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Spring 2023

CLEAPSS D&T e-newsletter

FM Spring 2023 – The Sustainability Issue

Welcome to the Spring 2023 edition of Futureminds.

As always, it's been a busy time since the last edition in the autumn term.

We have generally been able to resume normal working, much as before COVID. Over the autumn term we carried out a number of department health and safety audits, and ran some face to face training. We have also been pleased to see that our online training continues to be very popular.

For the first time in three years, CLEAPSS attended the ASE (Association for Science Education) conference in Sheffield. Although this is a science conference, we always have a D&T display, this year we took along the resin printer, as it has a tenuous link to chemistry!



We have also run our first D&T course in our new facilities at Chesham. The D&T space is designed to provide a showcase for good practice, as well as exemplifying a mobile, or flexible solution to practical space designs. We do not have any heavy workbenches, and only a couple of fixed machines, but we do have the capacity to work with all types of materials, including; woods, metals, plastics, textiles and even food.

The training day went really well. Not only did we cover the H&S management for D&T, we also invited the three main awarding organisations to provide a short input. Phil Holton (Pearson), Louise Attwood (AQA) and Liz Bull (OCR) joined us to provide information about the latest developments at KS4 and post-16.

If you would like more information about our courses, or would like to work through our online training, some of which is free to members, go to the courses section of the website:

https://dt.cleapss.org.uk/Resources/Service s/Courses/ We have also started to develop a range of Tool tips videos. These are designed to supplement the MRATs, and give a short illustration of some of the points teachers and technicians need to consider when developing their own, localised risk assessment record. So far, we have produced some on the larger machines used in D&T, but the library will increase over the coming year:

https://dt.cleapss.org.uk/Resource/Tool-tip-Introduction.aspx

There are also a number of new or updated documents on the website:

Storage of chemicals in D&T (E232) Secondary-aged Pupils with Special Educational Needs and/or Disability (SEND) (G077) Brick and Block Work (MRAT 172) Manual Handling in Building Work (MRAT 190) Food testing (1) (student safety sheet (004) Food testing (2) (student safety sheet (005) Note; all the students safety sheets can be accessed, including by students, free of charge from the CLEAPSS science website.

If you have suggestions for guides that you would like to see, please contact us via the *Helpline*: https://dt.cleapss.org.uk/Helpline/Helpline.aspx Developing greater flexibility in the teaching and learning of D&T, food and art

By Dave Parry CLEAPSS D&T adviser

Over the past few years, we have been working with a range of interested parties on the design and equipping of D&T spaces in schools and colleges.

This work led to the Vision edition of *Futureminds*, in <u>autumn 2020</u>, which contained articles and information from a whole range of suppliers, teachers and others about the direction they believed D&T may be headed.

The work didn't stop there. We have continued to work with suppliers, teachers, the DfE, HSE, and others, to explore what the future might hold for D&T spaces. We want to ensure that we are able to support schools when they develop their facilities to meet future needs. It is too early in this process for us to produce definitive guidance but we thought it would be useful to share some of our most recent thinking with our members.

Over recent years the updates to the National Curriculum and changes to the GCSE specifications have led to a more flexible approach to teaching the subject. Pupils are increasingly expected to utilise a variety of materials and techniques to develop prototypes and models, as well as working outcomes. This requires that pupils need to have access to a range of equipment and processes, which is not always limited to what would be found in a traditional workshop.

Having flexible solutions, such as mobile equipment, that can be moved in and out of a workspace, or having furniture that can allow for different teaching approaches, enables a school to provide pupils with a wider experience of D&T practice, whilst also providing safer work spaces when the equipment is not in use.

The design of workshops, food rooms and art studios is influenced by the equipment and furniture used in these rooms. The relationship between room size and capacity is explored in CLEAPSS guide PS068 - *D&T class sizes, room sizes and possible effects on safety* (cleapss.org.uk). Recent updated guidance from the Department for



Simple lockable castor

A number of suppliers have started to offer flexible solutions for equipping D&T rooms, including the use of trolleys and/or mobile workstations. In the CLEAPSS D&T room we have investigated the use of trolleys and mobile furniture, as well as smaller, benchmounted equipment. We have also developed a range of mobile storage solutions for materials, resources and equipment.

We are using our facility with its reduction in fixed equipment and fewer traditional work benches, to investigate the best ways to ensure that activities are safe. We have begun to use our experiences to inform our model risk assessments, and the guidance we provide to members.



Developing greater flexibility in the teaching and learning of D&T, food and art By Dave Parry CLEAPSS D&T adviser

Mobile solutions

It is worth reminding ourselves that the British Standard, and other guidance, stipulate that all equipment should be adequately installed so that the risk to the user is minimised.

Where a mobile solution is considered, the trolley must itself be suitable for the intended purpose. Common sense suggests that all trolleys used to support machinery, such as pillar drills, lathes, 3D printer, etc. would have the following features (this also applies to all tables and benches which could be repositioned but are not themselves on wheels of any sort).

 They must have the capacity to be secured in their position when in use.
 This will require that lockable castors or some other device to ensure that a trolley does not creep or move.





- They must be stable when in use, so should be manufactured in such a way that the weight of the machine is adequately supported, both when at rest, and when in use.
- They must remain stable when being moved, so that they do not present a hazard to those involved in moving the equipment in readiness for use, or for moving into storage.
- They must be positioned to provide adequate safe working space around the machine, to provide room for the operator to use the equipment without fear of being knocked or jostled.
- They must have the capacity to secure the power supply or other umbilical connections, so that these are not damaged in transit or in storage.

Power services to moveable equipment

Equipment that is supplied with a 13A plug and lead must be safe for use in a school workshop. Initial consideration of this aspect suggests that additional controls to ensure safety might include:

- Fitting a key controlled isolator to the trolley which enables the equipment to be locked off, then having a protected lead (such as having a protective sleeve or even, possibly, using armoured cable) that can be plugged into the room supply is one possible approach the requirements for fixed machinery. (see note below)
- Stop switches which provide NVOL capacity are needed on any machine with moving parts.





- Appropriate and effective guards should be provided, which, in some cases, will be interlocked to the machine start system. Access to moving parts via gear box or belt covers should be secured, so that a specialist tool must be used to open the cover(s).
- The addition of third limb switches, such as foot stops, is good practice
- Machines which create dust or fumes should be subject to a risk assessment and, where necessary, effective LEV must be provided. (see below)

Developing greater flexibility in the teaching and learning of D&T, food and art By Dave Parry CLEAPSS D&T adviser

Emergency stops/implications for room power supply

CLEAPSS guidance advises that any room with fixed equipment must have the facility to have the power turned off when the equipment is not in use.

Although flexible furniture solutions may mean that, at times, there is no 'fixed' equipment in the room, the power supply should still be controlled, so that when equipment is in use, the power can be turned off.

Where fixed equipment, including any mounted on trolleys, could be in use, there must be suitable mushroom headed emergency stops sited around the space, so that, in the event of an emergency, the teacher (or other) can cut the power to the machines.



Moving equipment

Trolleys used solely for storing materials must also be stable, both at rest and when being moved. All the materials in them will need to be contained so that they cannot fall off during movement, constrain movement, or strike other pupils and staff.

Lifting heavy items onto and off a trolley poses manual handling risks, which will need to be considered before any action. Standard trolleys are not suitable for moving items up and down stairs and may also not be suitable for moving items across outdoor areas. It may be possible to source specialist moving equipment, for these types of transfer. CLEAPSS has plans to look further into this topic.

Sufficient time must be allocated for technicians, and others, to move items and set up and clear away and to avoid moving equipment and materials when corridors are busy.





Dust/fume extraction

Most machines that are used to work with timber or plastics will generate dust which must be controlled through some sort of LEV system. There are various portable solutions, all of which will require a thorough examination and test each year to ensure that they are working effectively. In general, dust should be collected by devices attached to the machine in such a way that they extract from as near to the source as possible. Dust should be collected by extractors fitted with HEPA filters, rated at least M.

Other aspects that the changes to the design of D&T facilities may impact Restriction on D&T class sizes

Part of the reason for having a maximum group size of 20 in a practical space is historical. In a traditional workshop or food room, all the pupils would be using a range of fixed equipment, hand tools and utensils for the majority of a lesson. To ensure that these pupils were able to carry out the activities and move around the room safely the size of the room limited the maximum size of the class that could be accommodated.

Historically the number of identifable 'work stations' also reflected an expectation for the number of pupils for which the facility was designed and could therefore be expected to accommodate safely.



Developing greater flexibility in the teaching and learning of D&T, food and art By Dave Parry CLEAPSS D&T adviser

In new schools and refurbished departments, the overall room sizes may remain much the same as before, but there could be significantly less fixed equipment and furniture. Changes to the curriculum may lead to fewer pupils working on practical activities at the same time. This could mean that there are fewer pupils moving around the room, and less working space required to carry out practical activities. As a consequence increasing the number of pupils in the room beyond the traditional 20, may not have a significant impact on safety.

Managing risk through the use of a rigidly applied maximum number of pupils in a given space was always a pretty blunt instrument, assuming as it did that all lessons presented the same level of risk. This approach lacks the flexibility required by the changing nature of the activities being undertaken in many D&T lessons. Whilst room size may still provide an indication of capacity, the number of pupils that can be accommodated safely is more closely related to the level of supervision required which in turn depends on the nature of the activity and the experience of the pupils. As a consequence a fixed 'class size' could well become largely redundant as a control measure.

One thing is certain, in future, teachers, technicians (working in instructor roles) and others will still need to plan for practical activities and their supervision. One outcome (and one which is already seen in schools) is that some pupils are working on a practical task, whilst others are engaged in related activities, perhaps even in a different space with different supervisory staff.



Flexibility in the use of D&T spaces The CLEAPSS *Helpline* often takes queries on the use of D&T, food or art rooms for activities other than those delivered by specialist staff.

Our guidance is clear; only suitably trained staff should supervise practical activities in practical spaces. School managers must consider this when timetabling non-D&T (& food and art) groups in practical rooms. One solution could be to provide some or all non-D&T staff with a short induction programme, on the hazards in such rooms and the potential supervision issues that might be found in them.

With the development of flexible solutions it may be that the rooms themselves will present fewer hazards and risks to those working in them. This would make it easier for non-specialist staff to supervise non-D&T classes. Rooms could, therefore, be timetabled for other classes. To be successful this would require that the rooms are kept in a safer state when not in use for practical activities. Overall, these developments could have significant impact on the management of the spaces:

- If the rooms are to be used for activities other than D&T the rooms would need to be kept tidy and hazardous equipment or materials stored safely.
- Keeping the teaching spaces clear of hazardous materials and equipment, will increase the need for well managed storage and preparation spaces. These will, in turn, require that D&T departments are supported by sufficient, appropriately skilled, technicians.

Given the advantages in terms of delivering the D&T curriculum it would be tempting to ask why enabling D&T spaces to be used by other subjects should be a consideration at all. In part the answer is a pragmatic response to the economic demands being placed on schools. Teaching spaces need to 'earn their keep'. School managers are increasingly looking for flexibility in accommodation and a solution that meets the needs of an evolving D&T curriculum, is future proofed against future changes to that curriculum and can support the teaching of other subjects is likely to present a far more attractive proposition than one that doesn't.

Sustainable Design Education

By Jo Barnard, Director of industrial design and innovation agency Morrama and associate lecturer at the Royal College of Art.

Design Declares

I can still remember my design education, I graduated from university in 2014, and I look back on it with frustration. At school I had two amazing product design teachers and it's a testament to them that 100% of our A Level class went on to continue the subject in some form at university. At some point along the way, however, I feel there was an important piece of education that was missed out. I've ended up in a position where I am fuelling an industry reliant on production and consumption and, whilst the concept of user-centred design was drilled into me from GCSE age, I was never given the tools to make the right decisions for our planet.

I'm currently reading Victor Papanek's book *Design for the Real World*. The opening line; "there are professions more harmful than industrial design, but only a few" summarises it up well. We have a responsibility as designers that we find very easy to ignore, for the most part, because we don't know how to act on it.

How does one consider the environmental impact of each component of a product?

How can we justify adding cost to products by switching from a low-cost polymer to a plant-based alternative? Is this even the right choice if it means the product isn't as long-lasting? There are so many questions, each choice having a knock-on effect, and knowing where to start is the biggest barrier of all.

In September this year a small group of designers and I set up a campaign called <u>Design</u>. <u>Declares</u>. Our goal is to urge the design industry to come together, declare a climate and ecological emergency and take meaningful action to reimagine, rebuild and heal our world. We have written 8 Acts of emergency that lay out meaningful steps that designers can take to better



understand how they can make a difference through their practice.

Whilst the campaign is aimed at those in the profession, we are also keen for design departments in education institutions to make the commitment. If I were to summarise what that means for you, it's that you commit to including the planet (alongside the user) in your education and design briefs to students.

Let me give you an example, on the following page, using some of the 8 Acts as waypoints...



continued ..

Sustainable Design Education

By Jo Barnard, Director of industrial design and innovation agency Morrama and associate lecturer at the Royal College of Art.

Brief: To design a lamp (every design student gets asked this) with consideration for both the user experience and the impact on the planet.

Act 1 Sound the Alarm

Acknowledge that by creating a product you are taking materials from the planet, producing emissions that may harm the environment and requiring energy in use that might be reliant on fossil fuels. You will do what you can to reduce this impact as much as possible and make a meaningful product that serves a real purpose in the world.

This sounds super obvious, but it's critical. Only now, 10 years after starting higher education, is this the first thing I think about when I start a project.



Act 2 Start the Journey This is the education piece; the part that I felt was missing from my education. A decade on from University, I can see why my tutors failed. Sustainable and regenerative design is complex, it relies on a systemic design thinking approach and an acknowledgement that every decision has an impact on the planet in some way. Learning how to make the right decisions would take time even if the answers were black and white, which they are not. However, instilling, in young designers, a desire to seek out information, to further their understanding and to be agile enough to act on new data as it comes to light, is vital.

 What materials could your lamp be made from? What makes one material better than another in terms of the climate and ecological impact?

- What processes will you use to make your lamp? How could the energy or chemical use be reduced?
- What energy or resources are required to use and maintain the lamp during its life?
- What happens to the lamp at the end of life? How can its life be extended? How can materials be recaptured?

This <u>Sustainable Design</u> <u>Handbook</u> is a useful resource for sustainable design methodologies.

Consider how the product is disposed

of and what material value can be

0.6 Manufacture impact

Act 3 Measure what you make

Getting accurate quantitative climate impact data for a product is incredibly difficult. The go-to method is a life cycle analysis, however these usually rely on complex software and much of the input information is only known once a product is being manufactured. By then it's too late to do much about it. The other option is qualitative measurement. We have a simple wheel chart that we use at Morrama to enable us to think about each lifecycle stage of a product and identify where the biggest impact is. It does not give us accurate figures, but it's a starting point that helps us focus our efforts where we can make the greatest difference.

Act 4 Educate Accelerate.

Encourage students to share their learnings on the relationship between design and environment with each other and express the importance of continuing this willingness to collaborate later in life. It's all too easy when we get into the profession to see other designers, studios, or teams as rivals. But when it comes to protecting our planet, we need to work together.

and will it be used for, what energy is required in use and maintenance and whether the product life can be extended e.g. through repair.

0.4 Distribution impact Consider the energy and emissions of transporting the materials/final product.



0.3 Manufacture impact Consider how energy intensive the manufacturing process is.

0.5 Life-time impact Consider how long can



Our product range

SILVER

inspiration came from my loved bright orange fleece jacket which I had owned since 1993. It had been made from recycled

When studying at Edge Hill

University in 2012. I had an

I wanted to ensure that the

could use in the future. My

project would be something I

assignment on sustainability, and

plastic bottles. I went on to find research by Dave Hakkens in 2012. He is a Dutch industrial designer who started Precious Plastic a movement which promotes machines and organisations who take part in plastic recycling. I used this for my

university assignment to start building a school project around plastic recycling. Precious Plastic launched its first idea for accessible plastic recycling in 2013. It used panini makers, scissors, and greaseproof paper to make coasters.

"meeting the needs of the present without compromising the ability of future generations to meet their own needs."

from What is Environmental Sustainability? Goals with Examples by Nicholas Patterson. A few years later I joined Neston High School in 2017. This was the start of our adventure; it took a little while to win over the students and staff and convince

This is a quote that resonates with me

Neston High School Makerspace

By Pat Link, facilitator of the Neston High School

them that we needed to change. We started fundraising to improve our recycling capacity by adding in-house build machines using the Precious Plastic blueprints and adapting them to make them safe to use in school.

The first machine to upgrade was our plastic shredder.

We started with a small compact handdriven shredder I bought with some fundraising. We also managed to fundraise for a high torgue motor with a gearbox to drive the shredder at 70rpm. We made even more upgrades to this machine once we had the local council's health and safety approval that the device was safe to operate in school.

Our Makerspace team meets officially once a week after school. The club is open to any student who wants to make things, learn new skills, and get help with problem-solving.





continued...



gExtraordinaryLives

waste plastic into new sustainable products. Would

please get in touch at

meantime, check out our

what we do.

Tutor 11PLI

Teacher of Engineering

and 3D Product Design STEAM Co-Ordinator

Makerspace Facilitator

Pat Link

your school like to partner up with Recycling Plastics in

school? If you are interested,

social media platforms to see

high.com. In the

Neston High School Makerspace

By Pat Link, facilitator of the Neston High School

Introducing *Precious Plastic* recycling helped us build our machines alongside the students. This was so valuable, giving them the opportunity to use the machines but also learn how to build them.

We have been awarded the STEM silver club award for the work we are doing on plastic recycling and STEAM education.

To develop our plastic recycling project, we wanted to make an injection moulder, but buying an off-the-shelf version was not going to be the answer, the cost would have wiped out our department budget. We built a machine for just over £500. We then sold the products we made, which enabled us to reinvest the money to buy more moulds and increase our production.

In 2021 we started looking into entering competitions and started planning to build our sheet press to make plastic sheets for design and make projects. We want to be able have a fully sustainable way of making new products from recycled plastic.

Our engineering students enjoy making parts for our school-made machines using our lathes and welding equipment. In 2021 we launched our community open evening and invited people to see first-hand what we are doing in school.

In 2022 our students won the *All About STEM Best of the Best award*. Students made a video showcasing our Makerspace plastic recycling project, and submitted this along with a poster showing the whole process from cleaning and sorting, shredding and injection moulding. If students attend Makerspace on Thursdays, they receive training to use the machines.

We will be helping to host Wirral Make Fest in June of 2023; if you are interested in showcasing or just coming along, please get in touch.

The hard work we have put in as a team, and the buzz about the project in school and the local community encouraged us to submit an application for the environmental category of the Educate Awards (North West). We were delighted to be recognised as the overall winner in this category at a prestigious event in Liverpool Cathedral in November. Winning the award has spurred us on to dream bigger and better for 2023.

It is now second nature for all 1700 students at Neston to save their bottle tops and collect them for our project.







By Steve Cole, Associated Pallets





PALIE N SCHOOLS Now, more than ever before, schools are looking for ways to integrate sustainability into their D&T curriculum. One way is to reuse materials we might otherwise throw away. One such material is the wooden pallet. Pallets can be broken down for their raw materials but can also be used for interesting starting points for GCSE and A-level projects. Students can be given the challenge of upcycling pallets into usable products.

> Hundreds of millions of pallets are used around the world each year to transport and store goods. With so many being used so frequently, many pallets often come to the end of their life and are ready for disposal. It is important that businesses and people across all industries who use pallets, know how to recycle them in the correct manor.

How Are Wooden Pallets Recycled?

The first goal for any damaged pallets should be to get them back into service. This may mean refurbishment or repairing the broken pallet. However, there

may be times when the pallets are beyond repair.

In these instances, pallets can be stripped and dismantled into reusable components with a pallet dismantling machine.

The timber from that, once good, pallet will be reused and applied to other used pallets.

Any pallets which are of an odd size, unable to be reused or dismantled will be sent to a chipping facility. They then will be turned into sawdust and other wood chippings. The wood chippings or sawdust will then be used by farmers and many other industries. Many of the wood chippings you see on park floor areas are from old end-of-life pallets.

Benefits of Recycling Pallets

 Reduce waste to landfill If a pallet is not disposed of correctly, it can often end up in landfill. This of course has damaging effect on the local environment and much more. By recycling pallets, not only are they diverted from landfill, but they have value through the creation of new products

Conserve natural resources Recycling pallet materials to create new products means fewer natural resources will be harvested and manufactured into goods. This is significant in preserving trees. Of course, trees are renewable, but do take many years to regrow.

Reduce climate change effects

Pallet recycling can help reduce the effects of climate change. Trees naturally process carbon dioxide and help reduce the levels of greenhouse gases in the atmosphere. Additionally, landfill sites contribute to greenhouse gases, this means any waste diverted from landfill is key in helping the environment.

Making with Pallets

Pallets can be used to make all sorts of products.

To enable students to understand certain timber processes, pallets can be used as an excellent case study.

Class discussions could focus on why certain types of softwood or hardwood are chosen for pallets and how pine is often chosen, due to its consistency in strength and weight alongside its ability to be kiln dried and therefore resist mould, fungi and other pests. Students could be introduced to the processing of ripping felled logs into stock-form boards via a case study of a humble pallet.

Students could also be introduced to heat treatment, a processes often required if the pallet is going to be used for foodstuffs or internationally shipped.

The way the pallet is nailed together could also introduce students to pneumatic nail guns.

A pallet is a great example product for understanding mass production and largescale machinery in a factory setting.



Textíles Action for a Sustainable Future: Making it Succeed in the Curriculum

By Dawn Foxall, Textiles Skills Centre



Textiles Skills Centre Online Conference 18th March (For More Info CLICK HERE): It's time to ramp things up!

Textiles Skills Centre has taken on board the urgency of climate and environmental sustainability! *We need* to become part of the solution, not part of the pollution.

As educators, we have been tasked to equip and empower young people with the tools to tackle the climate change challenge. Textiles Skills Centre online conference aims to give up-to-date information, advice and practical guidance on integrating climate education into D&T and art & design textiles courses.

The focus is on the fashion & textiles industry and curriculum, with sustainability experts from high street clothing brands such as Primark and Marks & Spencer; designers such as Wayne Hemmingway; climate experts from the MET office; manufacturers and education leaders. They will all be discussing how they are addressing the challenges of ESG (*Environmental, Social and Governance– standards measuring a business's impact on society, the environment, and how transparent and accountable it is*), and climate change action, and how this can be integrating into the curriculum. They will be identifying and outlining how a step change in climate and sustainability education can be made, so that young people have the skills and knowledge needed for the 21st century.

Sustainability in education is being addressed by several groups and associations, including The British Educational Research Association (BERA) which published a manifesto: Education for Environmental Sustainability: a Guide for Schools. This guide was based on findings from a study to analyse where we are now with education for environmental sustainability, what change is needed, and the barriers to this change.



A summary of the findings showed: Undervaluing of environmental sustainability in government policy, budgetary constraints for schools, the nature of the curriculum and assessment.

Prioritising economic considerations in decision-making, teacher workload, exam pressures and constraints, and **insufficient confidence**, **knowledge and agency** for all members of the school community.

Download the report **<u>HERE</u>**



Textiles, art and design & technology subjects are the obvious place to start to embed understanding and knowledge of sustainability and moral values, which could be carried forward into the new generation of artists and

designers. We must, however, address the current issues within the subjects of just designing more stuff and re-educating textiles and art teachers right from GCSE through to degree level, to update the curriculum and stay connected to the needs of the textiles industry.

We know the fashion and textiles industry is one of the biggest global industries, and the most resource-consuming because of its fast cycles, vast consumption, and global supply networks. The practice of sustainability within such an industry is incredibly difficult, with every stage of a garment's life cycle impacting on climate and the environment.

However, a recent study with students (*Drapers: Sustainability and the Consumer report 2022*) demonstrated there is still a lack of awareness of the full impact of the industry and understanding of what sustainable fashion actually is. When pressed, most students focused on the repair, reuse, and recycling as their interpretation of fashion sustainability, with little consideration of ethical/social injustice involved in making garments/textile products and the impact that raw materials and resources (water, energy, etc.) have on the planet. Textiles Action for a Sustainable Future: Making it Succeed in the Curriculum

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The fact is that as educators we are in the perfect place to deliver this message and ensure that young people understand fully the impact of their consumption habits and change their attitudes towards consumption. Textiles, art, design and technology subjects are where skills and understanding of sustainable practices can be taught.

'Respondents believed that intervention in school curricula was the best way to educate future generations about sustainability, and that having the skills to maintain longevity in clothing use was a key factor to a more sustainable fashion future.'

(Educating for Change? An investigation into consumers' perception of sustainability and the educational drivers needed to support sustainable consumption) Kirsty Bennetta & Jemma Oeppen Hill (Sept 2021)

In 2015 the United Nations announced the 2030 Sustainable Development Goals, introducing 17 goals with the purpose of meeting the future needs of the planet.

The aim is that by 2030 the sustainable development goals will be taught in every classroom (United Nations, 2021c).

Through the introduction of EBAC, textiles subjects were merged with art and design & technology, reducing the range of KS4 options and leaving fewer opportunities for young people to understand sustainability issues and acquire vital life skills needed to upcycle or repair clothing.

Incorporating sustainability into the curriculum is the most effective way to educate the future consumer. The embedding of fundamental sustainability practices from a young age can successfully influence and change consumer habits, because it is understood that knowledge acquired at school forms lasting habits. An understanding of the negative impacts of fashion and/or how to partake in sustainable practices would provide the future consumer the power to decide on their purchasing decisions and which ultimately affects the cycle. But it isn't just about circular design and increasing longevity of textiles/fashion products that we can teach. As designers and creators, our students can work with a host of options and opportunities to develop new products and ideas to support environmental issues. For example, producing natural dyes, experimenting and growing new biomaterials, such as mycelium and creating their own textile waste action plan for school. There are numerous ways to embed the skills and messaging and a whole variety of cross-curricular activities.

If business and education act together, we can overcome the apathy of having inherited a huge problem, and focus on being an active part of the solution.

Join the Textiles Skills Centre to focus on sustainability and climate change, and how textiles education can make practical and real differences.

Useful Links

https://www.theguardian.com/teachernetwork/2017/apr/06/want-to-teach-ethical-fashion-to-kidsheres-how https://oursharedworld.net/education-for-sustainable-fashion/ https://www.gov.uk/government/publications/sustainabilityand-climate-change-strategy/sustainability-and-climatechange-a-strategy-for-the-education-and-childrens-services-syst ems https://wrap.org.uk/resources/report/citizen-insights-clothinglongevity-and-circular-business-models-receptivity-uk https://www.drapersonline.com/guides/collaborating-forchange-sustainability-report-2022 https://www.tandfonline.com/doi/epdf/10.1080/17543266.20 22.2083694 https://www.drapersonline.com/guides/sustainability-and-theconsumer-2022 https://se-ed.co.uk https://www.the-sustainable-fashioncollective.com/2016/08/24/fabric-made-fungi https://materialdistrict.com/article/mycotex-textilemushroom-mycelium/

Acrylic Benders

By John Donnelly, of DTResources limited, www.dtresources.co.uk

Around 30 years ago, I was a Year 7 student, and one of the first projects I made then was an acrylic keyring. The profile was cut with a hacksaw, the edges smoothed with a file, wet 'n' dry paper and then polished with T-Cut. Once the keyring was polished it was heated for around five minutes using a traditional strip heater. Even now, all these years on, I can remember the line of students waiting for their turn to heat the acrylic up.

Nowadays, many schools use laser cutters to shape acrylic in seconds, rather than the weeks it took me to make my keyring. It is still however very much the case that bends and twists in acrylic are achieved by the rather slow process of heating using a strip heater/line bender. Most schools have old strip heaters and I guess that until now, using a strip heater is 'just the way it's done'. Whilst learning about thermoforming polymers may be an objective you wish to teach, the time taken to actually see it in action can now be speeded up massively by the use of acrylic benders. Acrylic can now be heated and bent in around 15 seconds, as opposed to five minutes.



The bender's anodised aluminium plates both concentrate the heat, and apply it to both sides of the acrylic at once, thus speeding up the heating The exact same learning outcome can be achieved by a whole class in minutes, with very little waiting time, rather than needing a few lessons for a class to heat and shape the acrylic the traditional method.

The pair of acrylic benders available can be used to heat a 3mm line (useful for tight, accurate work) or a 50mm gap (suitable for larger curves or twists). They operate at low power, 60W, meaning they are cheap to run. They heat up in around 90 seconds and will heat 3mm acrylic around 15 seconds. Due to the thin profile of the tool, for the first time ever, shapes can be produced that the tradition strip heater could not. No longer will students need to hold acrylic near a hot element or wait in line for what seems like a whole lesson.

When bought, the set of acrylic benders come as a pair, a thin 3mm and wide 50mm. The heating element is 100mm long. Also included in the kit is a 'how to use guide', a model risk assessment for school use and some sample acrylic parts for making a couple of phone stands and some acrylic twists suitable for using with a windchime.

The following link is to a short video of Ross McGill, also known as @teachertoolkit using the acrylic benders

https://twitter.com/TeacherToolkit/status/1577313887803826176 You can also check out the acrylic benders on the 'dtresourcesItd' Instagram account or via the website <u>www.dtresources.co.uk</u>

Affordable Food Lessons for All

The cost of living is an ever-growing problem, which looks likely to continue. This affects our subject, especially where parents/carers are asked to provide ingredients, or make a donation towards the food. Budgets will now be extremely tight. There is also pressure on schools as budgets are being stretched further for greater value.

Understanding the true cost of food education is of the upmost importance. From individual recipes through to schemes of work, true costs need to be calculated for you, the parents and pupils.

The cost of our subject is in the spotlight, which provides an opportunity to demonstrate how healthy, tasty dishes can be prepared and cooked, being mindful of cost - key skills for life.



Affordable Food Lessons for All:

- provides advice and practical solutions for addressing cost in food lessons
- shows how 24 recipes can be prepared and cooked for less than £18 each in 60 minutes or less.
- Used over three-years, the recipes also take into account progression and food group coverage
- gives pros and cons for ingredient provision, as well as costings to share with senior colleagues
- has a range of support materials and online training
- is editable, so you can make it your own, using it in your planning and teaching
- supports teachers' professional development and training. A certificate of completion is provided.

Affordable Food Lessons for All comprises:

- unlimited access to a modular online course, featuring all the resources below and training videos
- a detailed guide, providing support information and guidance
- a series of PPT presentations, focusing on the resources, ingredient provision, learning, budgeting and management tips
- 24 recipes (as PDFs and WORD files), which have been tested and fully costed
- a PPT presentation about the recipes, showing images of the ingredients (amounts and labels) and final dishes (with top tips)
- three comprehensive Excel spreadsheets showing full recipe cost breakdown, including a 'blank' excel chart for your own use as a template in school
- three charts food skills, food group and learning opportunities
- letters to send home about ingredient provision
- sources of further information
- an action planner and costing planner
- a CPD certificate, on completion

Developed and written by Louise T Davies and Roy Ballam, previous authoring team of 'Licence to Cook' and 'Real Meals' recipes.



Foundations in Food Practical Course for Non-Specialist Food Teachers.

The Food Teachers Centre recognising the shortage of specialist food teachers, also supports non-specialists (staff who do not hold food as their

main subject specialism) being drafted in to teach food in schools at KS3.

The course provides the opportunity to look at the pedagogy of teaching food and cover the practical requirements which will help practical sessions run smoothly. Focusing on basic nutrition, health and safety, setting up demonstrations and tips on how to set up the practical classroom. The practical aspect of the day covers and builds on key practical skills required at KS3 and provides ready to use resources to take away.

The non-specialist training is a one-day practical session with mentor support. The cost is $\pounds 250 +$ Eventbrite fees ZERO VAT.

All enquiries to <u>info@foodteacherscentre.co.uk</u> www.foodteacherscentre.co.uk



Teaching Primary Food and Nutrition

By Frances Meek, Education Services Manager, British Nutrition Foundation.

Are you a primary teacher, trainee or teaching assistant? Then this is for you.

Teaching Primary Food and Nutrition is a new professional development programme.

The British Nutrition Foundation is delighted to announce the launch of the <u>Teaching Primary Food and Nutrition</u> (TPFN) programme, which has been developed to equip teachers, trainees and teaching assistants with the necessary knowledge and skills to teach high quality food and nutrition lessons, and inspire them to champion a whole school approach to food. The programme formalises and supports professional learning around food and nutrition teaching. TPFN is a free, continuing professional development (CPD) programme for the busy primary teacher, trainee or teaching assistant. While teaching food and nutrition may take up a relatively small part of the curriculum, it does have some unique management issues and teaching approaches which need to be carefully considered (for example, managing and teaching practical cooking lessons).

The overall aim of the programme is to build confidence and competence in teaching food and nutrition, whether practitioners are new to the profession, or have been teaching, or working in schools, for a while (we can all learn something new).

The TPFN programme is built on two important documents, providing a firm foundation to support primary practitioner's professional development.

These are:

Food teaching in primary schools:
 A framework of knowledge and skills
 (2015) - a government checklist of key knowledge and skills

Area of practice	Food teaching in primary	Characteristics of good practice
	schools: A framework of	in teaching food and nutrition
	knowledge and skills	in primary schhols
Teaching the food curriculum	Section 3	Characteristic 3
Running practical food lessons	Section 4	Characteristic 4
Good food hygene and safety	Section 9	Characteristic 5
Developing food skills	Section 5	Characteristic 6
Where food comes from	Section 8	Characteristic 7
Healthy eating	Section 7	Characteristic 8
Making informed choices	Section 8	Characteristic 9
Whole school approach	Section 2	Characteristic 2

• <u>Characteristics of good practice in</u> <u>teaching food and nutrition in primary</u> <u>schools</u> (2020) - a guide to exemplify what good food teaching looks like in primary schools

These two documents set out knowledge and skills to be developed over time, in order to deliver high quality food and nutrition lessons. The concept for both documents is to set standards and provide helpful, practical guidance for the classroom. There is no expectation for practitioners to master every aspect, the documents are there to help them feel more confident and competent about delivering food lessons to pupils in their school.

The two documents cover the following eight areas of practice, which are the basis of the TPFN programme. Both documents also cover developing professional competence, which practitioners will demonstrate by being involved and engaged in the programme.

How will the TPFN programme help the busy primary practitioner?

Working through the programme will allow practitioners to:

- identify and build on their strengths
- determine areas of development and training
- plan their own professional development
 against national documents
- take responsibility for their own professional development
- gather and store everything needed to plan, implement and evidence their learning journey in a FREE physical portfolio*.
- * The physical portfolio will be sent to the first 1,500 primary practitioners who register for the TPFN programme.

In relation to food and nutrition teaching, it will:

- build on food skills and practical classroom management
- update food and nutrition subject knowledge, such as that around healthier and more sustainable diets and where food comes from
- increase confidence and competence.

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How will the busy primary practitioner get the most from the TPFN programme?

1. Complete a food and nutrition experience self-audit, which identifies areas of strength, areas that need refreshing and areas where there is little or no experience.

- 2. Proactively engage with the portfolio process and use it to plan and support personal training needs along with recording and evidencing professional development.
- 3. Engage with the TPFN training programme including virtual webinars, practical workshops and conferences all designed to equip practitioners with the necessary knowledge and skills to teach high quality food and nutrition lessons.

4. Remember that CPD does not only relate to formal training courses. It is important to recognise the wealth of professional learning experiences found in day-to-day practice and through engagement with pupils, trainee teachers, stakeholders, and professional organisations, such as the British Nutrition Foundation, CLEAPSS, and the D&T Association.

5. Carry out reflection of your practice, including ongoing and summative reflection, which provides useful insight that should fuel the process of self-discovery and teaching improvement.

6. Update the British Nutrition Foundation on progress and successes!

What should you do now?

Find out more about the <u>Teaching Primary</u> <u>Food and Nutrition</u> professional development programme and register as soon as you can. The first 1,500 primary practitioners will receive a free physical professional portfolio, which will be sent out later this term. Further mailings will take place during the second year of the project, to support you as you develop your portfolio.

Acknowledgement

The British Nutrition Foundation gratefully acknowledges the support of the All Saints Educational Trust in the development of this programme (enabling it to be provided free of charge to UK primary schools).

British Nutrition Foundation https://www.nutrition.org.uk/

Food – a fact of life – https://www.foodafactoflife.org.uk/

Teaching Primary Food and Nutrition https://www.foodafactoflife.org.uk/teachin g-primary-food-and-nutrition/_

Contact – education@nutrition.org.uk







CLEAPSS small print

Respiratory Protective equipment (RPE)

We were recently sent a copy of a leaflet that had been distributed to a number of colleges.

This leaflet carries logos for a number of organisations, including the HSE.

It carried what it states as an updated position, in terms of handling timber materials and the associated risks from inhaling wood dust. It states that all users of machines working on timber products must now wear Respiratory Protective Equipment (RPE), regardless of the effectiveness of any associated Local Exhaust Ventilation (LEV).

We have raised this with HSE, as it is a significant change to the existing guidance, which is that RPE should only be considered as a last resort, and not as a substitute for effective LEV.

We will report back on any developments in this area as we hear them. In the meantime our advice on RPE can be found in CLEAPSS guide GL310 Guide to respiratory protective equipment in D&T and science: <u>https://dt.cleapss.org.uk/Resource-File/GL310-Guide-to-Respiratory-Protective-Equipment-RPE-in-D-T-and-science.pdf</u>

Situations where RPE is specifically advised

• Working with GRP

The room must be well ventilated, or work carried out outside, users may still require RPE to protect, them from dust. see: <u>https://dt.cleapss.org.uk/Resource-</u> <u>File/MRAT-054-GRP-Resin-Casting-</u> <u>Chemicals-and-Fumes.pdf</u>

Mixing cement

When mixing dry cement with water, the operation should be carried out by the t teacher or technician and RPE should be worn to avoid breathing in the dry cement dust, see

https://dt.cleapss.org.uk/Resource-File/MRAT-175-Concrete-Cement-Mixers.pdf



Sanders with local extraction should be used, but as the surface areas are too large for general extraction, the operator may still require RPE, see

https://dt.cleapss.org.uk/Resource-File/MRAT-184-Surface-Preparation-By-Sanding.pdf

- Grinding or welding metal Local extraction must be used, but the operator may again also require RPE. <u>https://dt.cleapss.org.uk/Resource/</u> <u>MRAT-034-Dust-from-Grinding-</u> <u>Metal.aspx</u>
- Emptying the LEV hoppers
 The technician will need to wear RPE.
 <u>https://dt.cleapss.org.uk/Resource/</u>
 <u>G225-Local-Exhaust-</u>
 <u>Ventilation-in-D-T.aspx</u>



Immediate remedial measures (IRM)

Since our major revision of the MRATs in 2019, new advice has emerged from various agencies regarding irrigation of burns and chemical splashes as part of IRM (often incorrectly referred to as 'First Aid')

The new guidance is now:

- where someone has a minor burn, the area should be cooled and cleaned by running it under cold water for at least 20 minutes (was 10 minutes)
- Where someone has a chemical in their eye or on their skin, it should be irrigated for at least 20 minutes (also was 10 minutes)

Both of these actions should be continued until further advice or support is arranged which may include contacting the first aider or by calling NHS 111.

If you are supervising practical work, you should review the relevant MRAT and take note of the updated Immediate Remedial Measures notes.

The index of all 205 MRATs, on the website, clearly indicates those MRATs which have been updated in some way:

https://dt.cleapss.org.uk/Resource/MRATindex.aspx_______