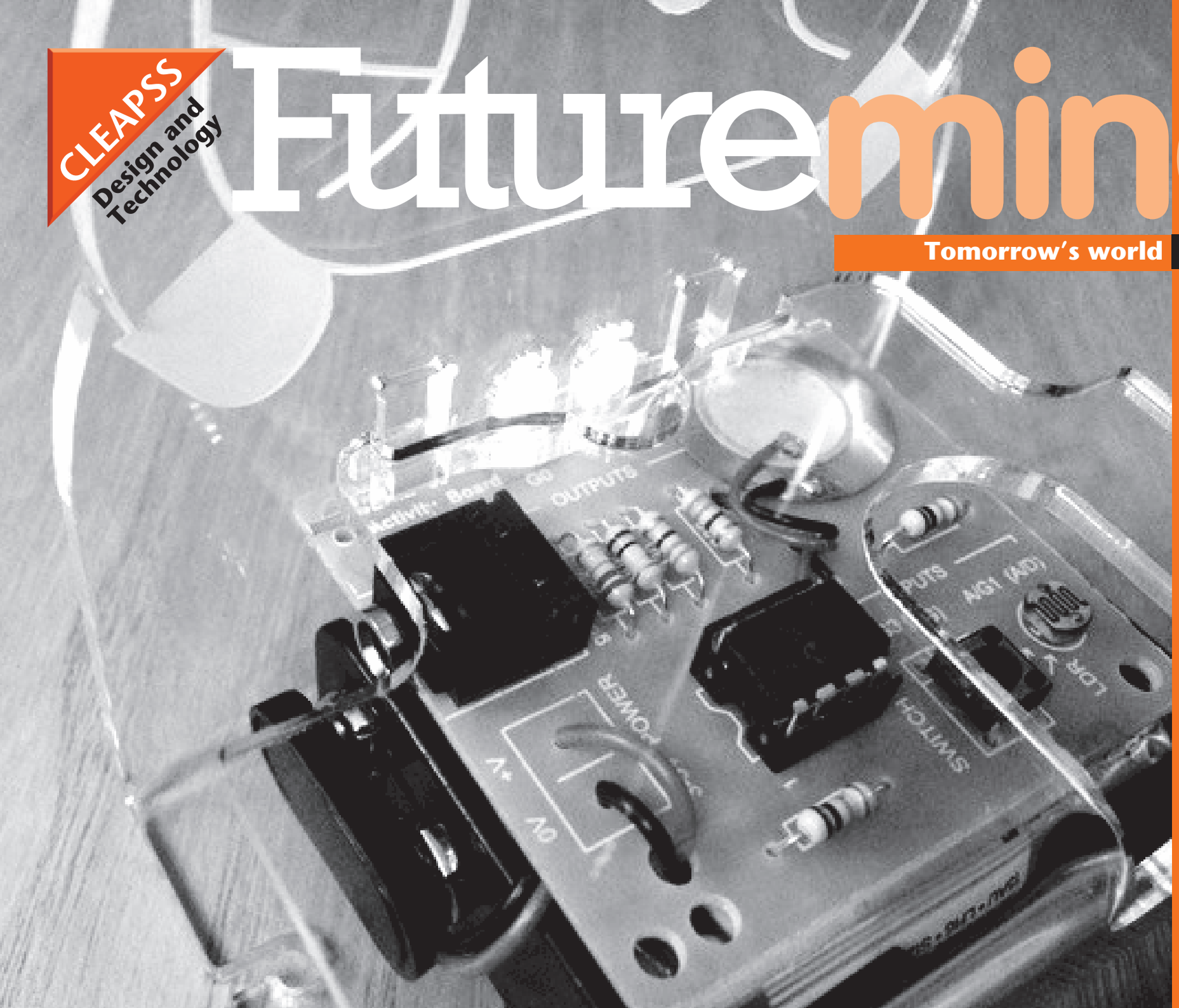
CLEAPSS Design and Technology

Futureminds

Tomorrow's world explored today



Spring 2022

CLEAPSS D&T e-newsletter

Welcome to Futureminds 20.

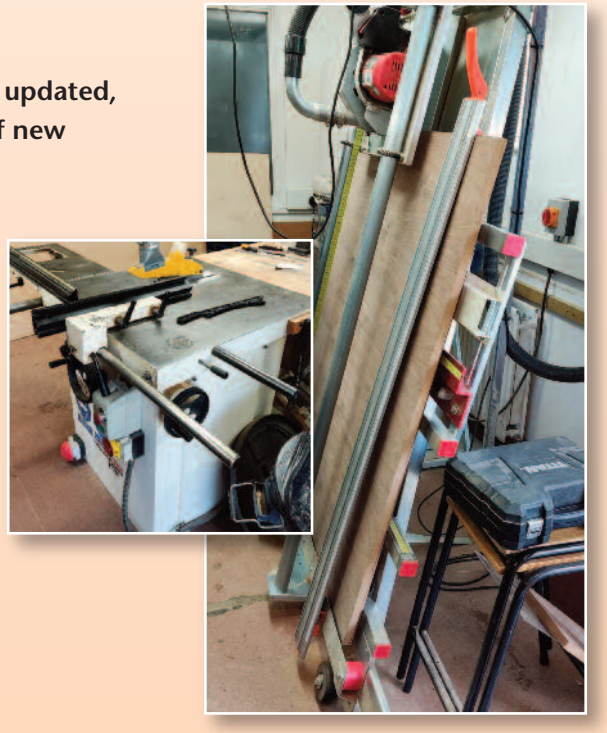
As you may have seen in the Autumn 2021 edition of Futureminds, we have done a lot of work on updating our guidance to match the latest requirements of BS4163, The British Standard that covers Health and Safety in D&T.

Over 40 CLEAPSS documents have been updated, and we have also published a number of new Model Risk Assessments (MRATs):

- 196 – Air Fryers
- 197 – Culinary Butane Torch
- 198 – Food Labelling
- 199 – Electric Rotary Cutter
- 200 – Multi-tool carver scraper
- 201 – Vertical Panel Circular Saws
- 202 – Table Mounted Circular Saws
- 203 – Plastics Oven

We are in the process of developing a few more, so it is worth checking the website regularly and seeing 'what's new' under each of the tabs.

The MRATs were completely rewritten in 2019 into the new format. These are continually updated, and we have not collated them into a single document. They are also no longer separated into different subject areas, as there is now so much crossover in the way schools teach D&T. Many schools have also combined art and design and D&T departments. Food, although a separate department in some schools, is still generally linked to D&T.



CLEAPSS advises that you do not keep printed or downloaded copies of MRATs, because we want you to always use the latest version.

When developing your local projects, we recommend that staff take a look at the projects section of the website where you may well find projects that broadly match your planned work. The documents listed beneath the picture on a project page will include relevant MRATs and related projects. Alternatively, use the search function on the website, which will return any MRAT that is relevant to the search query.

The MRATs are in PDF format, and, although PDF documents are difficult to edit, you can copy from them, and put the relevant text into other formats, such as Word or Excel documents. There is a guide that explains the use of MRATs and an electronic version, which is in a spreadsheet format, that you can use, or adapt, to your own requirements:

GL171 - *Using Model Risk Assessments in D&T* (cleapss.org.uk)
E171 - *Using Model Risk Assessments in D&T* (Spreadsheet) (cleapss.org.uk)

For further advice on managing this process, we have put together an online training session, which is free to members: https://dt.cleapss.org.uk/Resource/D-T-H-S-Online-Training.aspx

This training takes you through a series of short videos and exercises to help you to develop a robust H&S management system. A live, online follow-up, session with the D&T Adviser, which is charged at £95, provides further information and advice on managing D&T.

The online, self-study course has been viewed already by over 1,000 members, some of whom have used the videos as INSET for their department, either at department meetings, or on training days.

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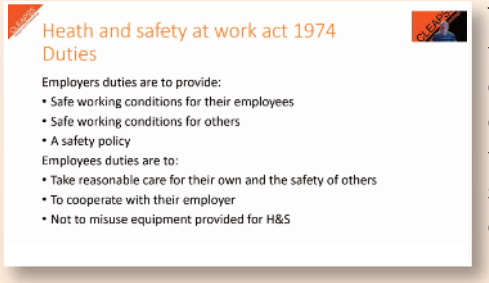
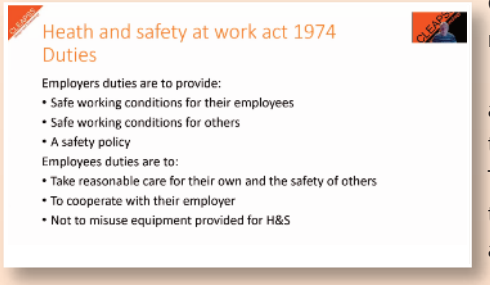
CLEAPSS D&T e-newsletter

Audit course online





To provide continuing support during the pandemic, we have used our experience of auditing H&S in D&T departments to develop online training. It is designed to prepare staff to carry out an audit, rather than giving us come out and do it.

Originally aimed at those with responsibility for H&S in the school or safety officers, it rapidly became apparent that it would be useful for teaching and technician staff as well. The training takes the form of a set of three videos, and a number of associated exercises.

To work through the videos and exercises should take a few hours, probably a half day. However, it is possible to stop the video at any point, and come back to it later, or to work through the exercises at your own pace. Access to the materials lasts for a month after registration, so users have plenty of time to work through it all. The audit course costs £95 for CLEAPSS members.

As with all of our work at CLEAPSS, if you have queries about the training or other issues, you can use the ***Helpline***.

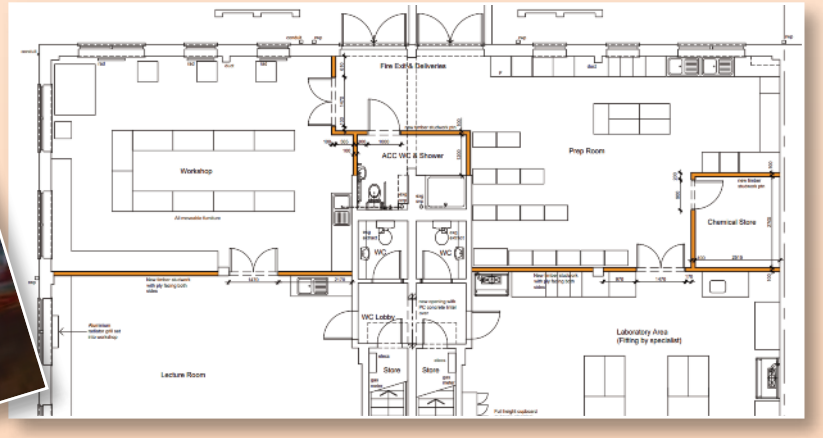
CLEAPSS is moving...

As you may have read in other CLEAPSS materials, we are moving offices.

By Easter we are hoping to be settling in to our new premises at Chesham, which is a significant move for us all. The new premises will give us a large D&T practical space, which we plan to use for training, as well as for making equipment or prototypes, something we have been doing for many years, but in limited facilities.

You may have read in the ***Futureminds*** *Vision Edition* Autumn 2020, that we have been working with the DfE and others to develop a vision for the facilities of the future for D&T. In planning our new D&T facilities, we have followed this guidance to develop a flexible space that can be used for many different activities. All of our hand-held tools and equipment, fixings and consumables will be stored in trolleys and tool chests. We will have three fixed machines, a bandsaw, a pillar drill and a sander, but, all other equipment will be mobile. We have also invested in an Airbench, which will enable us to avoid generating harmful dusts while working in the room.

We will also have a range of food equipment, including a hob and an air fryer, and textiles equipment, including sewing machines, that will be stored away, until needed. We anticipate that the new D&T room and an associated general teaching room will enable us to combine the skills of the advisers from science and D&T to develop more STEM-type activities, as well as giving us the space to continue our work on supporting practical work in D&T, food and art.



Writing effective assessments

by Louise Attwood, Head of Curriculum, D&T, AQA

Writing exam questions that effectively assess the students you teach is a challenging and time-consuming process. You want to fairly differentiate between students in your class so that you can accurately measure achievement and progress, without tripping students up or providing them with an unfair advantage.

In a normal year, teachers are tasked with the difficult process of assessing their students through exam practice questions, end of topic tests and mock exams, but of late this process has become even more focussed and potentially important. In this article, I explore a few key areas in Design and Technology examinations which can be used as a short guide to creating good quality assessments for your students.

General principles

When constructing a full examination, stick closely to the requirements of the specification. For example, for GCSE Design and Technology, the paper should be split into the following parts:

Section A – Core technical principles (20 marks)
A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding.

Section B – Specialist technical principles (30 marks)
Several short answer questions (2–5 marks) and one extended response to assess a more in-depth knowledge of technical principles.

Section C – Designing and making principles (50 marks)
A mixture of short answer and extended response questions.

You need to marry the above requirements with the following spread of assessment objectives and additional requirements:
AO3: Analyse and evaluate (20%):

- design decisions and outcomes, including for prototypes made by themselves and others
- wider issues in design and technology.

AO4: Demonstrate and apply knowledge and understanding of (80%):

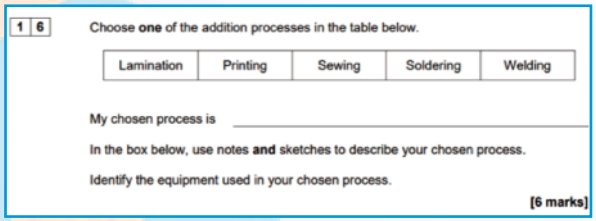
- technical principles
- designing and making principles.

At least 15% of the exam should assess maths. At least 10% of the exam should assess science.

Language

Language can be problematic for students. It can be a barrier to student success despite their understanding of the subject content, so it's important to minimise this risk where possible.

Try to ensure that questions are written succinctly by removing unnecessary language and limiting the number of ideas expressed. Consider emboldening words that may get overlooked and are fundamental to the meaning of the question, but don't do this unnecessarily as the degree of attention given to other words may be compromised.



1 6 Choose **one** of the addition processes in the table below.

Lamination	Printing	Sewing	Soldering	Welding

My chosen process is _____

In the box below, use notes **and** sketches to describe your chosen process.

Identify the equipment used in your chosen process.

[6 marks]

Use words that will be familiar to students, and ensure that if words have more than one meaning, the intended meaning is the only one that is consistent with the context of the question. Avoid using negative words where possible (e.g. 'not', 'least') as these questions can be easily misinterpreted. 'Which of the following is not a good conductor of heat?' could be easily misread as 'Which of the following a good conductor of heat?'. If there is a possibility that a word, phrase or sentence could be interpreted in an alternative way, it probably will be. Students are up against it in the stress of an exam, so it's crucial that each question has a single, clear meaning.

Use the command words published on the AQA website www.aqa.org.uk. You can find a list of these words under your specification and then 'Teaching resources'. This will ensure consistency across all exams.

Continued on next page...

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Layout

Think about how much space you need to give for students to write their answer. This is more important than you might think as insufficient space may lead students to provide less detailed responses, while excessive space may lead students to assume an unnecessarily detailed or more advanced response is required. You could use response prompts to split up answers and remind pupils of the number of points they need to give in their answer as shown below

1 3 Give **two** properties of manufactured boards.

[2 marks]

Property 1 _____

_____

_____

Property 2 _____

_____

_____

Context

Sometimes questions work best in a context as Design and Technology requires students to use their knowledge in different situations. Good examples of this include D&T maths questions which should not stand alone, or questions that ask students to apply their knowledge of materials and processes, for example, to a specific product.

When using a context, try to keep it simple. If students are required to digest a good chunk of information, consider writing a few questions based on that context. This limits the amount of reading a student needs to do across the paper and gives more time for a student to submerge themselves in a situation in order to think more deeply about the answers to these questions.

Contexts can be problematic as they can introduce an area of knowledge outside of the subject area.

'The effects of context on the processes that occur in students' minds when they are answering a question are in some ways unpredictable: a context will have different effects on different students since it will differ in familiarity to them. It is therefore much more difficult for examiners to be in control with a contextualised question, and much harder to say we are measuring understanding of a particular topic'. Ahmed and Pollitt 2007

Look at your question and consider whether you are testing something else additionally, beyond what is intended. Try to strip out as much as you can outside of the aim of the question so as not to penalise students for other gaps in knowledge or skill, or give groups of students advantage.

The below is a task from a German speaking exam where the student is asked, in German:

- What is in the photo?
- What do you think about winter sports? Why?
- What did you do in the last winter holidays?

Your teacher will ask you the following three questions and then **two more questions** which you have not prepared.

- Was gibt es auf dem Foto?
- Wie findest du Wintersport? ... Warum?
- Was hast du in den letzten Winterferien gemacht?

Students don't need any skiing knowledge to answer the question effectively. Travel and tourism is a topic in the specification, and skiing is on the vocabulary list, but it could be argued that a knowledge of skiing gives some students a slight advantage and students who have no experience of the sport may be put off by the photo. In D&T, when a context such as a product is necessary, try to pick one that is accessible to all students by considering which products students would have an experience of. Well-known products are often used in Design and Technology examination papers, but the author must then also consider whether candidates can answer the question with everyday knowledge rather than the intended subject content. This is why choosing an appropriate product for such questions can often be a really difficult task.

Where a picture doesn't add anything to the question, consider removing it. Often unnecessary pictures are a distraction. Remove redundant elements from diagrams as they can sometimes make students feel they are relevant to the answer. Remember that, while in some cases a visual resource can aid understanding and reduce the text required, it can also add to the overall cognitive load for test takers.

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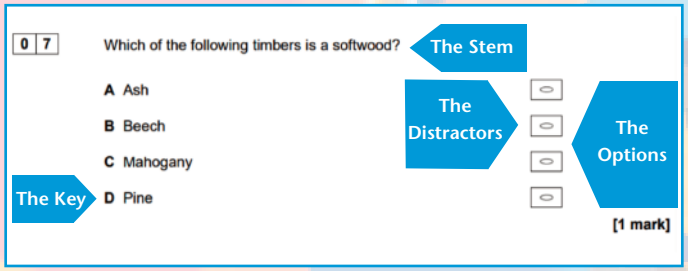
Mark scheme

Alongside the exam paper, the mark scheme is crucial in ensuring effective standardisation across students. Consider how you will measure success and ensure you allow for a variety of responses. For open-ended questions, it is often best to use a levels of response mark scheme as this gives you some flexibility in awarding marks for merit, even if the student's response is unexpected. It's important that your mark scheme allows for correct answers even if they are not the answers you anticipate.

Multiple choice questions

In GCSE Design & Technology, our examination papers start with a number of multiple choice and short answer questions that cover the Core Technical Principles section of the specification. Multiple choice questions (MCQs) are notorious for being difficult to create, but when designed well, they cover a wide topic area in a short amount of time and can validly test recall and application of knowledge. They can also feel more accessible to students, which results in fewer unanswered questions. Of course, not all areas of the examination can be effectively assessed through multiple choice questions as they do not test analytical thinking, so be careful to choose the right subject content for these questions.

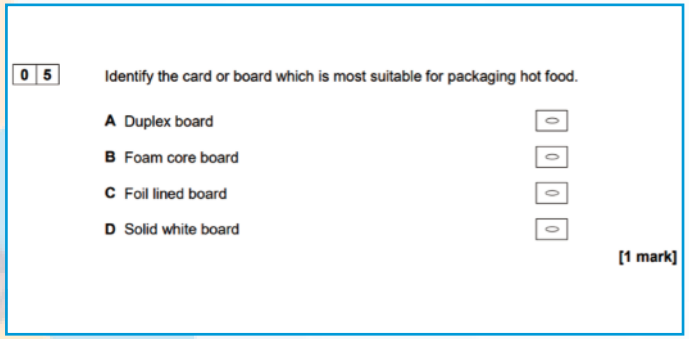
There are several parts to a multiple choice question:



The stem is the beginning part of the item that presents the problem, or an incomplete statement to be completed. The options are the possible answers, with the correct answer called the key and the incorrect answers called distractors.

Good distractors are really important to the success of an MCQ question. Choose distractors which are plausible and cannot be eliminated by a student who lacks the relevant subject knowledge. You shouldn't be able to discount them purely using common sense. Common misconceptions are often really good distractors as they differentiate between students who have learnt and understand the subject content, and those who have not. One of the real difficulties in creating effective MCQs is ensuring that there is only one correct answer. Make sure you check by considering different viewpoints. Occasionally, you may find what you thought was a sound distractor, could justifiably be correct!

If you want to assess higher-level skills, consider setting an MCQ that asks students to apply knowledge. For example, you might ask which is the most suitable material for a particular application, which asks students to apply their knowledge of the properties of materials to an application.



There is a huge amount to think about when producing an effective examination, this being just a short tour of some of the key considerations. Try creating your exam paper and then asking other students or colleagues to answer it so that you can identify anything that you felt was clear, but is actually misleading. If there is an unintended alternative, students normally find it. Think about which questions were answered badly and then ask yourself why. It may not always be due to a lack of knowledge, but because of the way a question has been written.

by Anna Watson, Highgate School

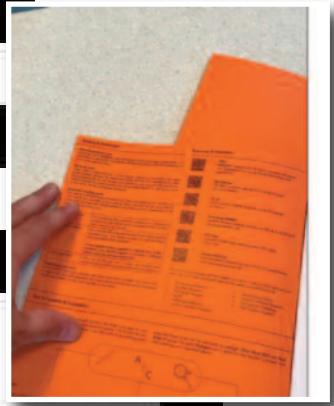
Ways technology can be embedded into exercise books

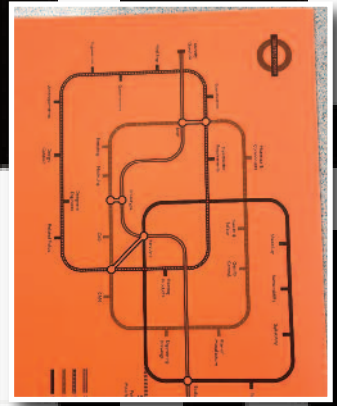
We might not see it initially, but the development of the 'exercise book' has come a long way. Historically, the ancient Egyptian used to use reeds dipped in ink to write on papyrus, Romans carved into wax tablets, in early classrooms pupils wrote in chalk. If I remember my school days, I used to take immense pride in my exercise books. Backing them in posters, coloured paper, or sticky back plastic. I used to love finding ways of injecting my personality onto my books. But inside they were uniform and uninspiring.

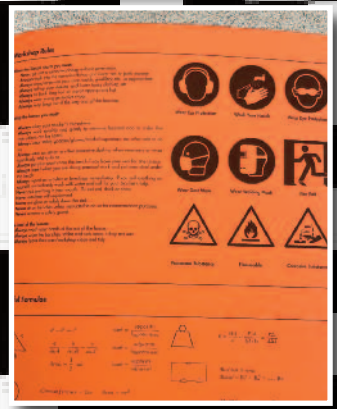
Times have moved on since then and we are now developing different ways on embed technology into the students learning via exercise books. We found at Highgate, using QR codes in exercise books worked really well and the students love using them. We have a feedback QR code on the front of the book. This allows students to give feedback on lessons as they wish, and we encourage students to respond to this at the end of every project. This way we can reflect on the student experience alongside our own to continually improve what we offer year upon year. The other QR code we have is at the back of the book for our health & safety sign off. Previously we had H&S sign offs in teacher planners or in individual student books, like a H&S passport. But we had issues with carrying this through their full DTE journey. By embedding a QR into the students book we could link our H&S quiz (alongside videos on each machine/hazardous process). Each student's result would be collated on a spreadsheet which we can keep digitally and refer to and update throughout their journey with us. Meaning no more H&S information accidently recycled and we can quickly and easily know when a student was tested and is current and competent to use the tools and equipment in the workshop.

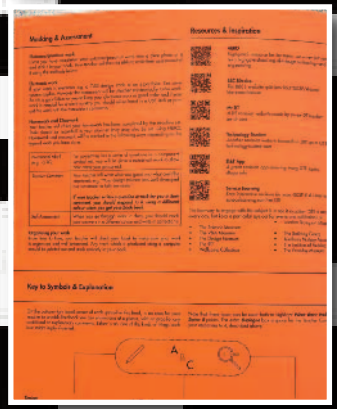
Looking to the future, as a department we would love to go 100% paperless. COVID and remote learning has given us all the opportunity to become quickly familiar with more software than we might normally use. If resources were not an issue; it would be our departments dream to issue each student with a tablet and electronic pen. This would mean that we could still work on fine motor skills involved in writing and drawing. Notebook, Google Classroom, (insert your preference of cloud based collaborative space), would be used extensively, and we could embed further technology into our department, such as Augmented Reality to extend learning opportunities further. Not to mention all the amazing apps out there that help us to teach our subjects.

Although this vision may be far down the development line there are still ways in which we can continue to have a crossover between the two seamlessly, paper and technology. Students are more familiar and experimental with technology such as smartphones and there are safe ways we can encourage that use to help promote learning within our subject.



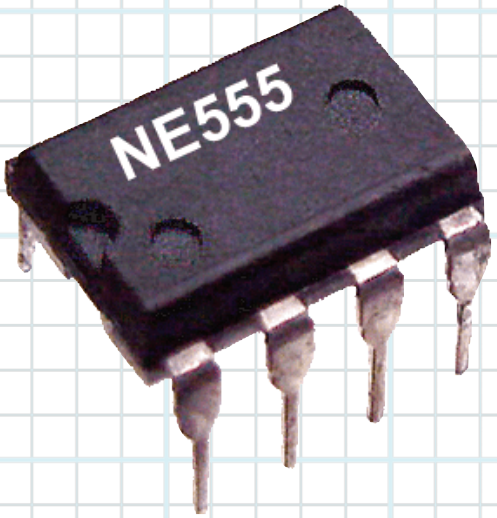






A missed opportunity. Again?

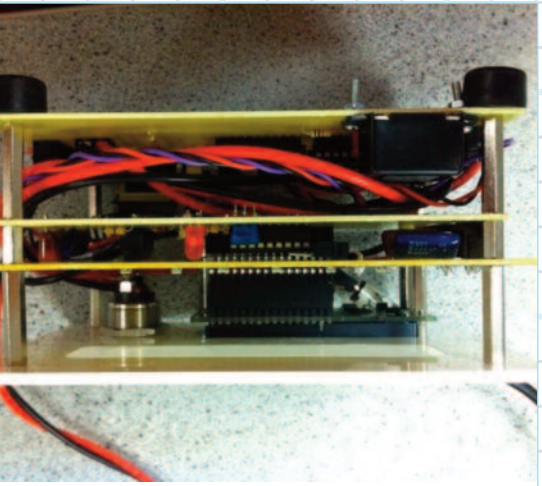
by Andy Mitchell



Andy Mitchell is of the opinion, that again in its short history, D&T is failing to take up and run with accessible technology and ignoring it at its peril.

The 555 timer integrated circuit (chip) went into production exactly 50 ago. Within less than 10 years, it had been championed in the seminal Oliver and Boyd Modular Technology DT O-level course books, and then covered in the Collins CDT Series, arguably the most popular ever D&T textbooks. Throughout the early years of design and technology (D&T), it continued to be the 'go to' chip for a huge number of projects.

It was a game-changer for our subject, although it still required at least a basic knowledge of electronics. The chip enabled a variety of timer, delay, pulse generation, and oscillator applications and contained 25 transistors, 2 diodes and 15 resistors on a silicon chip installed in an 8-pin dual in-line package (DIP-8).



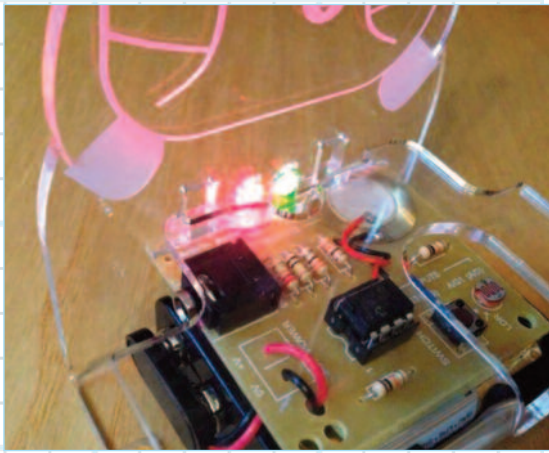
Armed with this and other electronic staples, pupils produced work previously unimaginable. Even as late as 2000 Sheffield Hallam University, at the time the largest provider of D&T initial teacher education (ITT), most students graduated as teachers capable in using it and the range of 4000 series CMOS logic chips. Their expertise developed and taught by Professor Tim Lewis, John Lee, Rowan Todd and others, ensured their employability - schools wanting to benefit from their contemporary subject knowledge. Other ITT providers such as Brunel, Edge Hill and Loughborough all contributed significantly to developing the use of electronics and control. Following a slow start, there was hope that including control technologies might in fact become commonplace in D&T, rather than in science, where early work had originated. However it turned out to be short lived.

Design & Technology GCSE was introduced in 1987, with Technology being one of the endorsed pathways. Always the poor relation in terms of entry numbers, by the late 1990s numbers were declining. The last entry for the outgoing GCSE D&T specifications in 2017, saw only 4% of the national entry adopting either the Electronic Products or Systems and Control pathways. Today, there is no evidence to suggest that the new GCSE D&T single title specification, first examined in 2019, has changed this, even though no restrictions are imposed on the resources used in D&T activity.

The 555 chip in D&T has since given way to more accessible and sophisticated use of programmable components and off the shelf microprocessor boards, such as the BBC micro:bit and Crumble available from Mindsets.

The revolution in terms of digital technology has yet to fully impact D&T. Amazingly, it is still rare to find creative, imaginative control technology work going on in secondary D&T departments. One might have expected to have seen schools' commensurate investment and prioritising of the necessary resourcing but this has not happened. It also remains the case, that the area in which D&T teachers most lack confidence is that of systems and control and the application of microprocessor technology. This can be partly explained by the prevalent ITT model in England being school based, which limits severely the opportunity for students to develop their subject knowledge. In addition, Ofsted has never really penalised schools for ignoring this and indeed other areas of the D&T National Curriculum. Unsurprisingly, without expertise, incentive and promotion, 'high tech' D&T work is simply not happening in enough schools.

So, what has gone wrong? In some schools today we are seeing the emergence of a STEM curriculum with limited or no involvement from D&T, which should be responsible for its coordination. Fundamentally, what future can we expect for D&T in a world increasingly dependent on digital technology, if we fail to make digital control and its application a central feature of the subject to be experienced by all young people?



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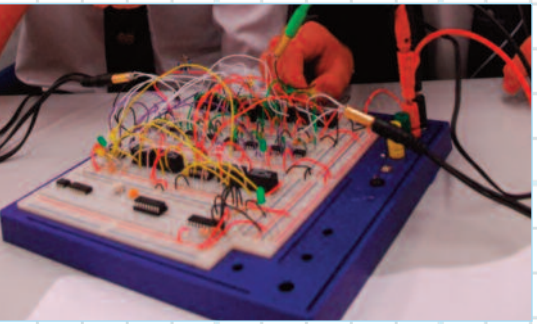


The subject has not been devoid of stimulus and support. The research and development initiative Project Technology, (1967-72) at Loughborough (then) College of Education, funded by the government was a significant project. Others at Keele University and Nottingham Trent followed. Plus the Microelectronics Education Programme (MEP) for England, Wales and Northern Ireland (£8M over the period 1981-1984) all contributed to the 'technology' arm of D&T. Later in the 1990s and early 2000s, the Department for Education funded further curriculum projects led by the D&T Association working with institutions including the Royal Academy of Engineering and the Institute of Engineering and Technology. Schools were supported nationally through the Marconi Initiative and the Electronics in Schools Project (later to become the Digital D&T in Schools Project). The Gatsby Foundation Technology Enhancement Programme (TEP) also contributed, by making low cost hardware, training and curriculum materials available, much of the inspiration and drive for which can be largely attributed to Professor John Cave.

There are of course many examples of schools, academies and UTCs making excellent use of the technology now available. As departments are refurbished and where there are new builds, forwarding looking curriculum and school leaders are recognising the need to create design and manufacturing facilities that better reflect future needs and are less defined by older largely craft orientated spaces.

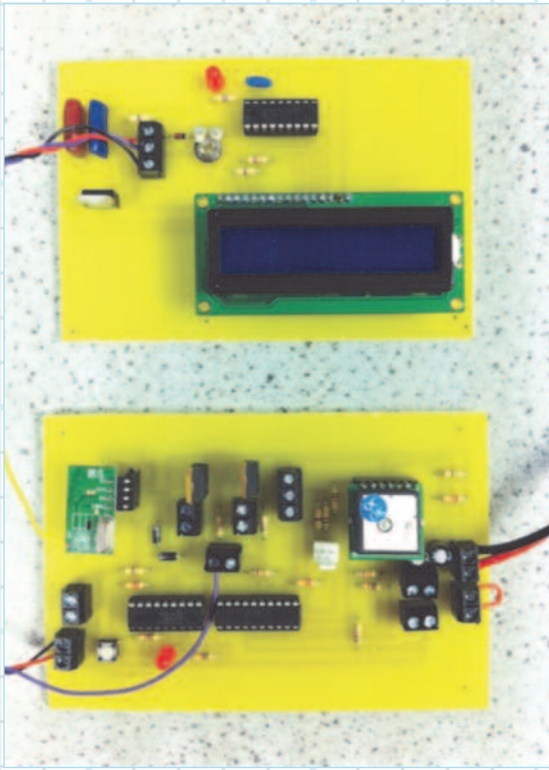
It should be these departments and indeed the teachers working within them who will enjoy a secure future, and who others will look to, for advice and inspiration. Above all, it will be the study of how they have incorporated digital technologies and won over those who need convincing of its intrinsic value.

Cost is a frequent given as an excuse. But unlike acquisition of major pieces of manufacturing equipment, investment in resource to enable computer control, systems modelling etc is cheap. Many components are reusable and can be considered capital, and investment can be made gradually year on year. Perhaps the biggest investment is the need to develop teacher expertise. But D&T teachers have always expected to carry on developing their subject knowledge throughout their career, often in their own time. Not all being acquired simply through attending courses. That said, accessing high quality CPD such as that provided by the D&T Association and the National STEM Centre does provide a significant boost.

It is unlikely that another national programme of support will be launched again soon. Nor will we see again the experts there once were, working outside the classroom, providing consultant support and curriculum/resource development. But, we cannot afford any longer to miss out on the opportunities provided by digital control. If the subject is to have a future, the next decade will be crucial in determining what that future might look like. Inhibited by a shortage of new D&T teachers, the need for increased sustainability in the use of materials, budgetary constraints and reduced status, it is up to the teaching profession itself, individual departments and teachers, to acknowledge the need and lead the change. And it can! Providing we plan to do so, making small steps, with professional development, new pupil activity, and we promote modern inspiring outcomes produced by young people.

We still seem to expect all pupils to graduate from KS3 with some knowledge and skill in making products using materials such as wood, textiles, metal and plastics. Surely all pupils today should also have specified, programmed and incorporated digital electronics in a product they have designed and made.

That has to be more than an aspiration.



SCALEXTRIC4SCHOOLS

It was Christmas 1987, and I was 6 years old when I first experienced Scalextric. 30ish! years later the concept of Scalextric4Schools appeals to so many teachers of my generation, creating a sense of nostalgia they can share with pupils. For me it brings back memories of the smell of burning motors and retrieving the car from under the sofa.

Scalextric4schools was originally developed by David Eyre and Chris Jarman of Edgecliff High School in Staffordshire. With the help of Tim Brotherhood (DT County Advisor) and the backing of Hornby, Scalextrics4Schools was born.

From 2009- 2014 several teams participated in the Scalextric4schools project but the number competing plateaued and in 2014 it took a rather long pitstop. This was due to it being ahead of its time. 3D printing and developments in CAD hadn't become mainstream in schools and, as a result, new teams struggled to compete. Now in the age of PlayStations and Xbox things have got up to speed in the classroom. Give a group of students a box of Scalextric and I guarantee they will have fun! The enjoyment is not limited to the classroom, pupils have gone home and reconnected with families over this iconic toy.

So, the question is what place does Scalextric4Schools have in the D&T curriculum? Simply put, it's mirroring reality. Hornby use the same techniques and software that are taught in the classroom to design their own cars. Just like F1 cars, set up is key. Clean tyres, a warm motor and the correct ride height all count for fractions of a second on the lap. To get the message out there we needed some help. The D&T Association quickly came on board, followed by Boxford and Root Solutions who were original founding members. Social media has been crucial and, since September 2021, the Scalextric4Schools Facebook page has gone global with over 800 new members. Resources and ideas are being shared daily.

by Simon Hooker, Head of Art, Design Technology Engineering, The Bishops Blue Coat High School Chester

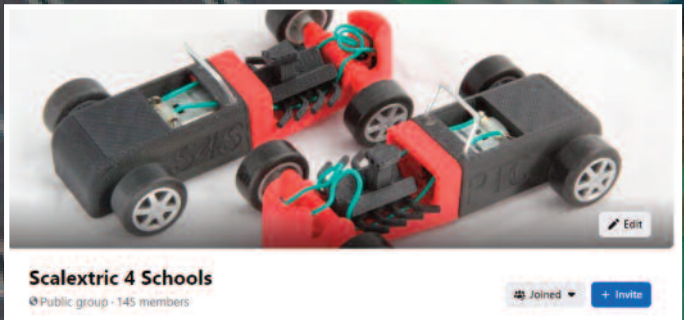
Continued on next page...

SCALEXTRIC4SCHOOLS

What will 2022 bring?

Discussions continue with Hornby in anticipation of their renewed support as our team of teachers look at ways to continue developing and expanding Scalextric4Schools further.

To find out more about the project please visit the Scalextric4Schools Facebook page



"Boxford has been a long standing and passionate supporter of Scalextric4Schools and the value it brings to the young people who participate. As a long-established engineering company, Boxford is well placed to understand how significantly Scalextrics4Schools benefits the development of the participants, and we will always support the scheme in any way we are able."
Paul Barraclough Managing Director Boxford.

"The Scalextric4School programme was originally conceived to give youngsters an opportunity to get involved in the world of design, manufacturing and innovation so that they might follow that into a career. The innovation shown by teachers and pupils has been amazing. The modern concepts of design, optimisation, rapid prototyping, materials, reliability all coming together in a competitive environment with the ever-popular race-car theme. I'm delighted that the scheme is growing in popularity and using our CAD/CAM software, which is freely available to anyone participating in the scheme."
Roger French, MD, Root Solutions Ltd, PTC Partner.

by Simon Hooker, Head of Art, Design Technology Engineering, The Bishops Blue Coat High School Chester

Design Ventura at the Design Museum

DESIGN VENTURA 2021–22

Bringing the business of design to life with Deutsche Bank

Having the opportunity to be involved with developing the Grow Wild Seed Launcher has been a highlight of my career. I am, of course, just a passenger in this journey. Guided by the calming hand of Poppy Parry of Design Ventura, driven by the creative duo of Huw and Mark, and inspired by the talented team of wonderful students, the 'real life' development of a product born in the D&T workshop at Heckmondwike Grammar School has been an experience well worth sharing.

by Howard Stevens, Heckmondwike Grammar School

The transformation of the seed launcher from initial prototype to production-ready product is significant, with every decision focusing on the needs and wants of the intended user. Huw and Mark, of the Tom, Dick and Harry design agency in Leeds, led us through the development process. Using a variety of approaches to get our creative juices flowing they ensured that we remained focused on the most important factor- that the product is designed in a way that makes people want to buy it.

We were really fortunate to be able to hold our first meeting face-to-face at the TDH Studio in Leeds. Having the opportunity to get out of the school building and discuss the development of the product in such a creative environment really helped inspire the students. This session focused on the renaming of the product. From very early in the design process at school, the team of students; Alice, Naomi, Emily and Hannah, had been drawn to the name Sow Beautiful. Although there are clear links to what the product does, we felt it perhaps didn't give a full reflection of the true function of the product. Dozens of product-specific words were discussed and recorded before we began teaming these up to experiment with different word combinations. It's fair to say that some suggestions weren't exactly easy on the ear but after a good discussion, we narrowed it down to shortlist which we then tested out on members of the target market. Our feedback indicated that the most popular name to go with would be Grow Wild, a fun title with obvious links to the purpose of the product.

With the name confirmed, Huw and Mark then began work on the branding and packaging of the product. They skilfully mocked up the packaging in a range of different designs from traditional and floral to modern and minimalist. Seeing the hexagonal packaging in these different styles really brought the product to life and gave us the opportunity to talk about which design we thought would be most appealing to our chosen target market. Again, we took feedback before deciding on this fun, hand illustrated style. The main deep yellow colour is not only eye catching and representative of summer and growth, it also ties in well with our school colours. The team are thrilled with the final design and having only seen it on a screen so far, cannot wait to see the real thing on sale at the Design Museum.

Under the leadership of the Design Ventura team and the creative expertise of Huw and Mark, the student team has thrived and will be eternally grateful to have been given this once in a lifetime experience.

As I write this, we are in the midst of organising another trip to the Design Museum, this time to attend the official launch of the Grow Wild Seed Launcher. Alice, Naomi, Emily, Hannah and I are beyond excited to be attending this event. For the team to see their professionally manufactured product on sale in such a high-profile environment will undoubtedly be a moment to savour.

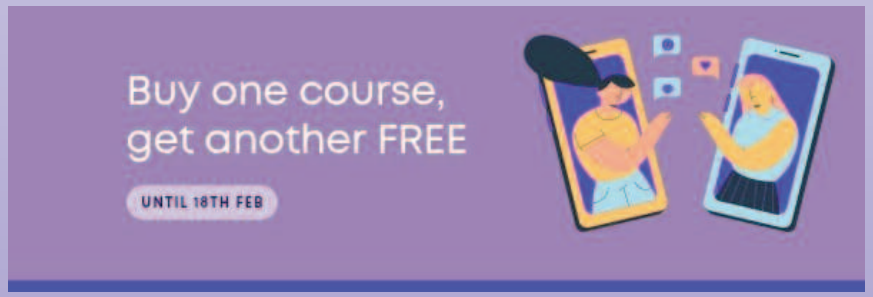
THE FOOD TEACHERS CENTRE

by Barbara Rathmill, Food Teachers Centre

We are proud to share that we've been selected to participate in the 2021-22 Facebook Community Accelerator, a program that helps leaders harness the power of their community to turn impactful ideas into action. 130 participants across nine regions across the world have been selected to participate. We are 1 of only 10 groups in the UK.

We're excited for the opportunity to learn, grow, and scale our impact!

Louise Davies, founder of the Food Teachers Centre is personally enormously proud to have been chosen by Facebook to take part in the Accelerator programme. It is recognition for how successful our community is in providing for the needs of teachers. It will give us the opportunity to do new things that are desperately needed and secure a great future for the group. The past 8 years since we created the group have been exciting and hard work, our success is due to EVERYONE in it, the kindness and generosity that you show in helping others each day. But I also pay tribute to the tireless team that work behind the scenes, keeping the advice high quality, providing worthwhile events and training, giving up their time to attend meetings to be that national voice for you, and relentlessly seeking new opportunities and partners to get the help we all need in our classrooms.



We have many plans, we now have the support of the global Facebook team, and anything is possible. How good does that feel as we emerge out of the tough 2 years? This gives us hope and help, so much to look forward to. We are keen to know how we can help you best and will do regular updates. In the meantime, celebrate with us, being part of this fantastic community

What has the Food Teachers Centre community has achieved this year:

- 7,800 teachers visiting our on-line community daily for professional support, advice and inspiration
- 12,000+ followers and newsletter subscribers
- 2078 teachers have taken part in our online training programmes throughout 2020
- 1600 doing practical skills courses with us
- More than 300 teachers accessing training for a small donation or less than £20
- 150 trainee teachers accessing free training courses and mentoring.

Continued on next page...

THE FOOD TEACHERS CENTRE

by Barbara Rathmill, Food Teachers Centre

Future Plans

Thanks to the Global Facebook Team we have started **3 innovative programmes** to support our teachers, including a fantastic volunteer initiative to get more help in your classrooms called "Kitchen Angels", and a support package for new teachers who need a lot more help teaching our subject called "Fly Higher", as well as "Next Generation" developing the future subject leaders.

More news very soon.How it works. Purchase a course* before 18th February 2022 and email us at: info@foodteacherscentre.co.uk and we will provide a free code for your 2nd course. This initiative is funded by Berridge Grant.

Supporting as many as we can.

We have a wide range of on-line courses, from exam course support, to KS3 360, Food Safety, Food Science and Technician Toolkit. https://foodteacherscentre.co.uk/online-training/

For all those who purchase a course* from December to February half term, we are offering a free 2nd course. You can treat your technician, support another colleague, or extend your own knowledge. Once signed up, all our courses last for a full year. (*Excludes donation events).

How it works.

Purchase a course* before 18th February 2022 and email us at: info@foodteacherscentre.co.uk and we will provide a free code for your 2nd course. This initiative is funded by Berridge Grant.

A GUIDE TO LEV TESTING

Kevin Hughes, Accreditation Manager, HME

This guide to LEV testing services takes the form of an FAQ to assist schools in both understanding the ins and outs of the subject, and to help you choose your preferred supplier.

What is Local Exhaust Ventilation?

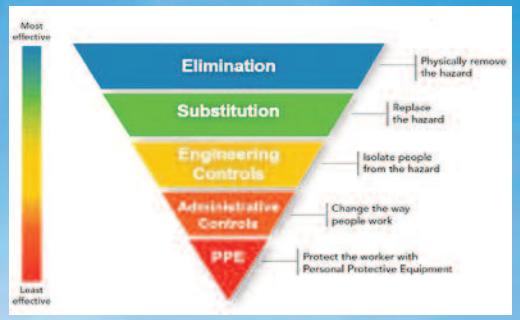
Local exhaust ventilation is an engineering system that captures dust, vapours, and fumes at their source, minimising the risk of workers breathing in contaminated air.

When should local exhaust ventilation be used?

The COSHH hierarchy suggests that LEV is an engineering control which is the third level of effective control, this means you should first consider:

- Can you substitute the material being used by something safer?
- Can you reduce the amount of the contaminant released?
- Can you change your method of work so exposure to hazardous substances can no longer occur?
- Can you modify the process to reduce the duration or frequency that the contaminant is released?

If none of these are possible, you may need to put effective LEV in place



What is the difference between general ventilation and Local Exhaust Ventilation (LEV)?

General (dilution) ventilation systems supply clean air that mixes with the air in the workplace, diluting the concentration of the contaminant. General systems can also remove air from an area which will be a mix of the fresh air (supply air) and the contaminated air. Local exhaust ventilation systems remove the contaminant before it spreads.

Sourcing a suitable local exhaust ventilation system

An employer is responsible for selecting a supplier that is competent to define, design and install a suitable LEV system. To help with this, employers may wish to:

- Invite more than one tender
- Provide a drawing of the area and the processes to be controlled
- Ask potential contractors to visit the site to see the processes
- Ask what are their professional qualifications, experience, memberships of trade organisations such as ILEVE and whether they can provide case studies and references
- Review tenders and quotes

A key part in ensuring that the LEV system is designed correctly is for the employer to draw up a specification for the supplier. In the first instance an employer should establish:

- **The process** (the way airborne contaminants are generated, for example in woodworking, processes may include cutting, shaping and sanding)
- **The contaminants** (the airborne material that is trying to be captured i.e. dust, mist, fume, vapour, aerosol) and their hazards (i.e. how are they dangerous, e.g. isocyanate containing paints can cause asthma and welding fumes can cause lung cancer)
- **The source**, depending on the process there could be single or multiple sources, these sources could produce hot and/or cold contaminants and the source may move e.g., a welding torch.

The specification should also require the supplier to:

- Show that the system is working properly, which may include the fitting of indicators at key points
- Ensure the LEV is easy to use, check, maintain and clean
- Provide training in how to use, check and maintain the LEV system
- Provide a user manual that describes and explains the LEV system, how to use, check, maintain and test it, along with performance benchmarks and schedules for replacement of parts
- Provide a logbook for the system to record the results of checks and maintenance

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A GUIDE TO LEV TESTING

Kevin Hughes, Accreditation Manager, HME

What needs to be done once an LEV system is installed?

Once an LEV system has been installed there are a number of steps that need to be undertaken to ensure its ongoing effectiveness:

1. **Commissioning.** After installation the system must be commissioned to prove it is working correctly and capable of providing protection to your employees. The results of the commissioning should be used as a benchmark against the future performance of the system and a copy kept with the system.
2. **Training.** Staff should be trained in how to use the system, how to check it is operating correctly, any limitations of the system and how they should ensure maximum control of the contaminants.

3. **Maintenance and servicing.** The user manual should specify daily, weekly or monthly checks on the performance and condition of the system to help ensure its effective control. These may include checks on the following:
   - Hoods - including airflow indicators, physical damage and blockages
   - Ducts - including damage, wear and partial blockage
   - Dampers - position
   - Filters - including damage, static pressure across the cleaner, and failure alarms

All user checks, maintenance and servicing should be recorded in the system's log book

Do I have to fit Air Flow Monitors?

It is not a specific requirement, but you should have some way of checking that adequate airflow is being maintained.

Common failures in using extraction:

- failure to check that the extraction continues to work effectively
- workers are not consulted or trained, so they don't understand the importance of extraction and do not use it properly

Thorough examination and test (TExT)

Every LEV system requires a statutory thorough examination and test by a competent person, at least every 14 months. A thorough examination and test is a detailed and systematic examination to make sure that the LEV can continue to perform as intended. As an employer, you should keep a copy of the report for at least five years.

What is the purpose of a thorough examination and test

- It is a check that your LEV is still working as effectively as originally intended and is helping to protect your employees' health

Who can undertake the thorough examination and test, and what responsibility does that person have?

- It is important that the examiner who undertakes the thorough examination and test is competent to do so.
- The examiner will use information about your equipment's intended performance to undertake the necessary examinations, tests and measurements to verify whether it is still meeting this level of performance.

What information does the examiner need?

- To assess if the LEV is still working properly, the examiner needs to know what the system was designed to do. The person doing the examination should let you know whether the information you provide is adequate for assessing whether the LEV is working as intended.

Why do I need to employ or use a competent examiner?

- You have a legal responsibility to ensure that employee exposure to dust/fumes etc. is minimised and well controlled. Using competent people can help to ensure that the system works as intended.

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A GUIDE TO LEV TESTING

Kevin Hughes, Accreditation Manager, HME

How do I know someone is competent?

- Competent people have the right mix of skills, knowledge and experience to do a good job. Ask about relevant qualifications and training, experience and previous work.
- A competent supplier should be able to train your staff to maintain the LEV. HME can provide references, case studies and appropriate training.

How do I find a competent person?

- Some trade associations keep lists of members who claim LEV competence. (HME is a corporate member of the leading industry associations).
- CLEAPSS has a list of suppliers on the website.

What Should My LEV Inspection Report Contain?

- The name and address of the employer responsible for the LEV
- The date of examination and test
- The date of the last thorough examination and test
- The identification and location of the LEV, and the process and hazardous substance concerned
- The conditions at the time of the test and whether this was normal production or special conditions
- A simple diagram of the LEV layout and location, with test points
- The condition of the LEV system including hood serial numbers and, where appropriate, photographs of relevant parts
- The intended operating performance for adequately controlling the hazardous substance and whether it is still achieving the same performance
- The methods used to make a judgement of performance and what needs to be done to achieve that performance, e.g.: visual, pressure measurements, airflow measurements, dust lamp, air sampling, tests to check the condition and effectiveness of the filter
- The results of any air sampling relevant to LEV performance
- Comments on the way operators used the LEV
- Comments on system wear and tear and whether components may need repair or replacement before the next TExT
- The name, job title and employer of the person carrying out the examination and test
- The signature of the person carrying out the examination and test
- The details of any minor adjustments or repairs carried out to make the LEV system effective.

Note: An employer needs to know about critical defects immediately and should not wait for the report. The report should be accompanied with a maintenance log book for each piece of LEV machinery. Identification should be left on the LEV equipment to show that it is operational and when it was last tested.

Our LEV testing team are highly qualified to undertake Health and Safety Training in your School, Academy, College or University.

HME Priory House, Saxon Business Park, Stoke Prior, Bromsgrove B60 4AD
email:
contact@hme-tech.com

Tel: 01527 839000

CLEAPSS small print

The guidance on eye washing to treat something in the eye has been updated to using running water for 20 minutes, not the 10 minutes it was.

This means that the use of eye wash from sealed plastic containers will probably not be sufficient. The best way to irrigate the eyes is to use a flexible hose attached to a mains cold water supply. Some schools have specific eye washing units, but in D&T this is unlikely. We do recommend that every department has access to a suitable piece of flexible tubing that is stored hygienically and can be fixed to a cold water tap.

With any damage or injury to an eye, we recommend that you must always seek a qualified medical assessment, either by dialling 999 for serious incidents, or for all other cases, dial 111, and continue irrigation until attention or advice is obtained from qualified medical staff.

To treat a burn or scald, you should remove the person from the heat source and cool the affected area under lukewarm water for 20 minutes. Do not apply any creams or oils. Remove any clothing or jewellery that could prove difficult to remove later, but do not try to remove anything stuck to the skin.

Contact 111 or 999 as appropriate.

Eye protection

We have had a number of helplines over the past few weeks about eye protection following the changes in British Standard, BS4163.

In previous versions of the Standard, eye protection was indicated, but not the type of eye protection, in the 2021 version, we tried to identify the appropriate level of protection required, as different operations will require different control methods.

The main change is the identification of two types of eye protection:

EN166F is for low impact, which should be adequate for general use, where there may be dust or small objects that could get in the eye. Lightweight protective glasses (not prescription spectacles) may be adequate.

EN116B is for medium impact, using machines or carrying out activities where a piece can be ejected and could reach the eye of the operator or those nearby. EN166B is not found on lightweight protective glasses, but only on googles or face shields.

For more information on the different labelling that is found on eye protection, take a look at GL342: https://dt.cleapss.org.uk/Resource-File/GL342-Eye-and-Face-protection-in-D-T-Food-and-Art.pdf

In the latest edition of the British Standard, there is mention of the use of metal working fluids (MWF), what we might recognise as suds, or soluble oils, used to lubricate machines as they cut metals.

HSE has a range of information sheets regarding the use of these fluids and has recently put in place an improvement notice on a company in Sheffield, which had not carried out regular maintenance, including changing the metal working fluids on its powered hacksaw.

Schools are reminded that, where metal working fluids are used, they must be regularly monitored and changed. It is also essential that operators wear suitable gloves when handling such fluids in maintaining or servicing the machines. However, gloves should not be worn when operating the machines.

The paragraphs below are taken from the HSE guidance note MW3 COSHH essentials for machining with metal working fluids (MWF):

"Decide how often you need to clean your system. The frequency will depend on a number of factors including visual inspection and monitoring results.

- If possible, prevent skin contact. If you cannot prevent skin contact, can you limit it?
- Provide equipment to remove and replace sump fluids with minimum spillage eg. wet vacuum.
- Ensure that the sump is cleaned before adding fresh MWFs.
- Avoid the use of high-pressure water hoses for sump cleaning where practicable.
- Keep absorbent material to hand in case of spillages.
- Follow your supplier's guidelines for sump cleaning"

It is unlikely to be a significant issue in schools, but operators should be provided with suitable RPE if the MWF can become a mist. For advice on RPE read GL301 *Guide to respiratory Protective Equipment in D&T and science:*

GL310 - Guide to Respiratory Protective Equipment (RPE) in D&T and science (cleapss.org.uk)

Big Ideas

As there are no Tweets in this issue we thought we would turn the focus on the unsung heroes of D&T and some of their world changing Big Ideas.
Let us know if you would like this to be a regular feature.

Just rollover the ? on the bulbs to reach the links.

In the next edition of *Futureminds*, we will be able to show you what the new CLEAPSS premises looks like, as we are hoping to be in our new facilities around Easter. We will also have our usual range of interesting articles from the world of Design and Technology, including some school projects we have been supporting over the last year.

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

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

You can also follow us on twitter
@CLEAPSS_DT