous social and economic cost over and above the human tragedy involved. It is in everyone's interest that they are reduced. Accident investigations often show that these injuries could have been avoided.

This revised guidance is aimed at directors, owners, managers and supervisors and pays particular attention to the most common hazards, including (un)loading of delivery vehicles, storage systems, workplace transport, mechanical lifting and injuries from sharp edges.

New sections compare the use of single- versus double-hoist cranes and give additional information on the safe use of pendant and remote controllers, suitable lifting accessories, working at height and providing better access arrangements with stock products. There are now specific requirements which effectively prohibit the stacking of 'U' frame racking and 'barring off'.

Myth Busting

There are an interesting few pages on the HSE site that try to show that not all 'elf and safety' decisions are anything to do with H&S!

For example, the Case 302 - Primary school not allowed ladders

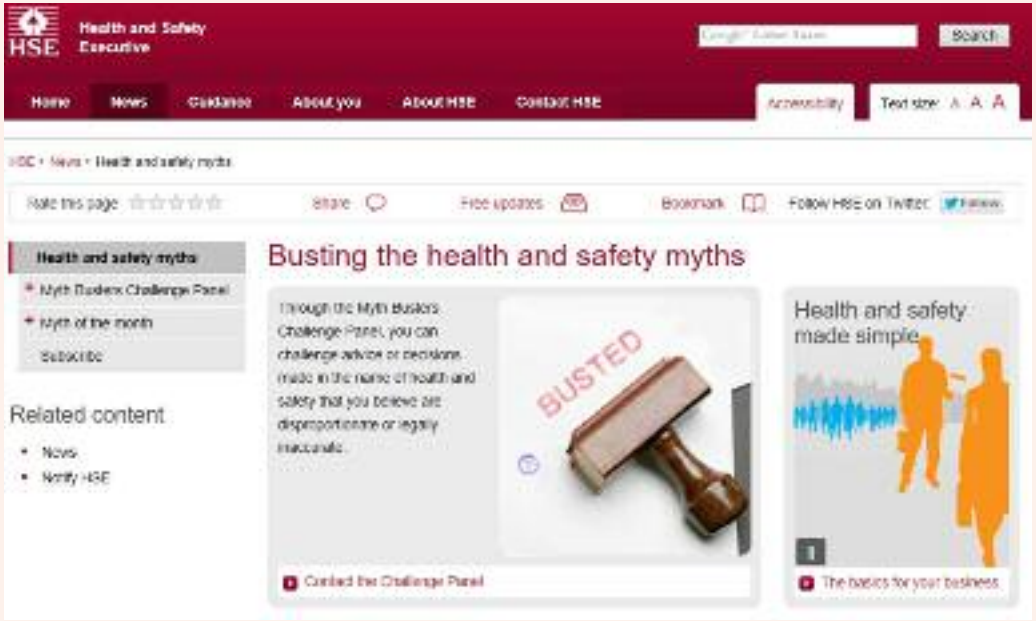
Issue

Primary school not allowed ladders due to health and safety. Therefore staff use chairs to reach up when 'working at heights'.

Panel decision

There is nothing in health and safety law that prevents primary schools from using step ladders in classrooms.

A properly designed stepstool or stepladder is often going to be the sensible and practical option for carrying out tasks that involve working at height for a short time – and schools are no exception. It's certainly a safer option than standing on a chair!



New documents

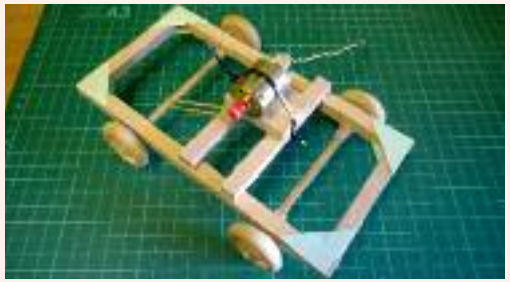
We are currently developing a range of primary D&T materials, these are to be hosted on the new CLEAPSS primary site when it goes live in the next few weeks.

Working with resistant materials tools and equipment. A series of short documents which describe the basic tools and equipment found in most primary schools and how to use them safely.

Working with food utensils and equipment. As with the resistant materials document, a set of documents which identifies and describes the use of a range of utensils and equipment that are commonly found in primary schools

Equipment for working with textiles this is formed of three sections; sewing, knitting, printing and dying. It includes the processes and the equipment used to carry out these practical activities.
There will also be a series of information sheets that provide examples of how the equipment is used to manufacture a particular artefact.

All of these documents relate closely to the relevant MRAT and other associated guidance so that teachers and other supervisory adults can use them as the basis of their planning for practical activities in all areas of primary D&T and food.



3D printing

As you may be aware, over the past year we have been doing a lot of work on 3D printing. This has included a number of meetings with the HSE www.hse.gov.uk and HSL www.hsl.gov.uk (the Health and Safety Laboratory in Buxton) to put together some national guidance on the use of 3D printers in school. We are hoping to be able to report on the findings of this research before Christmas. Initial findings seem to indicate that PLA is the safest printing filament, however, all filaments produce some particulate and fumes. It is therefore important that ventilation is considered when positioning and running the printer.

We have also found that some filaments have been incorrectly labeled and could therefore create significant issues for end users. It is important that schools purchase their consumables from reputable suppliers and always ask for the Material Safety Data Sheet (MSDS).
We recommend that filaments containing PVC or polyurethane are not used in school.

We are also working with the British Standards to investigate the possibility of writing a new relevant British Standard to cover this field. This may help to control the poor advice and materials being distributed by some suppliers.

If you are using 3D printers in schools you should make sure that you read and follow the guidance we have already produced in the MRAT 1.088 Additive manufacturing: 3D printing available from the website.

1.088 COSHH & Man Regs	**ADDITIVE MANUFACTURING: 3D PRINTING**	Applicable to: Extrusion deposition Binding granular materials Lamination Photopolymerisation	See also: 1.010 1.024 1.032 1.052 1.062

Process(es) covered: Manufacturing of products using some form of stereo lithography process.
The heating or bonding of materials to form shapes which can then be finished to provide a 3 dimensional representation of a CAD image.
The use of various polymer-based materials and solvents in the process of 3D printing, these may be heated and extruded, bonded using laser or heat application, laminated by the introduction of a solvent or activated by the application of specific light frequencies. The resultant product then undergoes a variety of finishing processes which may include the application of solvents.

HAZARDS

Trapping	Fingers can become trapped between moving and fixed parts of machines that are not fully enclosed.
Entanglement	Long hair, dangling jewellery or loose clothing can become entangled with moving parts that are not fully enclosed.
Dust	Dust can be emitted when working with polymer powders if the machine is not fully enclosed.
Fire	Machines left unattended can generate heat which could ignite flammable materials.
Burns	Heated base plates and extrusion nozzles may reach a temperature high enough to

Electric shock incident

We were recently told of a possible electric shock from a hand-held electric mixer in a food room. We asked if we could take a look at the mixer and the school sent it to us.
We tested it for electrical faults, but could find nothing obviously wrong. However, we were concerned over the state of the inside of the device.

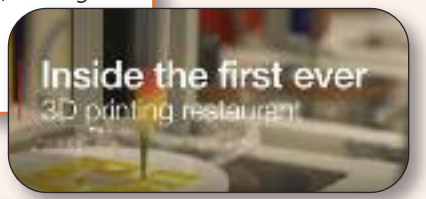
Below are some photos of the interior of the mixer. Machines that are in this sort of condition should not be used in school. There is potential contamination of food stuffs and the potential of overheating, due to the buildup of flour and other material in the body of the machine.

New D&T website

Over the next few months we will be developing a new CLEAPSS website, specifically for Design and Technology and Art and Design. This will host all of the current documentation, including the MRATs, previous editions of Futureminds and all the support documents. There will also be PDFs of the materials posters we have recently developed. If there is anything else that you feel would enhance the support that we are able to give to schools, please get in touch.

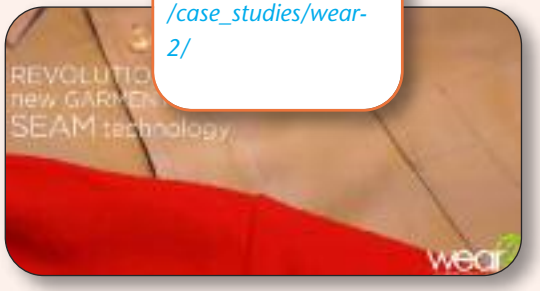
Dave.parry@cleapss.org.uk

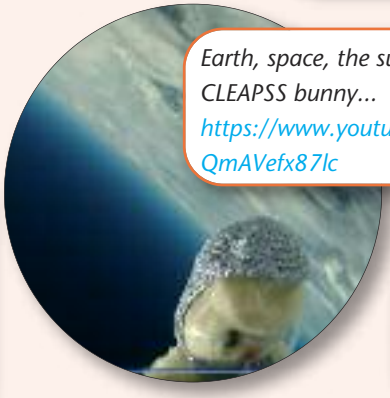
#3dprinting food in a restaurant, is it a good idea? http://www.bbc.co.uk/programmes/p042tmhm



Is #3dprinting food safe? Useful #DT and food discussion. https://pinshape.com/blog/3d-printing-food-safe/

Interesting #textiles starter - reusing clothing http://niri.technology/case_studies/wear-2/





Earth, space, the sun and the CLEAPSS bunny... https://www.youtube.com/watch?v=QmAVefx87lc

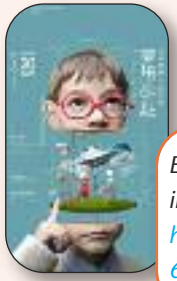
Testing equipment for use in primary school #DT any comments?

Great graphics project for #DT design business cards with interactivity. https://brightside.me/creativity-design/20-genius-business-card-designs-you-wont-forget-126655/

Using a tablet as a sketchbook? great for #D&T http://www.bbc.co.uk/news/technology-37185539

Interesting article about image stabilisation and new stuff for teaching photography. http://www.bbc.co.uk/news/technology-37244346

Useful information for #DT colour theory http://www.digitalinformationworld.com/2013/08/how-colors-influence-people-psychology.html



Excellent graphics for inspiring displays in #DT https://uk.pinterest.com/pin/326018460506542754/

Coming up in the spring edition:

An update on the new GCSEs in food and other D&T areas

Information and guidance for 3D printing and other new technologies

A case study from a technician

Greenpower racing

Report from BETT and ASE

Drones in D&T

If you have an idea for an article, get in touch.

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