

The School STEM Technician



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Supporting the professional development of
the school technician community in Scotland



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CEO Introduction

Alastair MacGregor, CEO, SSERC



SSERC has always been, and will continue to be, an organisation that has strived to support the school technician profession in Scotland and has not been afraid, when necessary, to call out the injustices that have been placed upon the profession in recent years (as referenced in issue 1 of The School STEM Technician¹).

Our support has been multi-faceted but includes:

- The establishment of the Scottish Technicians' Advisory Council (STAC) with representation across all Scottish Local Authorities which provides direction relating to the professional development requirements of school technicians²
- The establishment of Techné, a virtual professional network for Scottish school technicians³
- The establishment of SSERC Accredited Centres, allowing for localised school technician professional development opportunities
- The establishment of The School STEM Technician digital publication⁴
- The development of a range of SCQF credit and levelled professional courses to support school technician professional development
- The development of a range of non SCQF professional learning courses to support school technician professional development
- Securing funding to establish a series of twilight Tech Meet information sessions⁵.

If we want to continue to raise the profile of the school technician profession in Scotland, emphasising the critical role that they play in relation to supporting safe, practical STEM activities in the classroom, then we cannot do this alone; we need every school technician to be aware of the support that SSERC and STAC provide and start to engage with the professional networking opportunities that have been made available to encourage professional discussion and dialogue. It is surely, not up to a small minority of the profession to do this on behalf of the (sometimes) silent majority. Today I offer a number of challenges to the school technician community in Scotland:



Challenge 1: STAC

Do you know who your local authority STAC representative is, and do you know how you would be able to contact them? If the answer is no, then read the article in this issue, which can be found on page 3-4

Challenge 2: Techné

Are you aware of Techné? Have you signed up for Techné? Have you posted any items on Techné? If the answer to any of these questions is no – then take action now by [signing up to Techné here](#).

Challenge 3: The School STEM Technician (1)

Copy the following link to The School STEM Technician to another technician colleague: [The School STEM Technician - SSERC](#)

Challenge 4: The School STEM Technician (2)

Consider writing an article for The School STEM Technician. Suggestions include:

- A day in my life as a school technician.
- Sharing details of a resource that you have used and found to be useful.
- An overview of professional learning activities you have been involved in and how it has benefited you, your colleagues, and your centre.

Challenge 5: SSERC TV

Subscribe to SSERC TV and browse the various available playlists, including those specifically developed for school technicians. [SSERC TV - YouTube](#)

If you have any suggestions for technician-related SSERC TV content, let us know.

SSERC will continue to act as an ambassador for the school technician community in Scotland, but in order to do that we need to know that we have the support of the majority of the profession. We need to hear from the profession not only what the current issues and concerns are but also the many examples of good practice and success stories that are

undoubtedly taking place. I was disheartened that there were no Scottish nominations for the award category: Excellence in STEM Support: Technicians and Support Staff, at the recent SSERC/STEM Learning STEM Awards event in Glasgow, resulting in the category not being awarded. We need to celebrate success and break the mould of Scottish Miserabilism⁶ – but we cannot do it alone.

- [1] [STEM-Tech-01-intro.pdf \(netdna-ssl.com\)](#)
- [2] [STEM-Tech-01-STAC.pdf \(netdna-ssl.com\)](#)
- [3] [STEM-Tech-01-Techne.pdf \(netdna-ssl.com\)](#)
- [4] [School STEM Technician-1 - SSERC](#)
- [5] [Tech_meets - YouTube](#)
- [6] [Scottish Miserabilism \(thepatterpod.com\)](#)

Alastair MacGregor
Chief Executive Officer, SSERC

Who is your STAC member?



Aberdeen City

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TBC

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West Lothian Council

TBC

Independent Schools

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If your Local Authority does not have a representative on the STAC group and you would like to join, please send an email to alan.purves@sserc.scot with your contact details and a note of the LA you would like to represent.



A man and a woman in white lab coats and safety glasses are smiling and looking upwards in a server room. The man is on the left, wearing blue gloves and holding a small object. The woman is on the right, also wearing gloves. The background shows rows of server racks with blue cables.

Professional Learning

Case study: Inverclyde Council SSERC Accredited Centre

Inverclyde
council

SSERC has established an Accredited Centre programme. This has been designed to enable external bodies and organisations to deliver a range of SSERC developed, Scottish Credit and Qualification Framework (SCQF) Credit and Levelled, professional learning courses.

Currently there are 10 SSERC, SCQF Credit and Levelled, professional learning courses available through SSERC Accredited Centres. Whilst these courses were specifically designed to support Scottish school technicians they have proven to be of considerable value to both Design and Technology and Science teachers.

Inverclyde Council SSERC Accredited Centre

Inverclyde Council was one of the first to achieve SSERC Accredited Centre status and be approved as a training centre. The opportunity for technician staff to access quality professional learning opportunities locally in the training centre in Norte Dame High School, Greenock has eliminated travel and subsistence costs often associated with professional learning opportunities. With the in-house trainer being a council, employee delivery costs have been also reduced significantly. An additional benefit has been collaborative working amongst the school technician community, comprised of six technical technicians, nine science technicians and two Modern Apprenticeship (Life Science) technicians, supporting a total of six secondary schools.

“Our decision to become a training centre was brought about by not only financial advantages but also the willingness of our staff and schools to think in a solution orientated way. To take this forward we needed schools and technicians to work together across Inverclyde and our thanks go to the schools who have willingly released staff and facilities to undertake the training. Greg Cooper, the technician who drove this initiative forward and ensured its success, used this as a small test of change to improve ways of working

and subsequently presented the project to the Chief Executive of the Council as part of the Inverclyde leadership programme.”

Ruth Binks, Corporate Director of Education, Communities and Organisational Development, Inverclyde Council.

As the training centre was already fitted to a high specification there were no issues in meeting SSERC facility and equipment requirements. The only cost implications have been initial accreditation and approval cost and the annual accreditation fee.

Inverclyde Council found the application process to be clear and precise with the accreditation process straightforward. Currently, the training centre is approved to offer:

- Safe Use of Fixed Workshop Machinery (Course code: SUFWM5) SCQF Level 5; 2 Credit Points.
- Safe Use of Fixed Workshop Machinery- Refresher (Course code: SUFWM5R) SCQF Level 5; 2 Credit Points.

To date, Inverclyde Council has trained five new technical technicians and four Design & Technology teachers. The council has saved 70% in training and associated travel costs using the accredited centre. There are plans for further local training opportunities, and the vision is to have all technician and design and technology teachers staff trained by the end of 2022.

Staff who have already completed the course have given positive feedback.



The SSERC accredited centre programme

SCQF Professional Learning courses available to SSERC Accredited Centres



Course code	Course title	SCQF
SUFWM5	Safe Use of Fixed Workshop Machinery	SCQF Level 5 /2 credits
SMS6	Safety in Microbiology in Schools	SCQF Level 6 /3 credits
ESPAT6	Electrical Safety and Portable Appliance Testing	SCQF Level 6 /2 credits
CHS5	Chemical Handling for Schools	SCQF Level 5 /2 credits
IC15	Introductory Chemistry	SCQF Level 5 /2 credits
INTP5	Introductory Physics	SCQF Level 5 /2 credits
MFWM6	Maintenance of Fixed Workshop Machinery	SCQF Level 6 /3 credits
IMMR5	Introduction to Microscope Maintenance and Repair	SCQF Level 5 /2 credits
INTMP5	Intermediate Physics	SCQF Level 5 /2 credits
SUFWM5R	Safe Use of Fixed Workshop Machinery (refresh)	SCQF Level 5 /2 credits



Costs as from 1 April 2021*

- Cost to become a SSERC Accredited centre £900.00
- Annual cost to retain accredited centre status £150.00
- Cost for each SSERC Accredited course £165.00
- Annual cost to retain course accreditation (per course) £50.00
- Assessment fee per candidate (includes certification) £40.00
- Re assessment fee £40.00

* subject to review

For more information about our SSERC Accredited Centre programme, [click here](#) or contact accreditation@sserc.scot.

Tech Meets

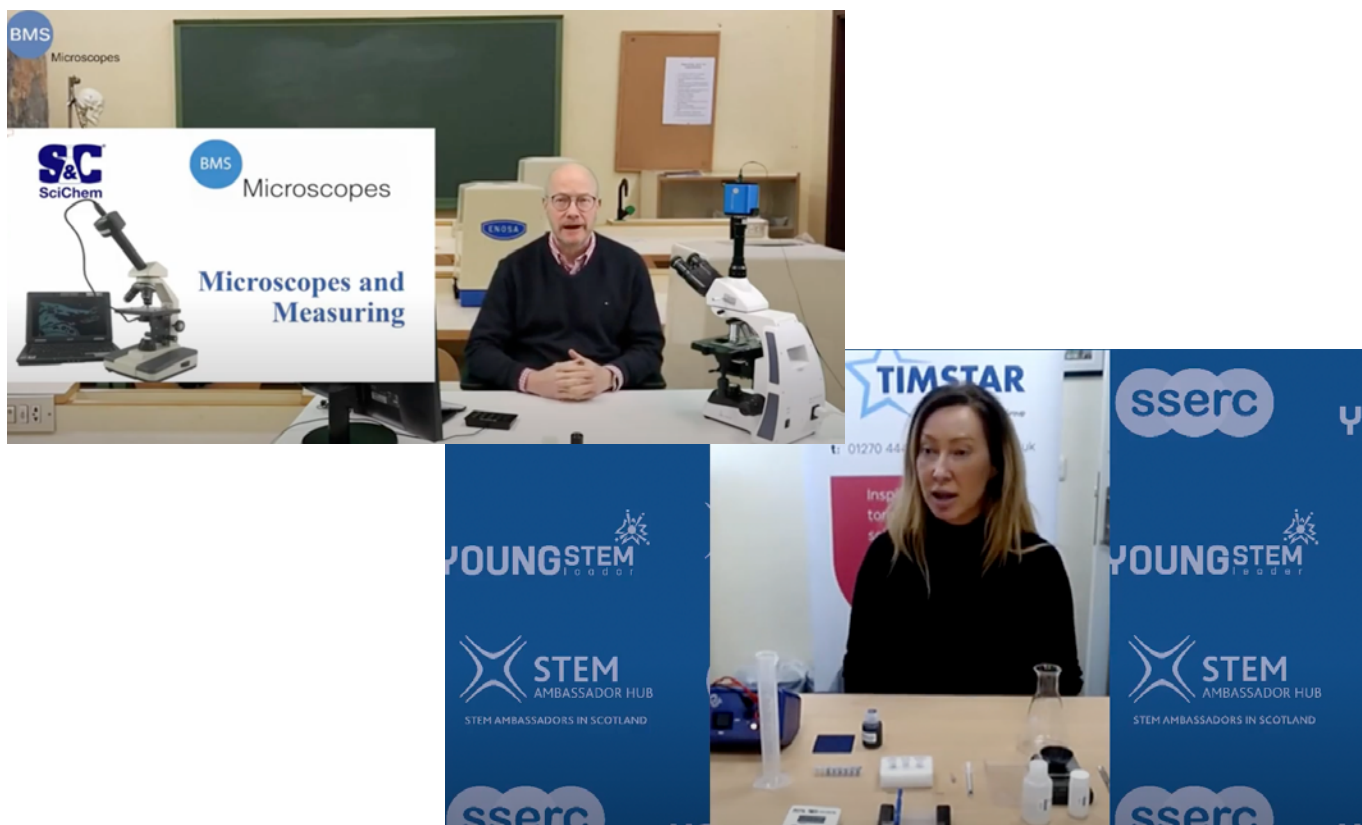
Our series of Tech Meets, which are half-hour online professional learning sessions designed for technicians, have been going well over the last number of weeks and proved quite popular.

We have covered subjects such as:-

- PCR testing and Eliza tests, both of which have been prevalent with the spread of COVID.
- Measuring accurately using a microscope graticule. How to do the calculations necessary to set up a graticule with different objective lenses.
- Basic microscope maintenance. Changing bulbs from Hal to LED. Replacing eyepieces, greasing the moving parts.

Don't worry if you missed them, you can view the full playlist on our YouTube channel SSERC TV. Just follow the link [here](#).

If you have any suggestions for future sessions, send them to alan.purves@sserc.scot.



Professional Learning Courses



MAY 18 Wed	Safe Use of Fixed Workshop Machinery May 18 – May 19 <small>all-day</small>
JUN 8 Wed	Intermediate Physics Jun 8 – Jun 9 <small>all-day</small>
	Safe Use of Fixed Workshop Machinery Jun 8 – Jun 9 <small>all-day</small>
JUN 24 Fri	Safe Use of Fixed Workshop Machinery Refresher Jun 24 <small>all-day</small>
AUG 24 Wed	Safe Use of Fixed Workshop Machinery Aug 24 – Aug 25 <small>all-day</small>
SEP 2 Fri	Safe Use of Fixed Workshop Machinery Refresher Sep 2 <small>all-day</small>
SEP 6 Tue	Chemical Handling Sep 6 – Sep 7 <small>all-day</small>
SEP 8 Thu	Electrical Safety and PAT Sep 8 – Sep 9 <small>all-day</small>
OCT 4 Tue	Safe Use of Fixed Workshop Machinery Oct 4 – Oct 5 <small>all-day</small>
NOV 2 Wed	Introductory Physics Nov 2 – Nov 3 <small>all-day</small>
NOV 8 Tue	Safety in Microbiology for Schools Nov 8 – Nov 10 <small>all-day</small>

We also plan to offer IOSH Working Safely and Managing Safely from September 2022.

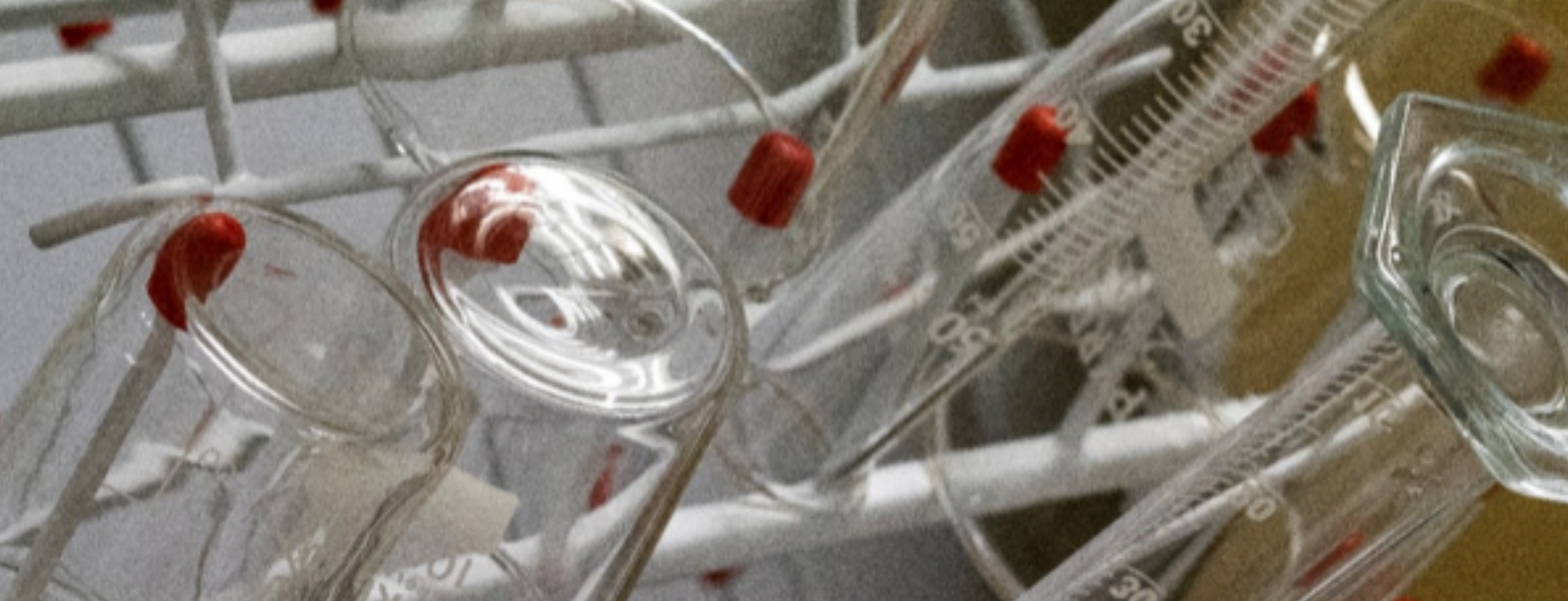
Click the links for more information. Both courses have been adapted to ensure all examples and scenarios used are applicable to technicians.

- [Working Safely](#)
- [Managing Safely](#)

Accredited Centre Courses

West College Scotland. Safety in Microbiology for Schools. 14th, 15th and 16th June 2022

More info and register [here](#).



The Heart of Glass

Despite the growth of plastics and of automation, in the school chemistry laboratory, glassware is still king. There are literally hundreds of different types of glass but fortunately not all that many are likely to be encountered in the school or college laboratory.

Types of glass

Soda glass

This is the cheapest type used for laboratory glassware, it is not widely used as its heat resistance is poor so it melts at a lower temperature than other glasses and it also tends to shatter when heated or cooled due to its larger coefficient of expansion.

It is commonly used for stirring rods and can be used for test tubes (or other items) but if this is the case they should be labelled clearly as not being suitable for heating.

Borosilicate glass

Almost all modern laboratory glassware is made from borosilicate glass, due to its chemical and thermal resistance

and good optical clarity. It is sold under various brand names, the most well known is Pyrex but others include, Duran, Borosil, Simex and many others.

To add to the confusion, there are different types of borosilicate glass depending on composition. However, nowadays they seem to have converged around a standard known as 3.3 Expansion borosilicate glass (made to ISO 3585). This has a very high resistance to attack from water, acids, salt solutions, halogens and organic solvents as well as a low coefficient of thermal expansion and a high resistance to heat: softening at 820 – 830°C with a 'working point' of 1250 – 1260°C.

The term neutral borosilicate that you may come across in older publications refers to a slightly lower specification (though still high quality) but this seems not to be widely available now – if at all.

Telling the difference

You can tell whether an item of glass is soda or borosilicate by putting it into propan-1,2,3-triol (glycerol). This has the same refractive index as borosilicate

glass and so when put into the glycerol it will 'disappear' whereas the outline of soda glass will still be visible.

Class



Figure 1: markings on a measuring cylinder

The standards referred to above only apply to the chemical composition of the glassware, not to its manufacture. Laboratory glassware comes in two grades: Class A and Class B – defined by various International Standards. Class A is manufactured to a greater accuracy in items such as pipettes and measuring cylinders but Class B is quite good enough for all school/college work.

Design

Test tubes in particular appear in catalogues as thin, medium or thick walled (The actual specifications are set out in BS EN ISO 4142) It is not quite as simple as it might appear as a thin walled soda glass tube is thicker than a thin walled borosilicate one. For most purposes, medium walled tubes are a suitable compromise.

Rims

Test tubes can be bought either with or without rims (see Figure 2). Ones with rims are less likely to slip out of test tube holders but the rims are more prone to chips, which can be sharp. This is largely a matter of personal preference.



Figure 2: Test tubes with and without rim

Care of your glassware

Chips and breakages

When storing your glassware, you should ensure that they are kept in such a way as to prevent them rolling around or moving in any other way. If they do then they can collide with each other in drawers or trays and become chipped, scratched or even broken (see Figure 3).



Figure 3: Chip in a test tube

Scratched glass is more prone to break during experiments. Any mark on the surface of an item of glassware is a potential breaking point, especially when the piece is heated.

Chipped or other sharp edges caused by chips on test tubes, measuring cylinders, beakers etc should first be filed gently to remove any of the larger protruding edges and then the area can be flame

fire polished by holding or rotating it in a hot flame.

Cleaning



Figure 4: A stained glass bottle

It makes life a lot easier if you wash glassware as quickly as possible after use. If, as is more likely, a proper clean is not possible immediately, put it to soak in water. If this is not done, it could be impossible to remove the residue.

Glassware can quite safely and effectively be cleaned in a dishwasher. If cleaning is done by hand then it is best to use brushes with wooden or plastic handles as they will not scratch or abrade the glass surface.

Stains will still sometimes be a problem. Iron compounds, potassium manganate VII, silver and others will often leave stains that can be hard to shift (see Figure 4). Many older books, and indeed some current sources, suggest using chromic acid as a cleaning solution. We do not recommend this as it is corrosive,

toxic and carcinogenic and has also in the past even led to explosions when cleaning organic residues. Stains can often be removed using a solution of ethanedioic (oxalic) acid (1 – 2 molar). But there are other options as well which we will look at in a future article.

Glassware should be dried upside down either at room temperature or in a drying cabinet – in this case it must be below 140°C to avoid damaging the glass though they are usually well below this..

Looked after well, there is no reason why your glassware cannot last for many years, decades even.



Technicians' Corner

Reflections of a college technician

Developing the pipeline of future technician talent – the Modern Apprenticeship route.

The apprenticeship programme (Foundation, Modern and Graduate) is sometimes the preferred route for career development for many young people. This article finds out why one young person decided on the Modern Apprenticeship route to becoming a Science Technician in a Scottish College.

I am an Apprentice Science Technician at Dundee and Angus College. Before commencing this role at Dundee and Angus College, I was a pupil in S5 at Dunfermline High School, studying towards my Highers. I felt the best choice was not to complete S6 and go to university but instead apply for a Modern Apprenticeship in a field that I had a genuine interest in. This would allow me to build on my knowledge of the subjects I enjoyed at school within the workplace and earn whilst learning at the same time.

Leaving full-time education to progress to full time education elsewhere did not fill me with enthusiasm. I always felt I was a more of a 'hands on' learner and would gain more knowledge from experience instead of purely academic learning in a classroom. Whilst at school, I studied all STEM subjects (Maths, Engineering Science, Physics, Human Biology, and Chemistry), which I felt I had the most interest in

The decision to leave school at the end of S5, having completed my Highers, was an easy one as I did not see the need to stay for S6, having achieved good results to apply for an apprenticeship. I felt that staying at school would have been counterproductive, and I was keen to enter the workplace. I decided that the decision to seek a career in a STEM field would be what I would get the most enjoyment.

With this in mind, I applied for some apprenticeships and was successful in progressing to the recruitment stages for a couple, but when it came to choosing the right kind of apprenticeship, I had to think carefully about which one I would select as the wrong choice could have potentially resulted in being in a job I hated for the next 3 or 4 years. Therefore, it was really important for me to take the necessary time to consider what career path I would get the most enjoyment out of. After careful consideration, I decided a career in Science appealed to me most rather than a career in Engineering. Therefore, I was really keen to take up the offer to join Dundee and Angus College as a Science Technician whilst also completing a level 3 MA in Life Sciences.

The role of a Science Technician is very varied, meaning that no two days of work are the same. When working as a science technician, there is such a large requirement for versatility as the courses run at the college are all different and have different aspects, e.g. you may need



to prepare solutions, growth cultures, acids and bases, growth media etc., and prepare labs for all practical work done in the college, so you are seldom bored. Technicians have so much responsibility within an education centre, keeping the fluidity of practical work and even often carrying out demonstrations. The technician team is also solely responsible for care of the Chemical Storeroom which is a very big responsibility due to all hazardous material being stored within. Maintaining equipment is also a very big part of a technician's role whether it's calibrating or repairing. A technician's job is to ensure equipment is always in working order before going out for labs.

Going to SSERC for the Safety in Microbiology course, I went in with the expectation that it would help to consolidate further what I already knew about microbiology from working in the lab at college; this expectation was met with the bonus of improving my confidence in the lab and providing proof of knowledge which will help towards completing my SVQ which is a competency-based qualification which is part of my apprenticeship. I would recommend completing SSERC courses for any Modern Apprentice working towards an SVQ as it helps endorse the practical skills you will learn as part of your Modern Apprenticeship.

Gregor Campbell,
Modern Apprentice,
Dundee and Angus College

Why become a STEM Ambassador?

STEM Ambassadors - Raising awareness of the role of the Technician

Technicians are the unsung heroes in schools, colleges and universities across Scotland. They work hard behind the scenes to give learners the practical, hands-on experiences that make STEM come to life and inspire them to engage with these subjects.

However, ask learners about careers in STEM and Technicians might not be at the top of their list for no other reason than lack of information.




Careers in other areas of STEM and education often have more exposure which means learners are unaware of the opportunities becoming a technician can offer and the study route they need to follow to get there.

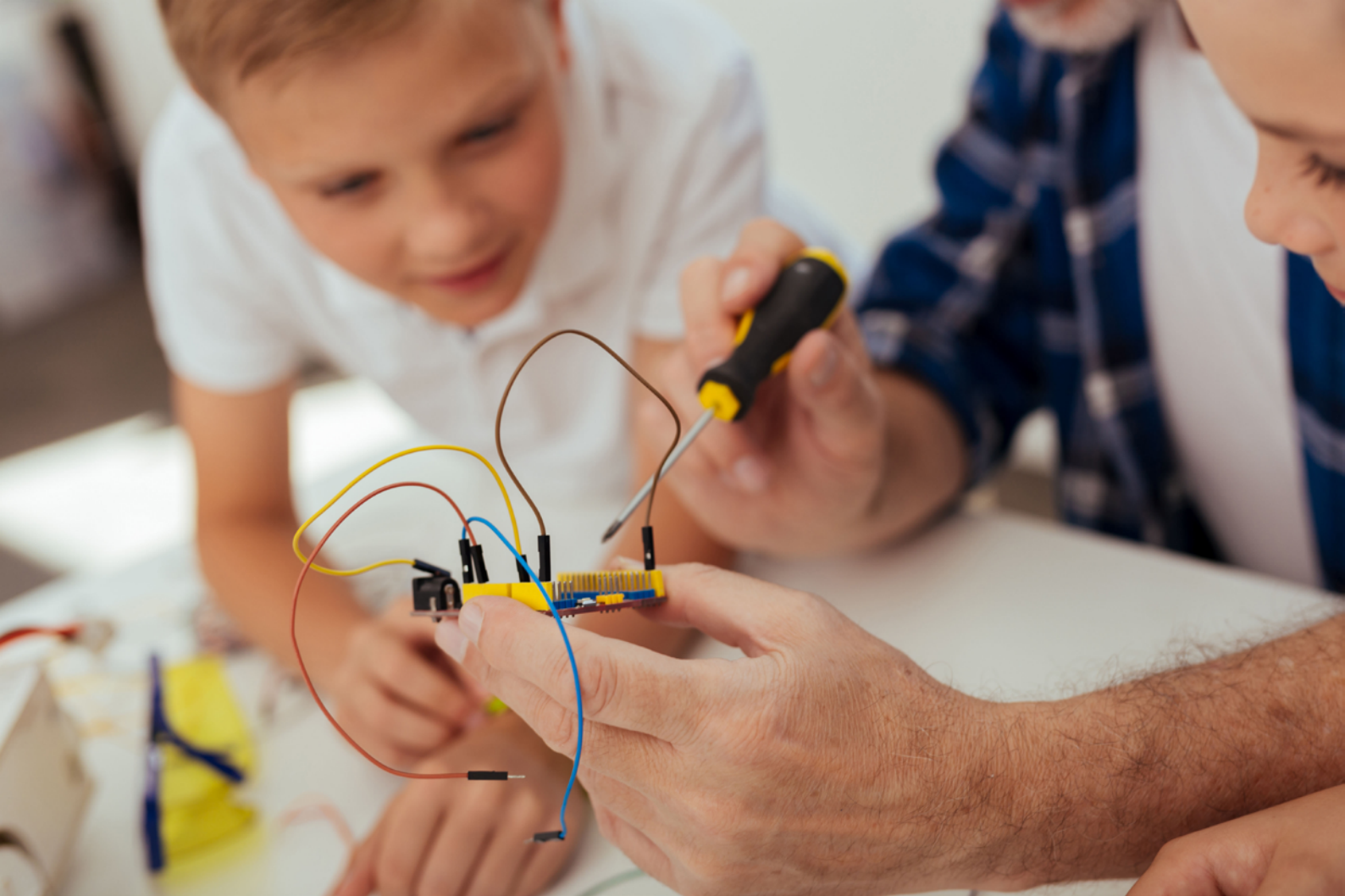
Becoming a STEM Ambassador allows those working in all areas of STEM to showcase their sectors and increases awareness of their roles to learners and colleagues, and the wider community; this is just one of many reasons we are encouraging technicians to sign up as STEM Ambassadors.

What can STEM Ambassadors do?

By volunteering as a STEM Ambassador, you will have the opportunity to take part in practical activities such as workshops, judging STEM competitions and supporting festivals, and promote and explain the role of a technician at face to face and online careers events.

At the STEM Ambassador in Scotland Hub, we regularly produce articles about our ambassadors' jobs to give learners options and information they might not otherwise have access to. We are keen to promote technicians and the vital role they carry out.

STEM activities	Support with or deliver workshops, enrichment days, exhibitions, STEM fairs or STEM Clubs	Judge school STEM competitions	Bring specialist equipment for young people to experience	Host a school trip
				
Careers support	Give careers talks or help at careers fairs	Host a workplace visit or work experience	Speed networking with pupils, parents and teachers	Help students with mentoring, mock job interviews and CV writing
				
Wider school & college support	Develop and run CPD for educators or talk to a teacher to help with any questions	Provide support and advice for governors, headteachers and senior leaders, or become a governor	Develop curriculum, resources and activities	Develop connections with local businesses
				



Becoming an Ambassador

Registering as a STEM Ambassador is easy and comes with a whole host of benefits to yourself and the young people in and out of schools you will get the opportunity to engage with.

Once you register as an ambassador at <https://www.stem.org.uk>, we will give you access to online induction training, PVG certification, and ongoing support and keep you updated with volunteering opportunities in your area.

If you would like to find out more come along to one of our regular [Welcome Sessions](#), where you can chat with the team who are there to answer all your questions.

Support for Technicians

You don't need to be a STEM Ambassador to access some great resources from STEM Learning.

To complement SSERC professional learning courses, STEM Learning has a range of [professional learning courses](#) available for technicians, both face to face and online many of which are free of charge.

They also offer a whole section full of [ideas and inspiration](#) to support you and your department.

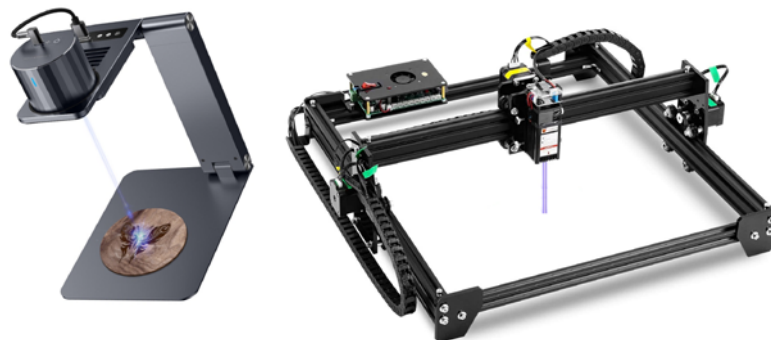
Visit the website to find out more.

www.stem.org.uk



Health and Safety Update

Laser cutters



Don't make an EN-grave-ING mistake

Devices like these above may function as laser engravers but they fall short when it comes to safety features necessary, to allow them to be used in an educational setting.

In order for a machine to be suitable for education use, BS 4163 (2021) states:

Only laser cutters or engraving machines classified as Class 1 lasers should be used in school. The laser may be Class 4, but when enclosed in an interlocked unit, it would be a Class 1 machine.

This means that your laser module must be

completely inaccessible when the machine is in operation. This is usually achieved by manufacturers placing the entire machine inside an enclosure that interlocks an access panel, and cuts power to the laser module if the access panel is opened during operation. This way you ensure that no one is injured by being exposed to the laser.

A typical example can be seen below. This Mantech Lasertech 6040 has a fully interlocked access door and built-in extraction system making it a good option for schools.



Glassware

Breaking Glass

The biggest problem with glass from a health and safety point of view is linked to its biggest drawback – the fact that it is brittle and likely to break. But there are a few lesser issues as well.

Cuts

The edge of a piece of broken glass can be phenomenally sharp. It is possible to obtain scalpel blades made from glass what are many times sharper than steel with an edge only 3 nm or so thick!

Clearly then any broken glass should be handled with care. It is usually easy to see when glass is broken and pick or sweep them up carefully with appropriate precautions. Beware of tiny slivers than can sometimes be missed. If it is not easy to sweep these up, you can use a piece of Blu Tack to pick them up.

You need to particularly beware of glassware piled in a washing up bowl. It is always wise to check it before filling with water and detergent. Once it is full, you will not be able to tell if there is broken glass there and can easily give yourself a serious cut.

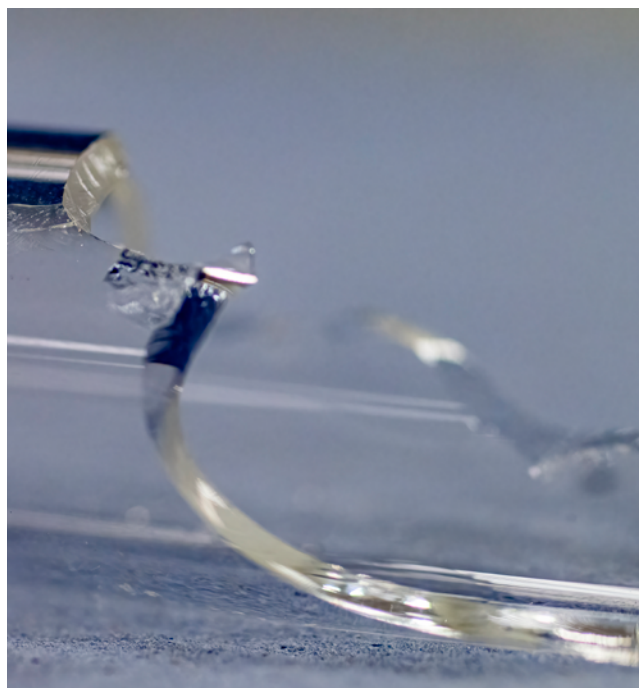
Another potential cause of nasty cuts is inserting glass tubing into bungs or corks. It is important to use the correct technique for this to avoid injury:

- Insert a cork borer, wide enough for the glass tube to fit through, into the hole in the bung. You can use propan-1,2,3-triol (glycerol) as a lubricant for this.
- Insert the glass tube through the cork borer.
- Remove the cork borer, leaving the glass tubing in place.

Inserting pipettes into fillers can also be a hazard. To avoid breakage and stabbing themselves, learners should be taught to hold the pipette only a centimetre or two from the end and not to push too hard.

Burns

Glass can get extremely hot and looks no different from cold glass. Moreover, it has quite a high thermal coefficient and so will stay hot for a long time. So be very careful before picking up any glass item that has been strongly heated.



Spillage

Another problem with the brittle nature of glass is that if it breaks the contents will spill out, and these could be hazardous. In addition to the normal precautions you would take with any container: watch out for cracks. A crack, even a hairline one, in glass can lead to sudden failure particularly when heated.

Stuck stoppers

Stoppers, particularly in storage bottles, can become stuck in place. This is most common with ground glass stoppers. These should be avoided for bottles containing sodium hydroxide or other alkaline solutions as the alkalis can react with the glass and cement the solutions in place.

Similarly, alkaline solutions should not be left in burettes or pipettes as they will cement the jets closed.

Gentle tapping or warming can sometimes loosen them but even if not then it is usually no more than an annoyance.

Sometimes, however, the chemical inside the bottle can release gases that produce an increase in pressure that can cause the bottle to explode. Silicon tetrachloride is known for this.

Working with radioactive materials

Technicians may not have specific responsibility for radioactive materials in school, but an awareness is important.

The Health and Safety Executive's Field Operations Division has contacted SSERC (and CLEAPSS for the rest of the UK) to explain it is undertaking a programme of inspections across England, Wales and Scotland to see how schools manage the safe use and storage of the radioactive sources used in science teaching. An inspection programme may come as a surprise to some when you consider the relatively low risk of these sources compared to those used in universities and hospitals. But low risk does not mean exemption from inspection.

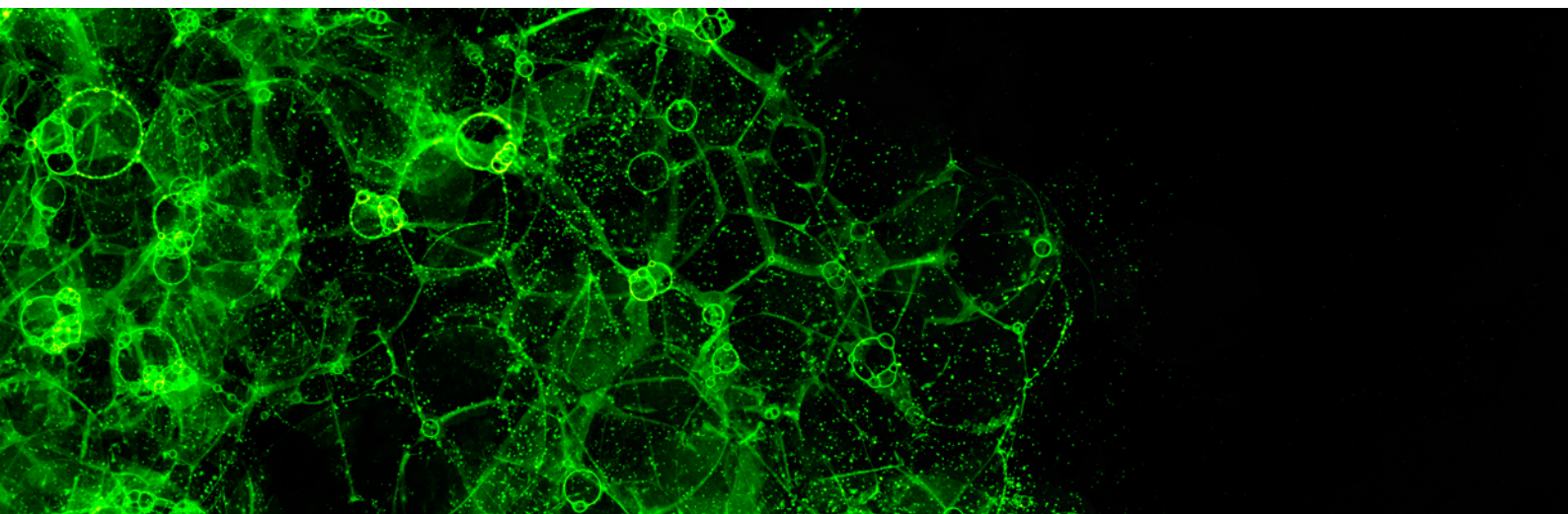
Ahead of the inspection programme, our advice for Scottish schools with radioactive materials is to log in to our website and read the document *Working With Radioactive Materials in Schools*, which is downloadable from our Ionising Radiation webpage [1].

We are not the radiation protection police at SSERC, nor do we carry out inspections. If we did do so, we'd expect to be introduced to a member of staff who had taken responsibility for ensuring that the science department's procedures for working with radioactive materials were both safe and compliant with the law. Have a look at the following checklist. Can your school tick all the boxes? If you can't at the moment, make sure that you address the weak areas. You are not on your own – the team at SSERC will work with you. Contact us on rpa@sserc.scot.



We also run courses on working with radioactive materials. We'd love to see you at our face-to-face course that will next run in August, but we appreciate that not everyone who wants to will be able to come. We will also run an online course in March 2023 and are soon to launch a self-study course. Details of all courses can be found on our website [2]. Keep checking for new courses!

At the time of writing, we don't know how many schools in Scotland HSE intends to inspect or when they will be inspecting them. We are however confident that all schools who keep and use radioactive materials should be able to work with SSERC to be in a position where they have nothing to fear from an HSE inspection.



This is a checklist.

Item	Comments	Tick
SSERC poster with basic safety rules displayed, customised to have your own 'radiation casualty' hospital listed, and supervisory teacher identified	Editable version downloadable from our Ionising Radiation webpage [1]	
Stocklist present	Editable version downloadable from our Ionising Radiation webpage [1]	
Log of usage maintained	Editable version downloadable from our Ionising Radiation webpage [1]	
Monthly stock checks take place (except for summer holidays) and are recorded in log		
Only approved sources used	See document Working With Radioactive Materials in Schools for a photo guide	
Contingency plans available	Customisable plans available in document Working With Radioactive Materials in Schools	
Plans covering less serious incidents available	Customisable plans available in document Working With Radioactive Materials in Schools	
Activities risk-assessed, control measures communicated to users	Generic risk assessments available for adaptation from our Ionising Radiation webpage [1]	
All staff who work with radioactive materials given appropriate training	We run training courses, details on our website [2] or inhouse training can be provided by a competent person e.g. the supervisory teacher	
No work with radioactive materials by learners if under 16s in the class		
Training and supervision of older students if they are to use radioactive materials		
Appropriate secure storage	See document Working With Radioactive Materials in Schools	
Leak testing carried out and recorded	See document Working With Radioactive Materials in Schools and spreadsheet downloadable from our Ionising Radiation webpage [1]	

[1] <https://www.sserc.org.uk/health-safety/physics-health-safety/ionising-radiation/>

[2] <https://www.sserc.org.uk/professional-learning/secondary-clpl/health-safety-clpl/>

SSERC and Biology

Biology is less obviously hazardous than chemistry from a Health and Safety point of view but there can still be issues and SSERC can still help.

Human remains

Most skulls and skeletons found in schools are artificial but from time to time we come across genuine human remains.

Usually this is in the form of bones or a complete skeleton but we have heard of other samples – even in one case a human foetus preserved in formaldehyde!

There is no requirement to dispose of these but if you are going to, it needs to be done properly. The appearance of a human skull at the local recycling centre could spark a major police incident.

If you find something, contact SSERC and we can put you in touch with the right people.



Fieldwork

This is certainly not unique to biology. Indeed many other subjects make use of the educational opportunities available away from school premises.

Many of these activities, particularly those taking place at relatively remote sites, contain risks not present in normal school life.

In addition to our classroom-based risk assessments, SSERC has numerous risk assessments covering a variety of other activities that may take place on and

off the school premises: from school fairs to river studies. And, as with all other areas we cover, if you need more specific advice, we are on hand to help.



Microbes

Studying micro-organisms is an important part of any biological studies but one that is not without dangers. If samples are taken from the wrong places (e.g. manure) or cultured at high temperatures (especially approaching human body temperature) or grown anaerobically, then there is the possibility of dangerous pathogens being accidentally cultured.

SSERC's Safety in Microbiology Code of Practice gives extensive guidance on what to do, and more importantly what not to do. If there is any doubt then we are available by telephone or email to advise.

Plant and animal material

On a larger scale, a lot of other biological work involves studying living organisms, or more often material extracted from them.

- **Human studies** – most commonly these involve non-invasive studies on things like heart rate or breathing; though studies can be carried out on saliva, cheek cells and blood. Some studies however, particularly at Advanced Higher, raise ethical issues.
- **Animal studies** – any studies on live animals also raise ethical issues as well as health and safety ones but dissection and examination of animal organs (eyes, hearts, lungs etc.) are commonly carried out and, as long as SSERC guidance is followed, are quite safe.
- **Plant studies** – In general, these are less problematic. The main hazards are likely to involve either plant toxicity or allergies.