

Guidance for school Science & Technology coming out of lockdown

Version 3.0- 1st August 2020.

Introduction

This document focusses on Science and Technology. More detail, particularly about wider school issues can be found in the official Scottish Government advice which can be found here (<https://www.gov.scot/publications/coronavirus-covid-19-guidance-preparing-start-new-school-term-august-2020/>) and for colleges here (<https://www.gov.scot/publications/coronavirus-covid-19-guidance-for-colleges/>)

While most schools have not been fully shut, there will be much preparation that will be needed as part of a careful, phased reintroduction of learners into the school environment, particularly for practical subjects such as science and technology.

This guidance focusses specifically on Science and Technology in schools and colleges but obviously any changes in these areas can only be made as part of a whole school approach and Heads of Department should make sure they liaise with other parts of the school.

The situation will vary significantly across the country: learner rolls, numbers and location of teaching rooms, their dimensions and arrangements will all differ not just from Authority to Authority but from school to school. The advice in this document, therefore, is necessarily general in nature but SSERC will be happy to provide specific advice to schools and colleges if needed.

It is important to emphasise that the whole procedure for making arrangements for re-opening to learners should be led by risk assessment - this risk assessment should directly address any risks associated with coronavirus so that sensible measures can be put in place to minimise those risks for children, young people and staff.



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Differences from previous versions

2.0

In consultation with the Scottish Government, sections offering more general advice for schools have been removed as these are dealt with by government publications. The document now focusses more narrowly on science and technology.

Reformatting and branding.

Some changes to phrasing in a few places to increase clarity.

More guidance (in section on Hygiene) on the cleaning of equipment such as tools and computers.
New short section with information on other help SSERC can provide.

3.0

In light of the revision of guidance regarding returning to school (30th July). Substantial changes in the sections regarding social distancing. Minor alterations elsewhere that reflect this. FAQ section now included.

Further details, as they come, will be addressed via a FAQ section which will be placed at the end of the document.

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A holistic approach

The measures outlined in this and other documents are none of them exclusive of others: they are part of a whole.

Good hand hygiene in your school does not mean that there is no need to maintain spacing. A reduction in interactions does not mean that you can neglect the cleaning of surfaces.

We all of us need to implement as many of these measures as far as we possibly can. It is the combination of approaches that will help us in our fight to keep the coronavirus under control.

Prior to Returning

When returning to school there are some important things to consider before 'normal' activities begin again. Most though not all of these are activities for technicians:

- **Taps and Sinks:** - The HSE has recently issued guidance regarding Legionella in workplaces that have been in lockdown. The school/Local Authority should have procedures in place for managing this risk. Consult them before using any water supplies. If they are content that all appropriate measures have been taken, then run the water for 5 to 10 minutes through the system to ensure it is working. This will refill any drain traps which have evaporated.
(<https://www.hse.gov.uk/coronavirus/legionella-risks-during-coronavirus-outbreak.htm>)
- **Chemical Store:** - Check that the store is secure and has not been tampered with in any way. Chemicals that exist on the latest stocklist are all present and accounted for. There may be specific chemicals that required attention due to shelf life, such as potassium. Look for any distortions in bottles that may indicate pressure build up. If there are any signs of leakage, or any unusual smells, seek guidance immediately. If there is no one on site who can help, contact SSERC.
- **Radioactive Store:** - Check that the store is secure, and all radioactive sources are present and accounted for. Check that the sources are still within their leak test period. If there are any overdue tests or checks, these should be carried out **before** practical work resumes with sources.
- **Electrical Safety:** - It may be that some electrical items are outwith their PAT test period. Check all electrical equipment before use and label and remove any items that fall into this category to be tested. If the testing is done inhouse, then items can be tested on a rolling basis as they need to be used. If it is done externally, contact the company as soon as possible to arrange a test before the start of term – if possible. If testing cannot be done in time, make sure the teachers know so they can plan their lessons accordingly.
- **Equipment yearly checks:** - Fume cupboards, autoclaves, extraction systems, steam engines, and other bits of equipment may be out of their yearly test period. If so, they must be fully tested and comply with all relevant regulations before being used. As with PAT testing, if it is not being done inhouse then contact the testing company as soon as possible to ensure it can be done before the start of term. Again, if there is a delay, let the teachers know to inform their planning.
- **Gas Supply:** - Check all rooms with a gas supply for full functionality. It may have been switched off at the building's main gas valve. Immediately report any gas smells as this may indicate a leak.
- **Electrical systems:** - If any of the rooms have an emergency shut down system, check that it is still fully operational, and all buttons function correctly. Report any faults immediately.
- **Eyewash:** - If you have eyewash bottles in labs/workshops, check they are not out of date. If, as is better, you have an eyewash station, ensure the tubing is sterilised and replaced above the tap. (A plumbed in station will only need to be cleaned and run for a while – once Legionella tests have been carried out.

- **Fridges and Freezers:** - Check that these have not been tampered with or switched off. If they have, they will need to be emptied and cleared out – this should be done carefully particularly if there was organic material inside that might have rotted.
- **Microbiology** – Dispose of all sub-cultures and plates. Check the master culture is still in date. Disinfect “Clean Room” surfaces and all storage fridges. While Virkon is a common ‘go to’ disinfectant, any surfactant disinfectant, including a dilute solution of bleach, is suitable. If microbiology work is being undertaken, new cultures might need to be obtained.
- **Machinery** – If there is machinery in technology (or other areas) that needs regular checks, these should be carried out before any use of the machinery.
- **Ventilation:** - It is a good idea to open all windows and let rooms ventilate for at least 5 minutes.
- **PPE:** - It should be noted that advice from Health Protection Scotland and the Scottish Government is that there is no need for any PPE to be used other than for the Health and Safety purposes that existed previously as a result of risk assessment.
- Any PPE should be checked by a competent employee that it is fully functional and has no damage **before** use.
N.B. It may be that your school has donated some of their PPE as a result of COVID-19. If this is the case, no activities that require the use of this PPE should take place until it has been restocked. Each member of staff should have personal eye protection and should be provided with suitable antiviral wipes for cleaning through the day.
- **Social Distancing** – The latest government guidance is that there is no requirement for social distancing among learners in school. Distance should, however, be encouraged where possible and close interactions minimised as far as possible.
However, the current distance of 2m should be adhered to wherever possible between adults and between adults and learners who are not family members.
- **Equipment and ordering** – Given that practical work will be carried out by individual learners now rather than groups, some readjustment will be needed. Having learners working individually (or in smaller groups) is still a preference and so there may be a case for purchasing extra equipment, where this is feasible.
- **Setting out and clearing up** - The best option remains for equipment to be set out for each learner (or small group) in trays as this will reduce interactions while they collect their own. More trays may be needed.
In addition, the setting out and clearing up of practical classes may take longer than before so technicians should be consulted about feasibility when any new timetabling arrangements are drawn up. The time taken and the practicalities of cleaning and sterilising equipment between uses will also need to be considered.

Consultation

As mentioned in a couple of places above, there are likely to be all sorts of changes needed to how teaching in general and practical science and technology in particular are managed. Extended time needed for setting up and clearing away may affect timetabling. Changes may be needed to experiments. Some equipment will need to be disinfected on a regular basis. More individual kits may be needed which may have purchasing as well as preparation implications etc.

It is important that technicians are consulted fully before these changes are implemented to avoid the risk of measures being put in place that turn out to be impractical.

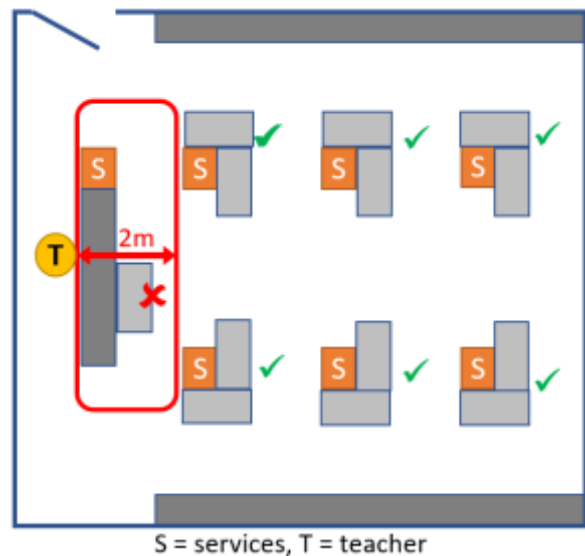
Positioning learners in labs/workshops:

Revised government guidance means that there is now no need for physical distancing among learners in laboratories or workshops. So, there is no need for measuring out for positioning learner workspaces.

However, it is still necessary to ensure a 2m spacing between the teacher's desk (the rear side where the teacher will sit) to the nearest desk or workstation.

In particular there cannot be a learner positioned directly in front of the desk as shown in the diagram (right).

It is also important to arrange as far as possible that learners are not seated across from each other but side by side.



The table arrangement shown in the diagram would not have all learners face to face but they would be at right-angles. This is less bad but still not ideal. An option might be, where possible, to use any side benches for some student seating – this would also help with further distancing.

Permanent groupings

Given that close interactions are a risk and the more different people an individual interacts with the higher the risk, limiting these interactions is a sensible option where possible.

Particularly in the earlier years of secondary education, it may be feasible to have students in fairly static groupings.

In these cases, it may also be the case that a decision is taken that a class remains in one room and the teachers move. In this case, you may find that science or technology is having to be taught in a room not designed for it. In such a situation contact SSERC to find out what practical work you can and cannot safely do in this situation.

Entry and Exit

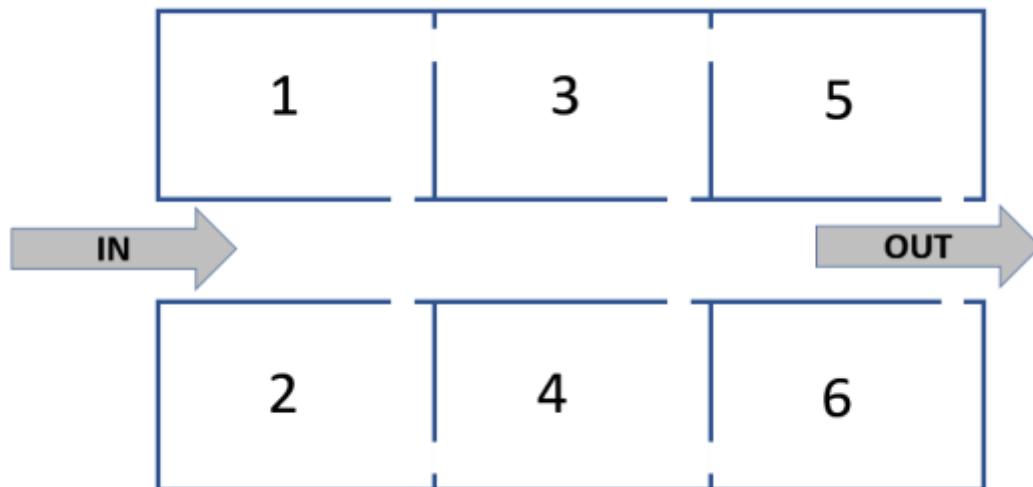
Into the school

Advice on this is more general and thus outwith the scope of this document. Guidance has been provided by the Scottish government and can be found here (<https://www.gov.scot/publications/coronavirus-covid-19-guidance-preparing-start-new-school-term-august-2020/>).

Entering/leaving the Lab/Workshop

- While brief interactions such as might happen while entering/leaving are generally an insignificant risk, every little helps. If it is feasible to arrange a one-way system, or to control entry and exit to minimise interactions then you should do so.

e.g.



- If doors are not fire doors, then leaving them open will aid ventilation and more importantly reduce touching of them. However, **fire doors must not be left open**. Check before having any open doors.

Managing practical activities

- Where possible, equipment should not be shared.

What that means is that where there are limited numbers of pieces of equipment, such as accurate balances, colorimeters, microscopes, lathes, 3D printers then, if need be these may be shared. Efforts should be made, however, to reduce the need for sharing as far as possible. but with enhanced cleaning after between uses.

E.g. Using microscopes. If there are, say, 10 microscopes for a class of 20, it could be possible for the lesson to be split so that one half uses the microscopes while the other half of the class does other work, then they swap. Ideally the two sessions would be in different lessons but even if it involves swapping halfway through a single period that is only the one change and will be safer than any constant common usage.

Using a belt-sander (or other fixed machinery). Avoid learners gathering in line, waiting for their turn to use the equipment. They should stay at their workstations doing other tasks until the teacher tells them it is their turn.

- Where possible, practical work should still be carried out by individuals rather than groups. For instance, there should be no need for simple chemistry experiment using test tubes to be carried out in pairs or groups.
- Practical lessons may well take longer than normal to complete; this is likely to be a particular problem if your school has short lessons. The Head of Department (in consultation with the technician team and senior management) should ensure that the timetable is changed in such a manner as to make the preparation and clearing away of any practical equipment feasible.
- As with other subjects, having longer lessons, possible very long blocks of individual subjects, might be a good way to minimise movement of groups around the school. In the sciences this may well have implications for preparation and clearing away of practical work.
- Teachers (in discussion with technicians) will have to plan and take into account requirements for each practical (e.g. available equipment) and decide whether it can be safely managed as a class activity (learners working individually not in groups) or needs to become a teacher demonstration.
- Long and complex multi-step practicals are best avoided except for with very experienced learners. It may be helpful to alter learner instruction materials to try to maximise the autonomy with which they can work.
 - It may be useful to have the instructions appearing one step at a time on the teacher's board (one step per PowerPoint slide for instance). And learners simply have to wait for the next step.
 - Another option might be in some cases to adapt the 'integrated instruction sheets' as developed by many educators. See this RSC article for more information: <https://edu.rsc.org/feature/improving-practical-work-with-integrated-instructions/3009798.article>
 - An extension of this is to use PowerPoint to animate the steps in the integrated instructions – an example can be found [here](#).

- Learners should work individually wherever possible rather than in pairs or groups. This does not totally preclude group work though. For instance, different individuals could investigate different factors affecting the rate of reaction and then share their results (electronically).
- With learners working individually, some practicals may take longer to complete, but time can be saved by
 - Having reagents pre-weighed or measured.
 - Using a 'flipped classroom' approach so that learners familiarise themselves with the experiment before coming into class to carry it out.
 - Learners can also share their data after the practical if required.
- Time must be allocated at the start and end of lesson for setting up/clearing up. This will need to be allowed for in the timetable.
- Once the practical has finished, learners should tidy up their equipment, wash / sanitise their hands then leave the room in an orderly fashion similar to their entry. (See later section on hygiene). The dismissal of classes, like their arrival, should if possible be coordinated to minimise mixing.
- If teacher demonstrations are being carried out, it is important there is still at least a 2m distance between the teacher/demonstrator and any learners. (This should be the case for most hazardous chemistry demonstrations anyway. However, the nature of a demonstration means that learners will inevitably be crowding quite close together in order to see; so, using AV equipment to project the demonstration is a good way to prevent this and should be the preferred approach.

An important part of many demonstrations, particularly chemistry ones, is their multisensory nature. It is better for the demonstration to be carried out live in class rather than just watched on video – that way the learners will experience the sounds and smells as well.

- Teachers must try to keep the 2m distance when observing the learners as they work through the practical activity. This may raise H&S concerns, as well as issues around the competency of the learner to carry out the task without the intervention of the teacher. The teacher should risk assess the activity prior to the session and take into consideration the competency of the learners.

However, the latest guidance does allow **brief** interactions between teachers and learners closer than 2m.

If these are brief (less than 15 minutes) as such interactions almost always are, then no special precautions are needed.

If, however, the interactions are:

- Face to Face **and**
- Longer than 15 minutes

then the teacher should wear a face covering.

- Where possible, it might be helpful to have learners able to carry out **some** practical work at home. This could either be a part of catching up with missed work due to self-isolation (or conceivably if there is a rise in cases causing schools to be closed again at some point in the future).

If it is simple, then kits can be sent out and learners can have a 'cook-along' approach or work autonomously. It will help break up the routine of home working for learners as well. Details of some possible activities (particularly for chemistry) can be found on the SSERC Home Learning pages.

Hygiene

A vital part of removing distancing requirements for learners is enhancing hygiene procedures in the school.

Hand washing & personal hygiene

By far the best way of ensuring clean hands is washing with soap and water. Obviously, there will be issues with access to sinks for a class of learners (even a small class) but there are other possibilities.

- If soap and water is not available, a suitable hand-sanitiser is the next best option.
- Ideally, each learner should be provided with a personal bottle of hand sanitiser by the school, which they can use to clean their hands before and after practical work. If this is not possible, hand sanitiser should be provided at least in each laboratory/workshop, particularly where there is equipment that may need to be shared.
- There should be a supply of tissues in each laboratory (in addition to supplies for individuals). Used tissues should be placed in bins that are emptied regularly.

Hand Sanitisers

These are less effective than soap and water but better than nothing.

They do tend to be less effective where hands are dirty or greasy – which may be problematic in some school situations.

Alcohol-free sanitisers are less effective. Aim for ones containing at least 60% alcohol. **Some** alcohol-free sanitisers may work but check carefully before ordering them.

N.B. If alcohol-based hand sanitisers are used, the bottles should be kept well away from any sources of ignition and no naked flames should be used for several minutes to avoid possible ignition and burns.

PPE

As mentioned earlier in this document, this is guidance specifically for the use of PPE in standard Science/Technology activities. There is no need for PPE to be worn more generally (but see 'Face-coverings').

For detailed advice on this sort of PPE and Covid-19 see the Health Protection Scotland and Scottish Government websites.

- We know many schools have donated all of their PPE to the NHS. You can expect demand for PPE to be very high, so it will take time and money to restock supplies.
- **Face-coverings** - In normal circumstances there is no need for learners or staff to wear face-coverings. However, these should be worn where, as mentioned above, there is extended face to face interaction (greater than 15 minutes). If individuals, either learners or staff feel the need to wear masks at other times, they should be supported in this.
 - Anyone (whether child, young person or adult) wishing to wear a face covering in school should be enabled to do so.
 - Schools should raise awareness amongst children, young people, and staff about the correct way to remove and store face coverings. This can be done well in biology lessons. It could be helpful to adapt some common microbiology experiments so that they highlight potential transmission from face coverings such as SSERC's 'Beat Those Bugs' or 'Toilet-tissue Challenge'.

- **Eye protection** - teachers should not attempt practicals where appropriate eye protection is required but is not available in school. This may initially limit the practical work that schools can do.
 - This can be mitigated to an extent in some cases by changing the experiments, reducing concentrations for instance, such that eye protection is no longer needed.
 - The safest arrangement is for each learner to have their own, labelled, set of eye protection. That way, there is no risk of cross contamination.
 - In many, if not most, schools this is not likely to be the case. If spectacles or goggles are shared between learners these will need sanitising between each use.
 - When leaving the lab/workshop, learners should place their used PPE in a washing up bowl (or two) of sterilising solution (have enough solution to cover all PPE). This then starts the sanitising process.

To sanitise goggles/safety specs, they should be fully immersed in a sterilising solution for at least 15 minutes. The eye protection should then be rinsed off with water and allowed to air dry. (This can be speeded up if needed using fans) Once dry check for any damage and then return to use. Avoid drying with towels as this can lead to scratching.

Suitable sterilising solutions are:

- Milton's solution (follow Milton instructions for how to make this up, tablets or fluid is fine),
- dilute bleach (100:1) or
- Virkon (solutions prepared according to manufacturer's instructions).

The best option is to do this at the end of each day and leave to dry overnight. If they are needed earlier, fans can be used to speed up the drying. Do not wipe dry it if at all possible – this raises the possibility of contamination.

If time really is of the essence, antiviral wipes can be used to wipe down the goggles (or other equipment).

- Learners should be reminded to wash their hands before putting on eye protection.
- **Gloves** – Gloves are rarely required by learners doing practical work. However, where we advise the use of gloves then the correct type should be worn.
- **Lab coats** –as these are not PPE they are not required for practical work, although if anyone wishes to wear their own lab coat there is no problem. Shared or department-based lab coats, however, should be removed from use. Staff clothing, including lab coats should be washed as normal.
- **Staff** will also need access to their own PPE, each member of staff should have personal eye protection and should be provided with suitable antiviral wipes for cleaning through the day. At the end of the day they should be sanitised in the same fashion as that for learners.

Laboratories/Workshops

- **Ventilation:** where it is possible to open windows and doors (not fire doors) this should be done. Science and technology departments should already have suitable extractions systems to comply with their duties under COSHH. However, if it is possible to adjust the systems so the 'makeup' air comes either directly from outside or contains a greater proportion of fresh air, this should be done.
 - **Benches** will need cleaning as per the guidelines for all classrooms in the rest of your school. Door handles and plates in particular (as well as any other frequently touched items) should be cleaned down on a regular basis.
 - Much practical equipment used in science, especially chemistry will not require any additional cleaning, though users should be reminded to regularly wash/sanitise their hands.
 - There should be regular (at least twice daily) cleaning of commonly touched objects and surfaces – this will include shared technology surfaces etc.)
 - Over and above this, however, where possible:
 - Any equipment, that is Hand-Held or Hand-Operated in nature, should be wiped down before use by a learner or teacher.
 - Try and limit the amount of shared equipment in use. This may include but is not limited to: -
 - Power Supplies/Signal Generators etc. in the Science Department
 - Hand-Tools etc. in the CDT or Art Department
 - Hand-Blenders etc. in the Home Economics Department.
 - For equipment such as power supplies, cables and crocodile clips proper sterilisation may be tricky. Wiping 10 powerpacks is fairly easy but cleaning all the crocodile clips would be difficult and time consuming.
 - If possible, microscope eyepieces and focussing controls should be wiped with antiviral tissues before each use – unless they are going to be left for longer than 72h between uses or reused by the same learner.
 - If wiping down equipment is not realistically feasible, there are a few options:
 - If possible, timetable for staggered usage of equipment where possible so that the equipment can be left for 72 hours between uses.
 - Perhaps better but maybe harder for schools to resource, a set of, say, crocodile clips could be issues for the use of an individual learner for the duration of that unit and then left for 72h or more before being used by another learner.
 - Alter the experiment or the way it is carried out to reduce or ideally eliminate the use of equipment that is difficult to clean rapidly – if it is not possible then perhaps these activities may need to become teacher demonstrations.
- There will always be a balance to be found between effectiveness and practicability. Obviously, complete disinfection (by, say, soaking) of every item after every use is the most effective way of eliminating any possible infection. But if the risk of infection is low, it may be that a lesser level of disinfection between uses may be acceptable if it facilitates important activities that might otherwise not take place – SSERC is currently seeking advice on this.
- Appropriate cleaning supplies should be in each laboratory to enable learners to wipe down their own desk/chair/surfaces before leaving and, especially, on entering the room.

Cleaning equipment

Books

Any unnecessary resource sharing including textbooks should be avoided, especially where this does not contribute to education and development. This is another example of where use of electronic media may be preferable. Where possible:

- Let learners have their own copy of any textbooks or other physical resources. If this is not possible then, like library books, they should be quarantined for 72h on their return before being issued to anyone else.
- Distribute scans of instruction sheets and/or display on boards rather than hand out individual copies.
- Where possible get learners to submit work electronically rather than on paper / in jotters etc.

This will include any equipment or machinery with keyboards, touchscreens or control panels that are likely to be used by more than one person.

If equipment has not been used for 72h or more, there should be no problem with virus on the keys. So, if users wash their hands properly before using them, there should be no contamination issues.

However . . .

It would be sensible to make sure that the keyboards are properly cleaned before term starts, just to be certain you have a good baseline standard of cleanliness. Harmful microbes (and not just coronavirus) cling to dirt, so if your device looks dirty, it really is.

Use a damp, soft, lint-free cloth to wipe away as much visible dirt as possible before any sterilisation. You may need to do this more than once. Keep going until you are satisfied it is properly clean. Use a toothpick on any areas where grime can build up.

To disinfect computers, just like anything else, you need an alcohol-based disinfectant with at least 60 percent ethanol (or 70 percent isopropanol.) You can use aerosols, pump sprays, or wipes, whichever you prefer, just make sure they contain the necessary amount of alcohol.

Because alcohol evaporates quickly, you can spray your gadgets just leave them to dry. This is easy to do regularly. If you need to rub with a cloth, where possible, use wipes or paper towels you can dispose of when you are finished.

N.B. Alcohols are highly flammable and so should never be sprayed where there is a source of ignition – such as an item of electrical equipment that is plugged in.

Remember that if you are using compressed air cans to clear dust out, they can damage laptops and other all-in-one devices.

If there are any difficult to reach cracks etc., you can use a sharp (but not too sharp) object, like a wooden toothpick, to dislodge any dirt without causing damage to the device.

Computers

You need to be more careful with laptops than desktop models because the computer's main components are underneath the keyboard and thus more susceptible to damage.

Before you clean it, make sure your laptop is completely powered off and unplugged to avoid any serious damage. For a desktop you can simply unplug the keyboard and mouse to clean rather than power down completely.

For a laptop, let it dry for a few minutes so the alcohol has time to evaporate before you turn it on again.

Keyboard

As described above, use a damp, soft, lint-free cloth to get the whole of the keyboard as clean as you can. Once all dirt has been removed, wipe all the keys and the rest of the keyboard with alcohol wipes and leave to dry.

The gaps between the keys on most laptops are small to prevent dirt and dust from getting in there. However, these small gaps still collect dirt from your fingers, so pay attention to them while you are cleaning.

Mice

Again, use a damp, lint-free cloth to clean your mouse the best you can and dislodge any obvious dirt. Inspect your mouse if you did not get it all the first time, disinfect any dirty areas again.

Now disinfect with an alcohol spray or wipe. If you are using a spray, leave for a few minutes, and then wipe off any remaining grime with a clean paper towel or cloth.

If your mouse is wired, you can also clean the length of the cord and USB connector with a bit of alcohol.

Touchpads

As for the other devices, wipe down thoroughly with a damp (not wet) soft, lint-free cloth to remove as much dirt as possible. Do this more than once if you need.

Use a toothpick to clean any grooves or gaps. Then, using alcohol spray or wipes, thoroughly disinfect the whole of the trackpad and the area to the left and right of the trackpad, where your hands normally rest.

Touchscreens

As for trackpads, wipe the screen with a lint-free cloth (microfibre ones are good for screens). Then disinfect using alcohol spray or wipes as before.

Prevention of contamination

In some cases, it is possible to prevent contamination by:

Using a device such a pencil to press a button rather than a finger – though if the pencil has been in someone's mouth, this is not a good idea.

Placing a protective covering over the surface. Some surfaces, especially things like touchscreens can easily be covered by e.g. clingfilm. A dispenser can be placed close by a section torn off before each use and

disposed of immediately afterwards. The pictures below show examples for a laboratory balance and an iPad.



It is trickier, but still works, to do the same for a computer keyboard – as shown in the picture to the right.

A computer mouse work even less well so is probably not worth trying. If there is a scroll wheel, this will snag the clingfilm.



Organisation

- Staff training will be needed, for ancillary as well as teaching/support staff to ensure they are familiar any new procedures, particularly those relating the new hygiene regime.
- Unless there is advice from government that states otherwise, physical distancing between adults and between adults and children will remain at the current distance of 2.0 m.
- Preparation and clear up time may take longer so the timetabling may need to consider this.
- Where possible movement of individuals between workstations should be minimised and where workspaces are shared there is cleaning between use (e.g. each individual has a designated desk/workstation).
- Movement of children, young people and staff between classrooms / laboratories / workshops should be minimised wherever possible.
- One way of facilitating the two points above might be to reorganise timetabling so that subjects are taught in longer, but less frequent, blocks. This will be a matter for schools and their employers to determine.
- It may be that as a part of the protective arrangements, a system will be put in place where learners stay in one classroom and the teachers move around instead. This, of course, creates issues for practical work that will need to be addressed:

Practical work should only be done, as always, after an appropriate risk assessment. A non-lab/workshop space will limit the nature of practical work that can be done but not eliminate it. For instance, simple circuit work, use of microscopes or some microscale chemistry can, with a little preparation, readily be done in a non-lab setting. Workshop activities in technology may be rather trickier in a non-workshop setting though.

Revised lab/workshop rules.

There will probably need to be some revision of normal lab/workshop rules. No getting up and moving around. No sharing of e.g. pencils etc. These will need to be circulated to learners before they come into school and displayed prominently in each classroom.

Procedures will need to be put in place to deal with learners who fail to observe the new protocols (e.g. will not keep their distance, will not wash hands/wipe equipment etc.).

Procedures will also be needed for issues like illness in class, dealing with accidents.

There will also need to be procedures in place, on a whole school basis, for toilets. When can learners go? Supervision to ensure no mixing etc.

- While the weather remains good, outdoor learning may be something worth looking at in more detail. While more particularly suitable for younger learners outdoor learning for older age-groups is certainly something that could be looked at. How learning and teaching is adapted for an outdoor environment should also be considered. The [Outdoor Learning Directory](#) provides links to a variety of resources that can be filtered by subject area and curriculum level.

Further advice about outdoors learning in science can be found here:

- https://www.ase.org.uk/system/files/Grimshaw%20et%20al_0.pdf
- <https://www.stem.org.uk/news-and-views/opinions/teaching-secondary-science-outside-classroom>
- <https://www.weareteachers.com/outdoor-science/>

Remote learning

There are circumstances in which this will still be important:

- If there is a significant 'second wave' that results in schools having to be closed again. This is unlikely but cannot be ruled out.
- If learners are having to self-isolate after a positive test or a contact via Test and Protect. Or indeed if they are unable to attend school for other reasons.
- If teachers need to self-isolate for similar reasons to those above
- To enhance learning, assist learners catch-up etc.

This being the case, science and technology departments should try to make sure that they develop their skills in this area as much as possible. In each department, there is likely to be at least one person who has developed quite high-level, relevant skills and it would be helpful if the department could arrange to share this expertise to upskill all.

What else SSERC is doing?

- As well as issuing regular updates of guidance documents, we will be available to offer bespoke advice to schools and colleges to assist them with issues they have that may be particular to their establishments.
- All SSERC Professional Learning offerings have been reconfigured to use an online or blended approach and will embed the Covid-19 protocols.
- Our reconfigured courses, in addition to offering the training that is core to them, will also seek to support home/remote learning by modelling good practice and offering advice based on our experiences with distance learning.

Wider School issues

Such issues are outwith the remit of this document.

The latest government guidance that covers schools in the wider context can be found here.

<https://www.gov.scot/publications/coronavirus-covid-19-re-opening-schools-guide/>

Here you will find advice on general school issues, including ones that will impact on science and technology such as:

- Cleaning
- Travel
- Potential infection
- and much more

Frequently Asked Questions

What if staff need to break social distancing in case of accident / injury?

Is there a risk if you as a person if you start to rinse a learner's eye with an eyewash?

There will be times when teachers need to get closer to learners for first aid/Immediate Remedial Measures or to prevent an accident. But make the interaction as brief as is needed to address the problem.

The interaction will be brief and its importance would seem to take priority. We are dealing with the situation where there **will** be harmful consequences if we do not intervene, whereas there **might be** if we do.

If you are actually in contact as in the eye washing situation then yes there is a slight extra risk but I think that in all morality, you can't leave someone in that condition while you go searching for PPE. In labs/workshops first aid kits should be supplemented with appropriate PPE for use in incidents requiring first aid/IRM.

What about alcohol gel and practicals?

While they **can** be a fire risk in the lab, we have no problem as long as care is taken not to expose to any source of ignitions until all fumes have dispersed and there is no trace of anything left on the learners hands.

What about air conditioning? Is there a danger that moving the air around like this can spread the virus?

If the air conditioning is taking in air from outside there is little problem. If it is a self-contained system that is simply recirculating air within the same room then it does create a marginally higher risk but there will still be a significant level of dilution. For airborne infection proximity seems to be the most important factor.

HSE announced June 23rd. The risk of air conditioning spreading coronavirus (COVID-19) in the workplace is extremely low.

However, they do suggest that '*. . . if you use a centralised ventilations system that removes and circulates air to different rooms it is recommended that you turn off recirculation and use a fresh air supply.*'

In terms of PPE, how would you recommend keeping lab coats clean?

There is no need for lab coats for learners at all – technicians have their own and can keep them clean. There is no need for personal technician lab coats to be washed any more frequently than normal. In technology, aprons are useful for protecting clothing. Again, those belonging to teachers and technicians can be used and cleaned as normal. As with lab coats in science, there should be no sharing. If learners do not have their own, then they could perhaps bring in an old shirt or something.

Will safety glasses need washing after every class?

This is a balance between efficacy and practicability. Try to avoid the need for back to back lessons where goggles will need to be passed on. This is an area where adjusting the timetable to have fewer, longer sessions would be a help.

A good investment though would be to buy more so that learners can either have their own or the set can be left >72h between uses so no fiddly washing/wiping is needed.

What if we do not have sufficient hand-washing facilities?

- There are a few suggestions for DIY handwash stations – adapted from camping facilities – that could be easily adapted/implemented in schools and would be much more effective. Several of these could be positioned either in corridors or in the classrooms themselves.
- A fairly simple option would seem to be for there to be a class set (for the new current class size) of plastic washing up basins and bars of soap along with paper towels for drying. One at each workstation along with paper towel for drying.
 - If there is not a hot tap at the workstation, then before the lesson a 2-litre bottle of warm water from the tap can be placed at each workstation. If need be this can either be replaced or a second one issued near the end of the lesson. The arrangement of the room should allow for this with minimal risk to the teacher/technician issuing them.

After the lesson, the bowl can simply be emptied out and rinsed – the soap will be its own disinfectant. If the equipment is cleaned before learners use it and their hands are washed before using it, this should greatly reduce possible infection.

What about using perspex screens?

Screens are an option that could be looked at but with some caveats.

You will need to check to see what your employers' policy is. In Health and Safety matters such as this, the responsibility lies with them.

SSERC's view being that they may be a useful **addition** in some cases but that they should not be used as an **alternative** to other measures. Our feeling is that using screens to allow teachers to spend more than 15 minutes face to face with others closer than 2 meters would seem inappropriate (as well as largely unnecessary). However, as an additional measure for pupils who might be positioned face to face, they might be helpful if there is no other approach to be taken.

In Technology departments, most (if not all) schools have each workshop arranged with 5 work benches, each with 4 vices. 4 pupils are seated at each bench facing each other. Your guidance states that pupils should not face each other: what do we do?

In the guidance we say it is "important to arrange **as far as possible** that learners are not seated across from each other but side by side."

There are many situations where tables and/or seating can be moved to facilitate this. Clearly though, in the situation described, it **isn't** possible so you just carry on as normal - in that way at least.

The seating arrangement is just one approach: enhanced, sanitising, restrictions of students moving round, fixed groups if possible, keeping distances where possible etc will all contribute, along with the seating arrangements. So just do what you can, and don't worry too much about what you can't do. It is, after all, guidance, not instruction from the Government.

Most of the schools in our area have been issued with huge quantities of hand sanitiser - 1750 litres in my school! What are your recommendations for where we should be storing this?

We are currently (7th August) investigating further but unless there has been an exemption put in place (possible but we are not aware of one) then if the hand sanitiser is alcohol based then it is a flammable

liquid and thus, under the requirements of DSEAR, need to be stored as such. These quantities obviously create problems for a school.

A better option would be for the council to see about storing it centrally – as they will be able to find suitable storage more easily – and send it out in smaller quantities.

Even so, there will still need to be suitable storage on site. So either a room will need to be converted to a flammable store (possible a little used toilet could be adapted as it already has ventilation) or one or more flammable cabinets will need to be purchased and positioned in a suitable place. The details will depend on how much is stored on the premises at any one time.

This is, however, like all Health and Safety issues, a matter for the employer. So the school should contact their Local Authority and raise the issue with them.