DESIGN & TECHNOLOGY ASSOCIATION

Health and Safety Training in Design and Technology
Secondary Core Health & Safety (SCHS)

SCHS	

Forename: _____ Surname: _____

School / College / Institution: _____

Course date: _____

These Training and Accreditation Guidelines are based on, and should be used in conjunction with the following essential publications:

- Health and Safety Training Standards in Design and Technology: D&T Association.
- BS 4163:2021+A1:2022 Health and safety for design and technology in educational and similar establishments – Code of practice.
- Model Risk Assessments for D&T in Secondary Schools and Colleges: CLEAPSS.

Summary Overview **Please tick the boxes below to confirm the sections that you have completed in this document:**	
1. Requirements relating to secondary core health and safety.	
i. Essential publications.	☐
ii. Health and safety training.	☐
iii. Risk assessment.	☐
iv. Teaching and learning strategies.	☐
v. COSHH assessment.	☐
vi. Environment.	☐
vii. Portable appliance testing.	☐
viii. LEV testing.	☐
ix. Maintenance of work equipment.	☐

The RDTHSC/Trainer will sign and date this form on completion.

RDTHSC/Trainer signature: _____ Date: _____

Delegate signature: _____ Date: _____

Please tick the individual requirements listed in the following sections to confirm your knowledge, skills and understanding, and that you have completed the Practical Assessments:

Assessment Task 1
Requirements Relating to Secondary Core Health & Safety–
what you should know and understand:



i. Essential publications.

a. Know and understand current legislation and guidance at national, LA and school level relating to health and safety and teaching design and technology.

- The major piece of health and safety legislation in Great Britain is the Health and Safety at Work etc Act 1974. It provides the legal framework to promote, stimulate and encourage high standards. The Act sets out the general duties that employers have towards employees and members of the public, and employees have to themselves and to each other.
- Besides the Act itself, most of the laws relating to health and safety at work are contained within a large body of regulations that are aimed at specific requirements, including:
  - The Management of Health and Safety at Work Regulations 1999
  - The Workplace (Health, Safety and Welfare) Regulations 1992
  - The Health and Safety (Display Screen Equipment) Regulations 1992
  - The Personal Protective Equipment at Work Regulations 1992
  - The Provision and Use of Work Equipment Regulations 1998
  - The Manual Handling Operations Regulations 1992
  - The Health and Safety (First Aid) Regulations 1981
  - The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR).
  - The Control of Noise at Work Regulations 2005
  - The Electricity at Work Regulations 1989
  - The Control of Substances Hazardous to Health Regulations 2002 (COSHH*)*
- Approved Codes of Practice (ACoPs) supplement Acts and regulations in order to give guidance on the general requirements set out in the legislation and enable the legislation to be kept up to date by revising the ACoP rather than the law. They give advice on how to comply with the law by, for example, providing a guide to what is 'reasonably practicable'.
- Failure to comply with an ACoP is not an offence in itself, but failure is held to be proof of contravention of a requirement to which a code applies unless a defendant can show that compliance was achieved in some equally good way.
- The Health and Safety Executive (HSE) has the power to approve codes of practice of its own, or of others such as the British Standards Institution. The British Standard '*BS 4163:2021+A1:2022 Health and safety for design and technology in educational and similar establishments – Code of Practice'* provides this level of guidance for all those involved in teaching D&T.
- Guidance Notes are documents issued by the HSE as opinions on good practice. They have no legal force, but because of their origin and the experience employed in their production, they will be 'persuasive' in practice to the lower courts and useful in civil cases to establish reasonable standards prevailing in an industry.
- ACoPs and Guidance Notes can therefore be said to have a 'quasi-legal' status, rather like the Highway Code. ☐

b. Understand their responsibilities as employees and their employer's responsibilities towards them.

- As noted above, the Health and Safety at Work etc. Act (1974) sets out the responsibilities of both employers and employees, e.g.:
- Duties of employers – it is the responsibility of the head teacher and governors to ensure that:
  - work is planned and organised safely;
  - colleagues receive the appropriate health and safety training;
  - teachers who are appointed are skilled and competent and receive the appropriate specialist D&T training;
  - plant and equipment are regularly checked, inspected and maintained and records are kept to verify what safety work has been completed;
  - space allocation for machines and furniture and overall workroom arrangements and number of learners working in a D&T area contribute to safe working;
  - what colleagues are asked to do is reasonable and has regard for their and the learners' health and safety;
  - the storage and use of dangerous substances and the emission of noxious substances is carefully controlled.
- Duties of employees – employees have a duty under the Act to take reasonable care to avoid injury to themselves or to others by their work activities, and to co-operate with employers and others in meeting ☐

statutory requirements. The Act also requires employees not to interfere with or misuse anything provided to protect their health, safety or welfare in compliance with the Act.

- To ensure that learners are provided with the appropriate experience to work correctly and safely, only fully trained and qualified teachers and supervised trainee teachers of D&T should therefore be permitted to take control of learners using equipment in specialist material areas.

c. Understand their liabilities as teachers and the liabilities of the school's line management structure regarding safety.

- The Health and Safety at Work etc. Act 1974 places a general duty on employers to ensure, as far as is reasonably practicable, the health and safety of employees and other persons affected by their activities.
- The Management of Health and Safety at Work Regulations 1999 require employers to carry out risk assessments for the purpose of identifying what should be done to comply with this general duty and any relevant Regulations made under this Act.
- Health and safety is an integral part of the management of schools and its implications need to be considered whenever related decisions are made. Governors and head teachers are responsible for everything over which they have control and are expected to take all reasonable measures within their authority to avoid or minimise problems. Governors are now able to exercise authority, DEP Circular 7/88 confirming that: 'Governing bodies now have a statutory duty to ensure Health and Safety on premises under their control'. Governors therefore are now in a position to take decisions affecting health and safety.
- The duty of care imposed on employers is delegated directly to teachers with regard to learners. Teachers who can demonstrate that they apply the D&TA Health and Safety Training Standards in their day-to-day teaching will be deemed to exercise this duty of care.
- Teachers put themselves seriously at risk if they leave pupils unattended in D&T lessons for any reason. ☐

d. Know and apply BS 4163:2021+A1:2022 Health and safety for design and technology in educational and similar establishments – Code of Practice.

- This British Standard provides recommendations and guidance for persons responsible for the safe use of equipment and machinery in educational and similar establishments and covers:
  - Health and safety management
  - Planning services
  - Teaching areas, equipment, tools and processes
- The recommendations cover the supply and safe use of equipment, machine tools, materials and chemicals, personal protection and safety management, with particular reference to the hazards involved and the risk control measures that should be followed.
- BS4163:2021+A1:2022 covers all aspects of D&T and all schools should ensure their equipment and room planning conforms to these standards. Failure to do so may increase the risk beyond an acceptable limit.
- This British Standard applies to schools of all types, including those maintained by local authorities, academies, free schools, independent schools, and any type of school for learners with special educational needs. It will also be helpful to further education colleges, universities, teacher training establishments, adult education workshops and workshops in hospitals and prisons. Implementation of this British Standard provides one way to demonstrate that reasonable and practicable steps have been taken to minimise risks from the machinery, equipment, processes and materials used. ☐

ii. Health and safety training.

a. Know what health and safety training is required, what learners need to be taught about health and safety and what records of individual training should be kept.

- BS 4163:2021+A1:2022 notes that all employers are required under the Health and Safety at Work Act 1974 to provide, as far as is reasonably practicable, all information, instruction, training and supervision necessary to ensure the health and safety of their employees.
- Employers are required, under the Management of Health and Safety at Work Regulations 1999, to take into account all employees' capabilities with regard to health and safety.
- The Provision and Use of Work Equipment Regulations (PUWER) 1998 (Regulation 9) require that all persons who use work equipment have received adequate training.
- *'Employees should be competent to undertake the tasks expected of them. The competence of relevant employees should be part of the risk assessment process. Proper health and safety training should be provided to employees on induction and when exposed to any new or increased risks.'*
- *'The D&T Association has published training standards which provide a framework that employers can use to cover all elements of health and safety training for D&T. The PUWER regulations require refresher training to be provided when necessary.'*
- *'Refresher training should be undertaken at least every five years.'* ☐

- *'Accreditation provides a record of the training undertaken.' 'All employees and supporting adults should be trained in safe use of equipment, machinery and processes during initial training, or by in-service training. All those involved in any aspects of food handling should have at least a recognized food safety certificate.'*
- Learners should be fully instructed in the use of equipment and processes before commencing the activity. Learners should be fully instructed in hazards associated with equipment and the precautions provided to counter these. The teaching environment should be appropriate for the task, it should be well maintained and the level of supervision appropriate for the level of risk.
- Close supervision should be provided with high-risk operations. The use of hand-held power tools should be closely monitored, especially if powered by mains electricity.
- Tools and equipment should be well maintained, including regular sharpening of tools as appropriate. 'A record of learners' competencies should be kept.

b. Are aware of the need to have specific training in order to use, and teach others how to use, certain tools and equipment, including potentially dangerous machinery.

- Colleagues should not use any equipment with which they do not feel confident or are not qualified to use. The D&TA Health and Safety Accreditation scheme identifies in the Specialist Extension Levels, areas of activity that require specific training and accreditation for teachers working in workshop environment i.e.:
  - S1HS Wood sawing machines
  - S2HS Centre lathe/CNC lathe
  - S3HS Casting non-ferrous metals
  - S4HS Electric welding/cutting
  - S5HS Gas welding/cutting
  - S6HS Milling machines/CNC centre
  - S7HS Wood turning lathe
  - S8HS Planer/thicknesser machine
  - S9HS Portable power tools
  - S10HS Grinding and sharpening
  - S11HS Site Staff
  - S12HS Technicians: knowledge, skills & understanding

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iii. Risk assessment.

a. Are able to undertake risk assessments, i.e. identify hazards, decide what might be harmful and who might be harmed, evaluate the risks and decide what needs to be done to reduce those risks, record significant findings and review their assessment.

- The Management of Health and Safety at Work Regulations 1999 require that employers carry out an assessment of the risks to health and safety of employees and other persons. The Regulations require that young persons (persons under 18) are not exposed to an increased health and safety risk through lack of experience, lack of awareness of risks or lack of maturity. Colleagues therefore, need to undertake risk assessments of the activities that take place in D&T. These can be divided into:
  - Risk assessment of the teaching, preparation and storage environments used by colleagues and learners, to create a safe place of work.
  - Risk assessment of the activities undertaken by colleagues and learners, to create safe systems of work.
- The Management Regulations note that '*There are no fixed rules about how a risk assessment should be carried out'.* A risk assessment is simply a careful examination of what, in your work, could cause harm to people so that you can weigh up whether you have taken enough precautions or should do more to prevent harm. The procedure a department adopts should relate to the school/college policy.
- The process that all risk assessments should follow is described on the HSE website. https://www.hse.gov.uk/simple-health-safety/risk/ and comprises the following steps:
  - Step 1 – Identify the hazards
  - Step 2 – Assess the risks - decide who might be harmed and how
  - Step 3 – Control the risks - evaluate the risks and decide on precautions.
  - Step 4 – Record your findings (and implement them)
  - Step 5 – Review the controls - review your assessment and update if necessary.
- Risk assessment should be undertaken by a competent person, and it is the employer's responsibility to ensure that those carrying out the work are competent.
- The Management Regulations note that: 'Employers who control a number of similar workplaces containing similar activities may produce a 'model' risk assessment reflecting the core hazards and risks associated with these

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activities. 'Model' assessments may also be produced by trade associations, employers' bodies or other organisations concerned with a particular activity.'

- Such 'model' assessments may be employed by employers or managers of each workplace, but only if they:
  a) satisfy themselves that the 'model' assessment is appropriate to their type of work; and
  b) adapt the 'model' to the detail of their own actual work situations, including any extension necessary to cover hazards and risks not referred to in the 'model'.
- Both BS 4163:2021+A1:2022 and the CLEAPSS Model Risk Assessments can be used by employers and employees to provide 'model' risk assessments, see 'Risk Assessment in Secondary Schools and Colleges Design and Technology Teaching Environments' (available from the D&TA). Section 12 sets out the procedure for adopting and adapting these 'model' risk assessments to meet the requirements of the Management Regulations.

b. Are able, when planning design and technology activities, to take account of the individual circumstances relating to the group of learners, the materials, components, equipment, processes and tools to be used and the environment in which it will be taught.

- Adaptation of 'model' risk assessments will involve identifying additional hazards and control measures to those detailed in the 'model' risk assessments, based upon your knowledge and understanding of your local situation. This should include a consideration of: the suitability of the overall working environment in which the activity is taking place, including group size, age and behaviour of the group, and the type of equipment and machinery available.
- When identifying additional hazards and control measures that need to be implemented, colleagues will need to ask for example:
  - Does the room have any layout/space/circulation problems which affect the activity?
  - Is the activity being undertaken by colleagues or learners?
  - In the case of colleagues, do they have the skills/experience/training to undertake the activity?
  - In the case of learners, do they have the maturity/experience to undertake the activity?
  - What training is required to undertake the activity, both by colleagues and learners?
  - What records of training by learners will be kept?
  - Do HLTAs/TAs need to be trained before supporting learners undertaking the activity?
  - Does the number of learners with behavioural problems/SEN/EAL restrict the activity?
  - Should the activity be restricted to learners working in small groups?
  - Should the activity, i.e. the use of this equipment/appliance/machinery/substance, be restricted to learners in particular key stages?
  - Can the activity be undertaken more safely by using different equipment/appliances/machinery/tools/substances?
  - What level of supervision will be necessary for the activity? One-to-one or whole class?
  - Does the activity require the support of the technician or LSAs?
  - Risk assessments are explicitly required by the COSHH Regulations. Will LEV be required? Will PPE be required?

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c. Are able, on the basis of this information, to analyse and evaluate the potential degree of hurt and damage, and modify plans where necessary in order to decide on the safe management of these activities.

- There is generally an accepted hierarchy of control methods that should be followed when it has been identified that further control measures are required. The hierarchy is as follows:
  - Elimination
  - Substitution
  - Isolation
  - Safe systems/guarding
  - Warnings
  - PPE (last resort or in addition to)

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iv. Teaching and learning strategies.

a. Have a secure knowledge and understanding and capability to use equipment, processes and tools in a safe manner, before they use them and teach their use to others.

- Teachers should be aware of the following general checklist in order to demonstrate that they have a secure knowledge of the equipment and processes they use in schools:
  - The level of supervision required
  - Space required for the equipment/activity
  - Lighting and ventilation requirements
  - Electrical supply requirements and checks
  - COSHH requirements, e.g. with reference to dust, swarf and other by-products
  - Hygiene issues

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○ Guarding requirements ○ PPE requirements ○ Appropriate systems for holding work ○ Rate for speed and feed where applicable	
b. Can plan and conduct lessons safely, taking account of the size and nature of the class and their activities, e.g. interactions with individual learners are organised so that they are able to maintain an overview of the actions of the rest of the class. • Space and the size of the group are probably the most contentious of all the H&S issues in D&T. The overcrowding often experienced by D&T teachers compromises the health, safety and welfare of both colleagues and learners. • BS 4163:2021+A1:2022, section 9.1, provides advice on the recommended maximum number of learners in any one work area and lists criteria that should be used to determine the appropriate number of learners in the work area. • It might be necessary to carry out risk assessments to provide a safe place of work and judge what would be considered a 'reasonable' number of workspaces for a particular teaching area, see Risk Assessment in Secondary Schools and Colleges Design and Technology Teaching Environments, 2024, D&TA, sections 10 and 11. • From BS 4163:2021+A1:2022, if the number of learners in a teaching area exceeds the number for which the room was planned, or creates unsafe working conditions, the employer can be held liable under the Health and Safety at Work Act 1974 for failing to provide safe working conditions.	☐
c. Can adopt a range of appropriate teaching strategies, understanding the risks and management issues with learners undertaking design and technology activities, e.g. using group work to reduce the amount of equipment being used. • Teaching strategies should be employed to ensure that the appropriate level of supervision is given for particular situations, i.e. ○ General class supervision – suitable for low-risk activities such as design or research work. General class supervision means that the teacher has an overall view of the whole class and is able to monitor the actions of all learners. The shape of the room (pillars, 'L' shaped rooms etc.) is an important factor and teachers should ensure that layout of the desks facilitates effective monitoring. ○ Close class supervision – should be employed where medium risk activities are being carried out. Close class supervision involves the teacher adopting a position in the room which will enable them to intervene quickly in any of the activities should it become necessary. For instance many food rooms are laid out in bays. The teacher supervising practical food lessons should be able to reach each bay without having to negotiate desks or other obstructions. ○ One-to-one supervision – reserved for high risk operations and requires the teacher to give total concentration on one learner. This means that they are unable to provide either close class supervision or general class supervision. Talking to and discussing individual learner's work does not constitute a one-to-one situation as the teacher should use well-practised teaching techniques such as scanning and listening to monitor the group.	☐
d. Can develop appropriate attitudes with learners in regard to health and safety, e.g. providing the opportunity for learners to be accredited using H&S passports, licences etc. • This statement underpins the need to develop in learners an appropriate culture of health and safety. Colleagues should, wherever possible, involve learners in health and safety decisions, for example, by developing their understanding of risk assessment processes, see 'e.' below. • As 1iia above, BS 4163:2021+A1:2022 notes that records of students' health and safety training should be kept. Individual departments must decide what form this will take, and which pieces of equipment and machinery will be covered by these records, e.g., by recording when students have developed competence using specific medium and high-risk equipment and machinery and collating records of the training undertaken across the department on a spreadsheet. • In addition, departments may decide to provide students with personal records of their achievements, e.g., by awarding health and safety certificates or licences to confirm that they can use specific equipment. • Departments could use forms or quizzes, which could be online, through which learners can reflect on their awareness of hazards and control measures associated with a particular process they have been trained on. This could serve as a shared record for both the learner and the department.	☐
e. Ensure that the learners are aware of safety hazards when undertaking a particular activity and are also made aware of any action(s) which should be taken in the event of an accident. • BS 4163:2021+A1:2022 notes that: ○ *'Practical experience provides opportunities to introduce learners to concepts of risk assessment and safe working methods and with encouragement, they can develop their understanding of risk assessment processes. Through application of this process, learners can be trained to use appropriate control measures to minimize risks to themselves and others. It is essential that teachers are fully conversant with hazards in the area that they supervise, and that they plan, organize, control and monitor the work so that risks can be*	☐

controlled.' • In relation to the use of equipment, BS 4163:2021+A1:2022 notes that: o *'The school or similar establishment should decide which machinery is suitable for use by each group of learners. The decision should be based on student maturity and competence, the level of supervision, and local authority/employer and national guidelines.'*	
f. Are able to ensure the safety of themselves, the learners and other colleagues in the room, especially with regard to the use of protective clothing and equipment, e.g., ensuring that eye protection with the appropriate lens and frame to conform with EN ISO 16321:2022 are provided and worn when machining. • Personal Protective Equipment (PPE) needs to be worn on many occasions in D&T (e.g. thimbles in textiles, oven mitts in food and goggles in secondary materials). It may help, however, to discuss within the department ways of creating a culture in which learners make use of such equipment as a matter of course, rather than colleagues trying to constantly supervise all activities. It may be useful for departments to identify in their Health and Safety Policy the action to be taken if learners do not follow instructions regarding PPE or if colleagues do not comply with the safety signs. • It is the teacher's responsibility to ensure that the items needed for PPE are readily to hand, clean and in sufficient quantities. It is the employer's responsibility to provide PPE in order to meet the requirements of the Personal Protective Equipment at Work Regulations 1992. PPE is defined in the Regulations as 'all equipment (including clothing) which is intended to be worn or held by a person at work and which protects them against one or more risks to their health or safety', e.g. gloves, eye protection, safety footwear etc. • The main requirement of the Regulations is that personal protective equipment is to be supplied and used at work wherever there are risks to health and safety that cannot be adequately controlled in other ways. • The Regulations also require that PPE is: properly assessed before use to ensure it is suitable; maintained and stored properly; provided with instructions on how to use it safely; and used correctly by employees. • You should ensure that any PPE purchased is 'CE' marked and complies with the requirements of these Regulations. The CE marking signifies that the PPE satisfies certain basic safety requirements and in some cases will have been tested and certified by an independent body. • BS 4163:2021+A1:2022 section 4.2.4 details the requirements for PPE in D&T. Table 1 provides an overview of the various levels of protection for eyewear. In addition, PPE requirements are described for each process and item of equipment in Sections 10 to 15. (BS EN 166 /BS EN 169 / BS EN 175 have now been superseded by EN ISO 16321:2022) • If the use of personal protective equipment is deemed necessary by risk assessment, under the Regulations this should be advised by clear signs in the area. • Where a risk assessment indicates the need for PPE, signs shall be provided in the area clearly advising the use of PPE.	☐
g. Are aware of the potential risks associated with the presence in the room of non-specialist colleagues, e.g. non- specialist teachers, visiting adults, special educational needs (SEN) support staff. • Teachers should consider the following if other colleagues are joining their groups or if supply/cover staff are using their room, i.e. o If you have support staff in your class, it is likely that the nature of the group will demand that a risk assessment is completed (or that a generic risk assessment is amended) o The support staff should be trained if they are using equipment – they should be competent to teach others to use the equipment o They should be aware of their role if the room has to be evacuated in an emergency o Support staff take up one of the available workspaces o They should be aware of departmental policies o They should know what to do in case of an accident o Supply/cover teachers should not have access to equipment they are not trained to use o The activities of supply/cover and registration groups should be monitored, particularly in food rooms where there may be a risk of food contamination	☐
h. Are aware of the risks and potential dangers associated with the dismantling of existing products in order to carry out product analysis activities. • When dismantling any item that is capable of running on mains electricity, it should never be reassembled and used again, and there should be no physical method of reconnecting it to a power source. • Food preparation and nutrition teachers need to be aware of the procedures that should be followed when undertaking product analysis with food.	☐
i. Are able to monitor and review school policy in relation to current safety working practices. • All employers employing five or more people are required to have a written Health and Safety Policy, for schools this is generally the LA or Governing Body. • Individual departments are not required to have their own Health and Safety policy, but where they do, they are	☐

regarded as being part of the institution's policy, and as such become part of that legally required document. The Health and Safety Executive seldom refer to these policies until they are investigating a reportable incident. They will almost certainly regard any policy that is not being translated into behaviour as a failure in Health and Safety Management.

- A departmental Health and Safety policy should set out clear procedures for staff and for learners, see CLEAPSS L260 Model Health & Safety Policy for D&T Departments. It is the responsibility of the head of department to monitor the effectiveness of the policy and ensure that all colleagues apply it. The policy should be copied to all D&T staff –teachers, trainee teachers, technicians, teaching assistants, etc. and automatically issued to new staff when they arrive, as part of the induction process.

j. Understand procedures to ensure that accidents and therefore liabilities are avoided.

- This statement confirms the requirement for teachers to apply the D&TA Health and Safety Training Standards in their day-to-day teaching in order to minimise the risk of accidents and reduce their own risk of litigation. The growth of 'No win No fee' solicitors highlights the importance of applying these standards. The HSE when investigating incidents, take the view that 'all accidents are preventable' and that the cause of all incidents can be attributed to an individual or the failure of effective health and safety management within an institution. ☐

v. COSHH assessment.

a. Know and can apply appropriate regulations for the use of materials, substances and processes, taking account of factors such as storage, fumes, dust, microbiological hazard, skin contact and other allergic reactions.

- Materials – see BS 4163:2021+A1:2022, section 20
- Storage – see BS 4163:2021+A1:2022, section 5.2
- Fumes – see BS 4163:2021+A1:2022, section 6.2
- Dust – see BS 4163:2021+A1:2022, section 13.1
- Dust from hardwood and composite materials, such as medium density fibreboard (MDF), has been assigned a workplace exposure limit (WEL) of 3mg/m3 and dust from softwood has been assigned a WEL of 5 mg/m3.

Skin contact

- Flammable liquids – minimise the risks from spillage by using small quantities and by replacing lids on containers quickly after use
- Avoid contact with skin by wearing PVC gloves
- Contact with the open end of a compressed air line can force air through the skin into the bloodstream
- Contact with metalworking fluids can irritate the skin
- Some dyes are classified as harmful or irritant to skin and eyes
- When preparing solutions of solid dyes, avoid raising any dust that could be inhaled and ensure that there is no skin contact by using gloves and eye protection
- If very reactive dyes are used, it is essential that solutions are prepared in a fume cupboard
- Ammonia solution and sodium chlorate (5% to 10% solutions) (bleach) are irritants to eyes and skin
- Washing powders and soaking agents can cause skin irritation

Microbiological

- Work surfaces in food handling areas should be smooth and easy to clean
- Work surfaces should not be edged with wood or plastics lipping
- Ceilings and walls should be suitable for regular cleaning
- Separate clearly coded cutting boards should be provided for working with different foods
- Ensure that food products are stored at the correct temperature

Food preparation and nutrition teachers should hold current Level 2 or above Food Hygiene accreditation.

Employees and learners should be aware of the following hazards:

- Fungi and bacteria cause food poisoning
- Poor personal hygiene can present a health hazard
- Inappropriate storage areas or temperatures can present a health hazard
- Inappropriate food preparation areas can present a health hazard
- Inappropriate clothing can present a hazard
- Cross contamination can present a health hazard
- Inadequate cleaning can present a health hazard
- Allergic reactions to food ☐

b. Are able to undertake COSHH assessments and take appropriate action, e.g. by using hazard data sheets for materials, substances and processes, and identifying how to remove or minimise the associated risks.

- Using chemicals or other hazardous substances at work can put people's health at risk, so the law requires employers to control exposure to hazardous substances to prevent ill health.
- They have to protect both employees and others who may be exposed by complying with the Control of Substances Hazardous to Health Regulations 2002 (COSHH). The regulations apply to all toxic, irritant, corrosive, harmful and poisonous substances. Both colleagues and learners can encounter a wide range of substances capable of damaging their health, for example dust from wood machining, detergents, disinfectants, chemical for testing fibres, fumes from heat treatment work, adhesives, such as epoxy resin, medium density fibreboard (MDF) and soldering fumes, and can be at risk from these substances if the right precautions are not taken.
- For the vast majority of commercial chemicals, the presence (or not) of a warning label will indicate whether COSHH is relevant. For example, there is no warning label on ordinary household washing-up liquid, so if it is used at work you do not have to worry about COSHH; but there is a warning label on bleach, and so COSHH does apply to its use in the workplace.
- Departments should obtain manufacturers' hazard data sheets for all materials and substances used in D&T that carry warning labels and ensure that they have recorded how they plan to either remove or minimise the associated risks.
- '*COSHH: A brief guide to the Regulations - What you need to know about the Control of Substances Hazardous to Health Regulations 2002 (COSHH)*', available at www.hse.gov.uk/coshh/, provides a guide to undertaking COSHH assessments.
- Records should be available for reference by all colleagues within the department.
- Wherever possible, schools should avoid using hazardous substances.
- Non-hazardous or less hazardous substances should be chosen in preference to hazardous substances. If use of a hazardous substance is unavoidable, it is essential to implement risk control measures including the following:
  - Secure storage to prevent unauthorised access
  - Hazardous substances should be stored separately so as to avoid incompatible materials coming into contact with one another
  - Adequate local exhaust and general ventilation should be provided and maintained
  - Safe systems of work, incorporating instruction, training, personal protective equipment and record-keeping, should be in use
  - Emergency procedures should be provided in case of spillage or accident
  - Emergency eye irrigation and body washing facilities should be available
  - Pre-prepared spill kits should be used if possible
- See BS 4163:2021+A1:2022, section. 5.2.4 for further information.

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vi. Environment.

a. The environment is not a health and safety hazard, and the working space is organised to minimise risks.

- The teaching environment plays a vital role in developing a health and safety culture. In general terms colleagues need to ensure that the environment is clean and well organised. It should give the impression at first sight that health and safety are important issues and demonstrate to learners that they are expected to take health and safety seriously.

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b. Adequate space is available for the activities being undertaken and between any equipment being used and other work areas, e.g. when materials are being worked, they should not impede walkways and not be a danger to learners or colleagues in surrounding areas.

- Four key activities take place in D&T: researching, designing, planning and making and testing and evaluating. These activities do not take place in any strict order, and often run concurrently. For example, a learner may make, test and evaluate a prototype, then refine their design, possibly carrying out more research, and then return to making once more.
- Learners are required to work both individually and in teams. For part of lessons they engage in whole class sessions for discussion, presentation and evaluation, often grouped in front of an interactive whiteboard.
- The size of teaching spaces therefore needs to be based on the range of activities that will take place in it and the maximum group size likely to be accommodated.
- BS 4163:2021+A1:2022, section 5.1, provides a graph showing recommended area ranges for secondary school teaching spaces, according to group size, with zones for any specialism, i.e. electronics and control systems, graphic, textiles, food, resistant material and engineering activities.
- From BS 4163:2021+A1:2022 '*the size of rooms required for different design and technology activities related to the size of the group for a single teacher should be in accordance with Table 2 in section 5.2'*. Building Bulletin 81 provides guidance on the working distances that should be allowed around tables, multi- benches and perimeter

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benching and around machinery and equipment.

- These can be used when planning room layouts to help ensure comfortable and safe working conditions. In all practical areas, the fixed items of furniture and equipment should be positioned where there is no risk of their forming hazards, particularly on escape routes in case of fire.
- Materials or loose furniture should not be allowed to accumulate and impede the movement of the occupants. Learners can be made aware of safe workshop practice by marking out safe working areas around machinery and equipment using chevron tape or painted lines.
- Temporary storage (e.g. 'I'll just pop this here while it dries') is often a cause of obstruction. Machinery, equipment and materials should be sited so as to avoid compromising circulation areas, e.g.:
  - In food preparation and nutrition, food should not be placed where it can become contaminated, such as near a heater
  - In textiles, ironing boards often impede walkways and evacuation routes
  - In the workshop, particular care needs to be taken when using portable power tools with trailing leads

c. Tools and materials are stored safely.

- Storage should be provided for bulk supplies of materials and learners' projects. Materials and projects should be stored safely. The amount of any stored substance should be as low as possible in accordance with purchasing and curriculum requirements. Inventories should be reviewed at least once a term, and redundant stocks disposed of safely in accordance with the manufacturer's instructions.
- Care should be taken to ensure that materials are stored securely and do not protrude so as to present a risk to the eyes, head or body.
- It is essential to separate and store food components and products correctly and provision should be made for storage of 4 categories of food, dry and shelf-stable foods, fresh fruit and vegetables, frozen foods and perishable foods. Suitable storage areas should be provided for chemicals, flammable liquids, liquefied petroleum gas (LPG), acetylene and oxygen.
- For further information on the storage of resistant materials, food, hazardous substances, flammable liquids, LPG, oxygen and acetylene cylinders, GRP materials, casting and forging materials, portable equipment and personal clothing, see BS 4163:2021+A1:2022, section 5.2. ☐

d. Equipment for the sole use of colleagues is secured in a way that learners are unable to use them.

- Notices are not enough to satisfy this issue. Circular saws and portable power tools for example, must be secured so that it is physically impossible for them to be used, even when these are in technician areas.
- It is advisable to have notices that name those allowed to use specific machines (unless they are too numerous for this to be practical). If the machine is for named users only then only those people should have access to keys.
- Other colleagues in schools (e.g. site staff) must be trained to D&TA standards or industry equivalent if they are to use the machines. A H&S accreditation is the best way of proving that training is adequate. ☐

e. Floors are sound, clear of obstructions and are non-slip.

- Floors in areas where D&T activities occur should be on one level. They should be provided with a non-slip surface and maintained in good condition.
- Floors in heat treatment areas should be of fire-resistant material.
- Floors in food handling areas should be washable and should be washed at the end of every day on which food preparation has taken place.
- Floors in textiles areas should not be carpeted because of the risk of injury from needles or pins caught in the pile.
- Accumulation of waste materials should be removed from floors each day.
- Floors should be kept free of obstacles and tripping hazards. See BS 4163:2021+A1:2022, section 6.3.1. ☐

f. Lighting is sufficient and appropriate.

- It is essential to provide sufficient lighting in work areas. Escape lighting should be provided where appropriate. The following levels of lighting should be provided:
  - High intensity or natural light (500 lx) in food preparation areas. Fluorescent lighting or LED lighting with a minimum colour rendering index (Ra) of 80 should be provided to avoid distortion of food colours
  - At least 500 lx for normal bench and machine work, taking into account the stroboscopic effect of fluorescent lighting
  - At least 500 lx in fabric work areas
  - 1000 lx for fine bench and machine work
  - Subdued lighting in forging, brazing and welding areas
  - Computer visual display units should be positioned away from glare and reflection from lights and windows
  - Supplementary lighting should be provided for machine tools and equipment if the main room lighting is not sufficient
- Supplementary lighting fitted to a machine and in close proximity to any operation taking place should conform to BS EN 60204-1.
- Lamps should not operate at more than separated extra-low voltage (SELV), i.e. below 50 V AC. If the switch for ☐

the supplementary light is not easily accessible to the machine tool operator, another switch should be provided adjacent to the light source. Lighting should be provided with a deep shade to prevent glare from polished surfaces. • See BS 4163:2021+A1:2022, section 6.1.	
g. Ventilation is adequate and the temperature is comfortable. • Local exhaust ventilation should be provided if a risk assessment shows that this is required, in order to comply with the Control of Substances Hazardous to Health Regulations 2002, and to ensure the safety and comfort of the operators, for the following equipment and processes: o Cooking appliances giving off steam, oil, grease, odour and heat o Equipment for heat treatment, including equipment for brazing, forging, welding, cutting, soldering and casting o Woodworking machines, including machines for sawing, sanding, routing, planing and thicknessing o Chemical processes and procedures, including acid pickling, processes involving plastics, paint spraying and procedures producing engine exhaust emissions o Metalworking machines used for grinding and polishing o Lasers and other cutters o When heating plastics, fumes can be emitted which may be harmful if inhaled. Therefore, using a properly designed and maintained LEV system is recommended to remove these fumes and protect the health of staff and learners. This could be relevant to the use of the following equipment: ovens, line benders, vacuum forming machines and 3D printers. • The type of LEV system required for fumes from heating plastics will depend on various factors such as the type of plastic, the heating method, the size of the workspace and the quantity of fumes produced. A LEV system may include a fume hood, ductwork, a fan and a filtration system. • It is important to consult with a qualified occupational health and safety professional or a LEV specialist to determine the appropriate system for your specific application. They will be able to assess the risks, recommend suitable equipment and provide advice on proper installation, operation and maintenance. • Work areas should be maintained at a temperature comfortable to work in when appropriate protective clothing is worn. • Food preparation should not be carried out in close proximity to fan-assisted heating units because of the potential for food contamination from airborne dust. • See BS 4163:2021+A1:2022, section 6.2.	☐
h. **Any statutory notices are placed clearly in workshops and studios and that both learners and colleagues are aware of the significance and content of these**. • The Health and Safety (Safety Signs and Signals) Regulations 1996 bring into force the EC Safety Signs Directive (92/58/EEC) on the provision and use of safety signs at work. The purpose of the Directive is to encourage the standardisation of safety signs throughout the member states of the European Union so that safety signs, wherever they are seen, have the same meaning. • Some examples of the most commonly used signs that should be used in D&T areas include for example: ear protection must be worn, eye protection must be worn. Signs should be kept clean and in good condition and replaced as and when necessary. • The Regulations require employers to provide specific safety signs whenever there is a risk that has not been avoided or controlled by other means, for example, by engineering controls and safe systems of work. Where a safety sign would not help to reduce that risk, or where the risk is not significant, there is no need to provide a sign.	☐
i. Regulations relating to the evacuation of rooms in the case of fire or other alerts are displayed and observed. • Under fire safety legislation a fire risk assessment is required to be undertaken in order to identify the means of fire prevention and the necessary fire precautions. A fire risk assessment would normally be undertaken for the whole school. This should take account of the specific fire risks in D&T areas. • It is the responsibility of the teacher to ensure that evacuation procedures are displayed and observed. Generally this is done centrally and notices are placed in each working area. Nevertheless, you should point out the procedures to learners on first arrival and consolidate this at appropriate intervals. In particular: never cover the notices up with display work; never obstruct an exit; take particular care that absent or new learners catch up on instruction; and be aware of learners who need special help in the event of evacuation.	☐
j. Fire extinguishers are provided and that they are familiar with the correct type of fire extinguisher to be used in the event of a fire. • Fine particles of some dusts are combustible (e.g. wood, plastics and some metals) and can, in the right concentrations, ignite explosively and start a fire. • Local exhaust ventilation systems for combustible dusts should be separate and not used for processes where sparks are generated. Sparks from grinders etc. could ignite combustible dusts causing an explosion and fire in the ducting or collector. Dust should not be allowed to accumulate on electrical or other equipment, this may lead to	☐

overheating.

- Fast detection of fires and immediate competent action are two of the most important actions required by personnel. Raising the alarm, knowing what to do, and how to do it at the right time, is the duty of each person.
- There are basically four different types or classes of fire extinguishers, each of which extinguishes specific types of fire. Newer fire extinguishers use a picture/labelling system to designate which types of fires they are to be used on.
- Older fire extinguishers may be labelled with coloured geometrical shapes with letter designations or have a particular body colour.
- Since the various types of colour and label system still in use can lead to some confusion, the key point to remember in the event of a fire is to identify the fire type and then match it with the A, B or C rating of the device.

k. First aid facilities are adequate.

- Specifications for First Aid boxes are given in the Health and Safety (First Aid) Regulations 1981 and HSE publication L74 First Aid at Work.
- Boxes should be available to each D&T area. The school Health and Safety co-ordinator should have a system in place for ensuring that these are maintained but you have a responsibility to inform them if the box in your room is incomplete.
- You should never add any supplies of your own to a box.
- Provision should be made for carrying out eye irrigation.
- At least one person holding a current First Aid certificate or who has been trained in emergency First Aid should always be available to attend and to provide First Aid when D&T rooms are in use. ☐

vii. Portable Appliance Testing.

a. Are aware of the regular testing that must be undertaken on electrical equipment and the records that must be kept.

- It is the teacher's responsibility to ensure that the D&T room is a safe place for learners to occupy.
- All portable electrical equipment must be visually examined before use to ensure that cables are not damaged or plugs loose, and that wires are not exposed.
- A competent person should carry out regular formal inspections and tests to identify any faults that require repairs. The Electricity at Work Regulations require that formal Portable Appliance Testing (PAT) is undertaken by a competent person on a regular basis, normally in schools this is every 12 months.
- BS4163:2014 requires that all 13 amp sockets in D&T rooms are protected by a residual current device (RCD). These are designed to protect the user of electrical equipment from electric shock. For general D&T rooms these should trip at 30mA but in areas where water is present they should trip at 10mA. Cordless, battery-operated portable tools should be used whenever possible. ☐

viii. LEV testing.

a. Are aware of the regular testing that must be undertaken on LEV equipment and the records that must be kept.

- In the case of Local Exhaust Ventilation (LEV) equipment, the Control of Substances Hazardous to Health Regulations 2002 require that LEV systems are thoroughly examined by a competent person at least every 14 months to ensure efficient operation to their original specifications. The Regulations require records of maintenance to be kept for at least 5 years, and any health surveillance records for individuals for 40 years. ☐

ix. Maintenance of work equipment.

a. Ensure that work equipment and machinery is well maintained and regularly checked for safe use.

- The Health and Safety at Work etc. Act 1974 requires that employers ensure equipment is safe and that risks to health and safety are minimised and The Provision and Use of Work Equipment Regulations 1998 require that work equipment is maintained in efficient working order.
- Maintenance work should only be done by those who are competent to do the work. For example, repairs to gas equipment must be carried out by an HSE-approved gas engineer. Machine servicing is generally carried out by external contractors, acting as the competent person. Technicians would need appropriate qualifications and training if they were being required to maintain any of the equipment identified in the Specialist Extension Levels.
- D&T departments should develop a recorded maintenance programme made up of daily, weekly, termly and annual checks on all machinery and equipment. In practice, school technicians normally undertake the daily, weekly and termly checks, and the annual checks and maintenance tasks recommended in the manufacturer's ☐

handbook are carried out in most establishments by external maintenance contractors. • Good annual checks should go beyond just breakdown maintenance, carried out normally only after faults or failure have occurred, but should also include planned preventative maintenance and condition-based maintenance. • Hand tools should be regularly visually inspected to check the condition, and if appropriate, their sharpness.	
b. Are aware that appropriate records must be kept on the servicing of work equipment and machinery. • It is essential that a maintenance programme is put into operation and also that a maintenance log is kept so that colleagues know and can demonstrate that the machines and equipment are safe to use. Colleagues need to also know for example that the LEV and PAT testing described above has been done and to take equipment out of use if the inspection time limits are exceeded. All colleagues should know where to access the inspection records and must report concerns regarding the condition of equipment to their line manager.	☐

Supplementary materials:

The following references provide additional notes and guidance to support training sessions:
https://www.hse.gov.uk/coshh/
https://www.hse.gov.uk/legislation/hswa.htm
HSE (2012) Working with substances hazardous to health: A brief guide to COSHH. Available at:
https://www.hse.gov.uk/pubns/indg136.htm