



Image: Ryan Hunt / Larbert High School

Annual report 2021



Image front cover: Ryan Hunt from Larbert High School.

What Ryan said about his image: “My image for the SSERC Annual Report was created through the use of projection. Firstly, I photographed various local demolitions, looking closely at the machinery used. I then created a textured relief using plaster, onto which my images were projected. My piece is symbolic of technology and innovation through construction and architecture, aided by groundbreaking developments across all STEM sectors”

Other student images:

- Caitlin Urquhart from Millburn Academy, page 5.
- Tara McGhie from Madras College, page 11.
- Stephanie Moore from Buchanan High School, page 19.
- Isla Monro from Peebles High School, page 33.

Contents

Overview	4
Message from the Chair	4
Message from the CEO	5
Corporate activity	6
Professional Learning (PL)	8
Early Years and Primary	8
Digital Skills and Computing Science	11
Secondary	12
School technicians	17
Outreach work	18
Outreach digital	19
The Advisory Service	22
Evaluation and research activity	25
Wider STEM engagement	27
The STEM Ambassador Programme	28
Young STEM Leader Programme (YSLP)	32
Business development activity	35

Overview

Message from the Chair of the SSERC Board of Directors and Trustees



In addition to its impact on public health, the coronavirus pandemic (COVID-19) caused a significant economic shock that impacted on the business functions of many organisations, including SSERC. In the financial year covered by this annual report, The Board, in particular, offered support relating to business operations and employment, financial fragility and preparing for the pandemic exit.

It is a testament to the hard work and dedication of the SSERC team that the organisation remained operational throughout the pandemic. During the initial stages of the pandemic, SSERC's Advisory Service took a proactive approach to the problems caused by the coronavirus outbreak, providing updated health and safety advice to Scotland's schools, colleges and local authorities throughout the COVID-19 lockdowns.

The twelve months to 31 March 2021 did see significantly reduced activity and income, forcing SSERC to furlough a large proportion of its staff. We supported staff salaries by accessing grants through the UK Government's Coronavirus Job Retention Scheme (CJRS). Unfortunately, the uncertainty as to whether the CJRS scheme would continue beyond September 2020 did force SSERC to reduce staff headcount during the year. Three staff accepted a redundancy package, and three leavers were not replaced (equivalent to 4.9 FTE).

Despite the significant challenge caused by the COVID-19 crisis, SSERC staff adapted a substantial number of courses to be delivered over a combination of live online sessions, guided self-study and 'Gap Tasks.' This enabled SSERC to continue a programme of experiential Professional Learning even during periods of lockdown.

We continue to be grateful to our funders, who themselves faced financial challenges due to the pandemic but continued to support the organisation.

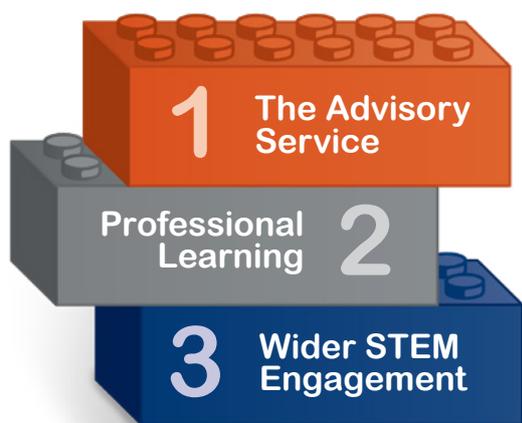
On behalf of the Board, I applaud the significant achievements made by the organisation in what has been a challenging and turbulent year in the organisation's history. It is a testament to the hard work, determination and professionalism of the SSERC team, and the high regard with which the organisation is held, that we can publish a 2021 annual report that showcases the positive impact of the products and services that we offer to the education community in Scotland.

A handwritten signature in blue ink, which appears to read 'Alan Nimmo'. The signature is stylized and fluid, with a long horizontal stroke extending to the right.

Councillor Alan Nimmo - Chair of SSERC Board of Directors and Trustees

Message from the CEO

The SSERC 2021 Annual Report details the organisation's activities from 1st April 2020 through to 31st March 2021, a time frame dominated by the COVID-19 pandemic. The pandemic undoubtedly had a significantly negative impact on the organisation, with aspects of furlough, redundancy, lockdown (and associated travel restrictions), working from home and income reduction all creating uncertainty throughout the 12 month reporting period.



As you read through this Annual Report, I hope that you will be as impressed as I am at the level of activity that has been reconfigured or developed and then delivered to support the education community in Scotland, despite all the challenges previously identified. The pandemic has not thwarted the enthusiasm and ambition of the SSERC team to develop new and exciting programmes which were able to be explored and delivered despite the impact of school and college closures. Not only have we delivered a relevant and quality range of STEM products and services, we have also been working hard to extend our offering across all our three core functions, and we have some new and exciting offers in the pipeline for the academic session 2021/2022 and beyond.

With the gradual relaxation of lockdown and the ongoing success of the vaccination roll-out, I look forward to once again being able to welcome delegates back into SSERC HQ. As we return to whatever the 'new normal' looks like, we will benefit from the excellent work undertaken by the team reconfiguring our Professional Learning to be delivered digitally. As an organisation with a reputation for excellence in our hands-on, practical, experiential Professional Learning, we will never be persuaded that digital provision can be an adequate alternative for much of our provision. The benefits of 'reach' and travel reduction associated with digital delivery cannot be overlooked. Moving forward, a significant proportion of our Professional Learning will adopt a blended approach, with face-to-face activity focussing on practical activity.

I have been overwhelmed by the messages of support from partner organisations and, in particular, education practitioners who have reached out via social media or email to praise the SSERC team for their efforts during the pandemic. As an organisation, we will continue to develop and diversify to meet the needs of the STEM education community in Scotland. By doing this, I hope that we can continue to maintain the trust and respect of those we engage.

Alastair MacGregor

Alastair MacGregor - Chief Executive Officer



Corporate activity

The SSERC Board

Our Board of Directors and Trustees comprises elected members from Scottish councils, senior education officers and representatives from The Association of Directors of Education in Scotland, School Leaders Scotland, The Association of Head Teachers and Deputies in Scotland, and the Scottish Parliament. The Board meets every quarter. You can find out more about each Board member by visiting [About SSERC](#).

The Board has three board sub-committees:

- 1) Audit and Risk Management Committee (chaired by Clare Adamson MSP).
- 2) Nominations Committee (chaired by Cllr David Dodds).
- 3) Staffing and Remuneration Committee (Chaired by Cllr Alan Nimmo).

In December 2020, following an open recruitment process overseen by the Nominations Committee, we welcomed six new Board members:

- Jayne Hamilton (Stirling Council).
- Richard Holme (Dundee University).
- Nicky Inglis (Fife College).
- Erin McGowan (Aberdeen City Council).
- Jon Reid (School Leaders Scotland).
- Alistair Wylie (SQA).

Vision 2030

The SSERC Board of Directors and Trustees monitors the organisation's progress towards achieving Vision 2030: **SSERC is internationally recognised as a centre of excellence for STEM learning and support.**

Work stream	Aim
Professional Learning 	To increase the breadth and impact of the professional learning offering.
Advisory Service 	To further develop and promote the Advisory Service.
Outreach work 	To increase capacity and capability to offer an increased volume and range of Professional Learning via SSERC accredited centres outwith Dunfermline.
Outreach digital 	To increase capacity and capability to offer an increased volume and range of Professional Learning via the use of digital technology and communication.
Evaluation and research activity 	Use evaluation and research data to influence the direction of all SSERC workstreams. To allocate time to undertake specific evaluation and research activity within SSERC and publish using various channels, e.g. website, academic journals, social media.
School technicians 	To raise the professional status of school technicians and promote the role they play in the education community in Scotland.
Business development activity 	To increase income streams from non-traditional sources to allow for increased capability and activity.
Wider STEM Engagement 	To increase the level of STEM engagement in addition to SSERC's STEM Ambassador activity.



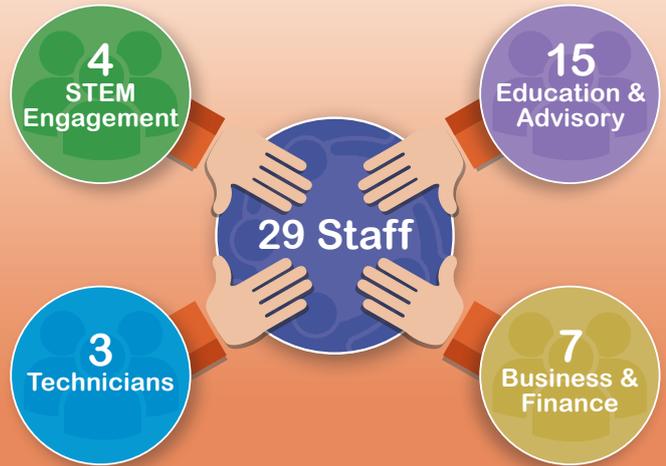
Complaints

In session 2020/2021, we received one complaint classified as 'not upheld' following an internal investigation.



Staffing

Our staffing complement was 29 at the end of the financial year.



Professional Learning

Aim

To increase the breadth and impact of the Professional Learning offering.



Early Years and Primary incorporating digital skills and computing science

The Early Years and Primary team provide Professional Learning courses for the following:

- Early Years Practitioners.
- Childminders.
- Nursery Teachers.
- Primary Teachers.
- ASN Teachers (supporting early – second CfE levels).

Despite the impact of COVID-19 and associated restrictions, by the end of March 2020 we were able to deliver a full year of Professional Learning. This included continuing to support 13 Local Authorities through both years of the Primary Cluster Programme.

The appetite and desire from early years settings and primary schools to continue to drive forward STEM in their settings has been remarkable with many using STEM as a context for learning through Interdisciplinary activity.

Professional Learning delivered:

- Primary Cluster Programme Year 1.
- Primary Cluster Programme Year 2.
- Open SSERC_Meet.
- ENTHUSE Courses – funded through STEM Learning.
- SSERC Online Learning Self-Study course.

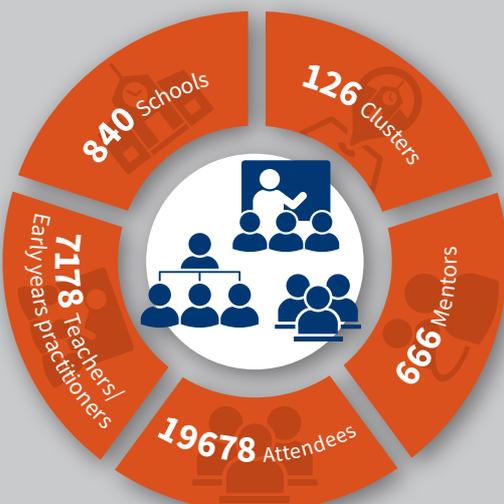
1803 training days delivered, this is 17.5% over agreed target.



Primary Cluster Programme (PCP)

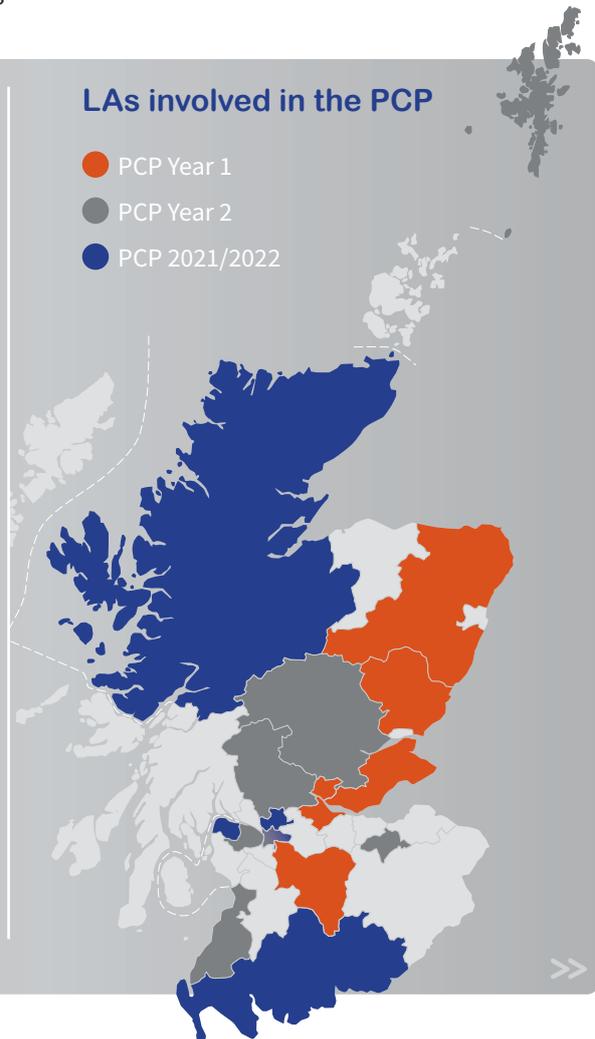
The Primary Cluster Programme continues to be the main focus of our Professional Learning to support early years practitioners and primary school teachers.

Numbers to date



LAs involved in the PCP

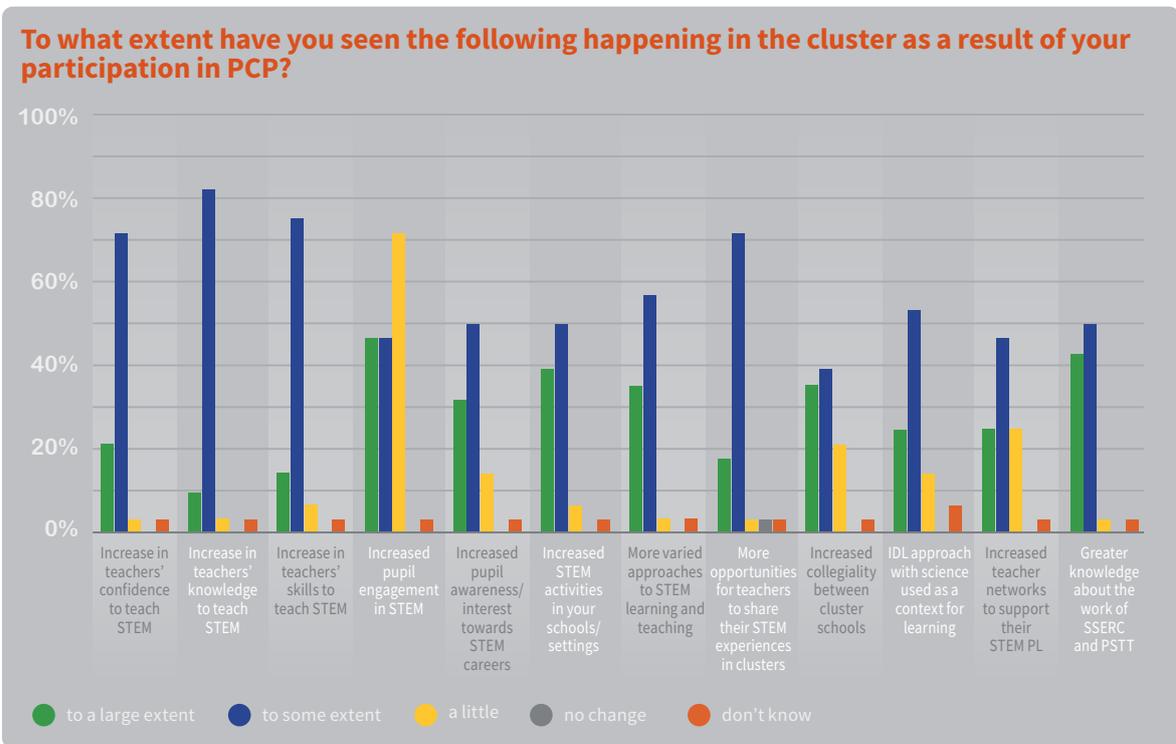
- PCP Year 1
- PCP Year 2
- PCP 2021/2022



Historically, PCP has been a programme of blended learning combining residential and remote Professional Learning opportunities. Through the COVID-19 pandemic we have been proactive and creative with PCP (and all other previously designed face-to-face Professional Learning (PL)), to allow continuity of delivery. The use of digital platforms for delivery combined with resource kits being sent direct to delegates meant that teachers could still engage with PL so allowing engaging STEM activities to be delivered in classrooms across the country. By way of example, we delivered 18 SSERC_Meets, three online leadership, coaching and mentoring sessions and three online delegate showcase events.

Feedback from both year 1 and year 2 mentors was very positive:

“It was a fantastic experience for all staff in school to be able to take part in the live sessions. In addition, the resources that were sent out to support the Professional Learning allowed staff to safely take part in their isolated bubbles to engage in high quality PL.”



During year 1 of PCP, 510 resource boxes were sent to schools, with enough kit to support 7650 delegates to benefit from live SSERC_Meet sessions. These resources were supported by funding from the Edina Trust Science Resources for Schools grants.

During year 2 of PCP, 225 resource boxes were sent to schools, with enough kit to support 2250 delegates to benefit from live SSERC_Meet sessions.

“Pupils just beginning to increase enthusiasm as we have left implementation to term 3. Very early results are very encouraging.”



Open courses and SSERC_Meets

Our range of SSERC_Meets continue to be popular with delegates and across the year we offered and delivered the following:

- Carbon Dioxide.
- Teddy in the Park.
- Pneumatics and Hydraulics.
- Good Vibrations.
- Mystery Messages.
- Science Inquiry/Classification, Observing and Exploring.
- Science Inquiry/Finding an Association and Fair Testing.
- Zoom in, Zoom out.

SSERC_Meet figures 2020/2021



777

training days were delivered digitally via open interactive SSERC_Meets



160

resource boxes allowing 1600 staff members to take part



21

different LAs covered through the open SSERC_Meets



75%

of our Early Years and Primary activity was delivered through SSERC_Meets

During the first lockdown the Early Years and Primary team adopted the following approaches to supporting teachers, and their learners, who were not part of the ongoing PCP but who were working from home or by various 'blended learning' arrangements:

- 1) A total of 31 Home learning videos are available via the Early years and Primary playlist on SSERC_TV.
- 2) Our online interactive self-study Professional Learning course, Exploring Maths and Numeracy through STEM, was developed and launched with 182 completions to date.
- 3) Development of STEM by the book resource – to be launched September 2021.
- 4) Development of interdisciplinary learning planners to accompany all SSERC_Meet activity.
- 5) The Super Science Terrific Technology course that began in November 2019 and was scheduled for part 2 in March 2020 had to be reformatted, rescheduled, and completed via a self-study course in March 2021. All delegates received a link to a Microsoft Team where they had access to the course materials and recorded instructional videos to accompany the resources that had been sent out.

“Being part of a programme recognised by the cluster Head Teachers has made a difference in how we have been able to develop Science and STEM across the cluster. Meeting colleagues in my cluster who are as interested in Science and STEM as I am and want to develop these subjects within their schools”

We were successful in application to be one of two Regional Champions for GSSFS 2021 (Great Science Share For Schools). As part of our role, we engaged with settings across Scotland focusing particularly on areas of high deprivation. The Early Years and Primary team worked closely with the Young STEM Leader Programme and STEM Ambassadors in Scotland Hub to promote engagement with the campaign. Together we developed and delivered several twilight PL events and worked with Linlithgow Primary Schools Young STEM Leaders to produce a 'live lesson' which was shared during the GSSFS day.



Digital Skills and Computing Science

We welcomed a new Digital Skills and Computing Science Education Manager to SSERC in January 2021. Working in Partnership with colleagues in Education Scotland, the CRIS (Cyber Resilience and Internet Safety) mentor programme was prepared for its launch in May 2021.

Delivery and activity

- Home Learning videos recorded and uploaded onto SSERC Home Learning and SSERC_TV.
- Recording, editing and supporting Early Years and Primary team with new SSERC Meet supported video material.
- Development, writing and delivery of two ENTHUSE course supported by STEM Learning:
 - Let's Play @ Computing Science.
 - Welcome to Micro:bit V.

"I now have a much clearer understanding of the importance of Computing Science in the curriculum and how it links into many other areas of the curriculum. I feel less scared of the language used in Computer Science after the session."

We have been awarded Apple Regional Training Centre status for a further year and we intend to deliver Apple courses from SSERC throughout the academic year 2021/2022 along with a comprehensive and varied digital PL calendar of events.

"Very easy to follow and I can now transfer this information and up skill other practitioners within my setting which was identified as an area for development within our SIP."

Looking forward

We will continue to develop new and innovative Professional Learning activities, many of which will embed digital skills and computing science and involve a range of partner organisations. We will take the outputs from our practitioner-led Leadership in STEM Education (Early Years and Primary) design team and move into development phase culminating in a Professional Learning course at SCQF 11.



Secondary

The secondary team provide STEM Professional Learning courses and events for:

- Secondary school teachers
- Newly and recently qualified teachers
- PGDE students
- School Technicians

During the pandemic we delivered 1073 training days, 945 of which were online, maximising access and geographical coverage.

SSERC Secondary online events and Professional Learning:

- Accessible to all on a national scale.
- Interactive.
- Recorded.
- Self-Study options are available.

Secondary PL delivery



88%
Digital



12%
Face-to-face

In response to centre closures, as a result of the pandemic, the secondary team adopted a three-pronged approach to supporting educators and learners who were working from home or by various 'blended learning' arrangements:

- 1) Updated resources were uploaded to Home Learning pages of the SSERC website.
- 2) Videos of experiments in biology, chemistry and physics were developed and uploaded to the website and to SSERC_TV.
- 3) Online interactive Professional Learning courses were developed with pre-delivered kits allowing delegates to 'cook along', or through online self-study courses.



Courses delivered face-to-face, online or by blended models

Chemistry	Chemical Handling Chemistry for Advanced Higher
Biology	Support for Advanced Higher Biology Techniques for recently Qualified Teachers of Biology Safety in Microbiology for Schools
Physics	Introductory Physics Intermediate Physics Physics Blended Course Working with Radioactive Sources
Science	Laboratory Skills for National 5 Environmental Science

Technology

The technology team faced the challenge of moving PL online as many of their offers are practical-based using the heavy plant and equipment in our technology workshops. However, courses and the workshop were adapted to allow small numbers of socially distanced delegates to participate in face-to-face Professional Learning when restrictions were eased, allowing us to continue our offer and support educators and technicians in these subject areas.



Technology courses

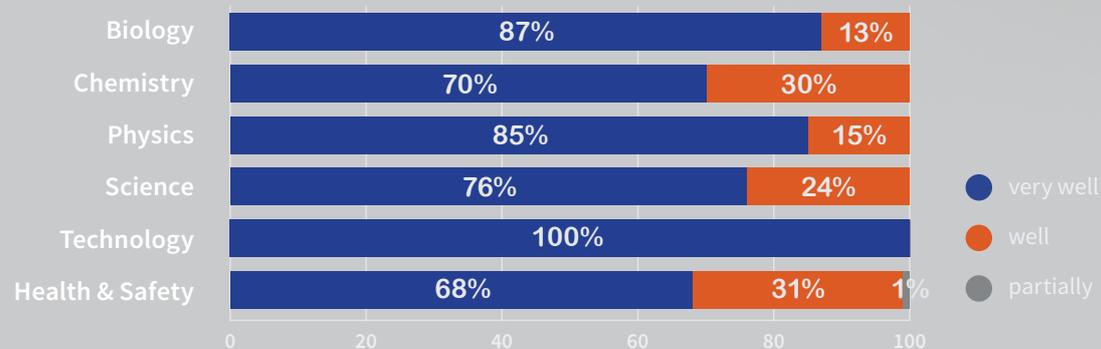
- Hot and Cold Metal Forming
- Engineering Bench Skills
- Safe Use of Fixed Workshop Machinery
- Refresher Courses
- Maintenance of Fixed Workshop Machinery



With a view to diversifying and expanding our future Professional Learning offering:

- A new wood turning area was upgraded and refurbished.
- The laser cutter was upgraded.
- Welding extraction equipment was installed to comply with health and safety guidelines.

How well did our secondary Professional Learning courses meet delegates' expectations?

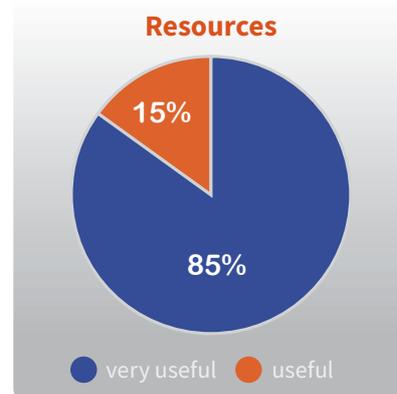


For our 2-part blended courses (online and face-to-face) including Environmental Science, Leadership, Laboratory Science, Physics Blended and Support for Advanced Higher Biology, delegates were asked to rate the usefulness of resources provided on the course.

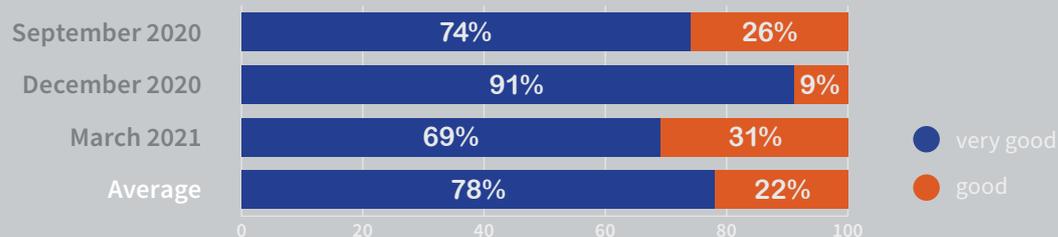
Support for newly Qualified Teachers (NQTs) of Science

With a curtailed PGDE year and a probationary year interrupted by lockdowns and home working, we worked hard to support this cohort, delivering 134 training days in 2-part courses online and face-to-face.

In evaluating the Professional Learning needs of NQTs, 3 cohorts of delegates responded in formal evaluations rating their PL experience with us.



How would you rate the experience?



In evaluating impact on their practice, NQTs reported the following

Respondents indicating they:	%
Have implemented new practical work	83
Increased confidence in delivery of practical work	96
Have developed new practical activities	57
Were more enthusiastic about their teaching	74
Have increased confidence in leading discussion activities	78
Use a wider variety of methodologies in their teaching	74

The data from our respondents shows that our alternative approach during centre closures still has a positive impact on meeting the PL needs of our delegates.

Scottish Universities Science School

All PGDE Science and final year undergraduates following a science with education programme in Scotland are invited to The Scottish Universities Science School (SUSS) which is held during their training year. Average attendance rates at SUSS are 95+% among the ITE community in Scotland.

Once again, we responded to centre closures with an alternative approach which would still allow us to support our large ITE cohort, making the vital introduction to new teaching professionals in what we hope is a long and successful PL relationship with SSERC throughout their careers. A total of 245 people (students and tutors) attended one of the two consecutive live online events. SSERC secondary science team contributed hands-on interactive sessions based on the kits sent to registered student delegates (230). Formal evaluations were positive.

94% of the 108 delegates who provided feedback found the *Simple hands-on practical activities with the SSERC Secondary Team* useful, or very useful.

Quotes from SUSS 2021 delegates

“Absolutely loved the experiments, very useful to know about simple activities which can be done from home!”

“Amazing activities. Really enjoyed the idea of simplicity, to be able to replicate it from the comfort of our own homes.”



Adapting to online delivery of practical activities

Our technical support team worked very hard to adapt and package kits to be sent out to individual delegates for all courses which were to be done online, or with a live interactive online component. We had been determined to deliver hands-on practical activities where it was possible. In some cases instructions for additional items to be borrowed from school were included in kits.



Period June 2020 - March 2021

386

'cook along' kits were prepared, packaged and sent out to individual delegates



What delegates said about kits and online delivery

Delegates to 'Support for Advanced Higher Biology' (delivered entirely online via Zoom between September and December 2020):

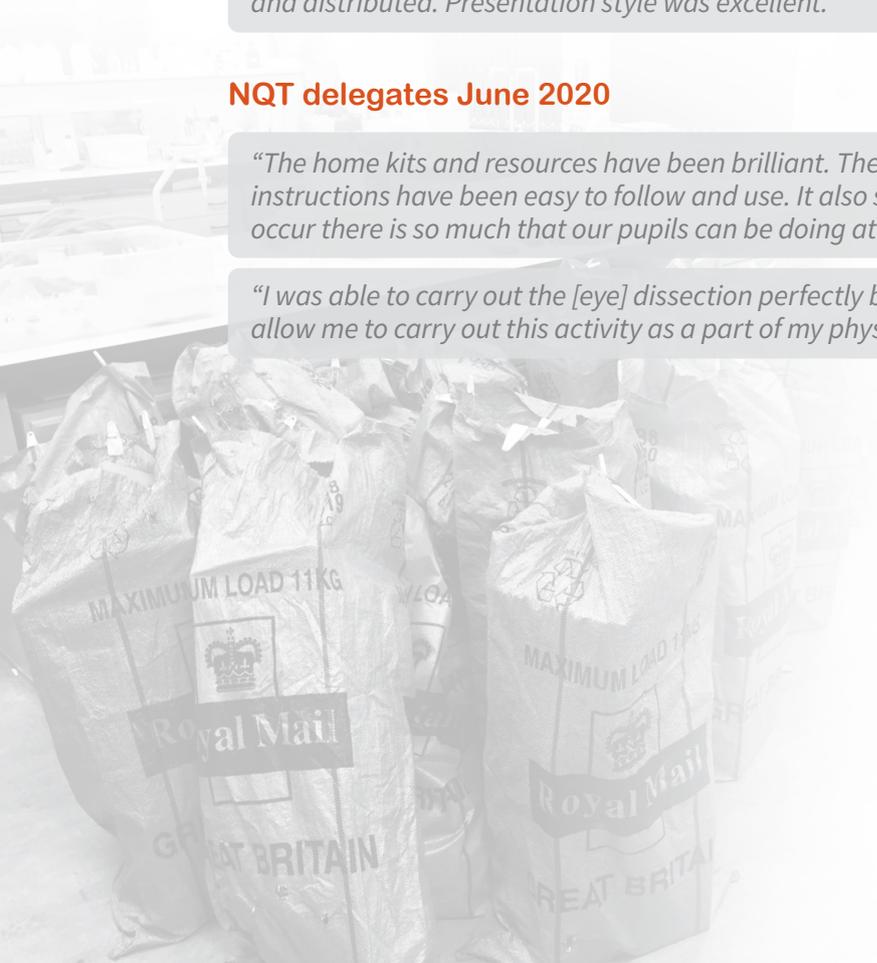
"The resources that have been supplied were excellent and such clear directions were given that I now feel much more confident at delivering this to my class."

"Really well organised! Kits supplied were great and quite a feat to get them planned, made up and distributed. Presentation style was excellent."

NQT delegates June 2020

"The home kits and resources have been brilliant. The organisation has been great and our kits/instructions have been easy to follow and use. It also shows that if a second lockdown was to occur there is so much that our pupils can be doing at home in relation to Science."

"I was able to carry out the [eye] dissection perfectly by following instructions. The resources will allow me to carry out this activity as a part of my physics course next week."



Collaborative working with the BBC and Education Scotland

In July and August 2020 colleagues from the BBC and Education Scotland worked with the SSERC secondary science team to create short 'Bitesize' films of practical activities to be added to the BBC Bitesize resources for Higher and National 5 sciences. The chemistry, physics and biology teams each contributed 10 films.



Looking forward

We will continue to review, adapt and develop new Professional Learning offerings to meet the needs of the education community in Scotland. Our offer moving forward will be diversified in recognition of the broad curricular areas that link to STEM. The outputs of our practitioner led Leadership in STEM Education (Secondary) design team will be progressed and moved into a development phase culminating in a Professional Learning course at SCQF 11.

A curricular audit will be undertaken to identify where there is a SSERC offer, from CfE Third Level through to SCQF Level 7. This will inform how we develop and enhance our courses and resource for STEM educators.



School technicians

Aim

To raise the professional status of school technicians and promote the role they play in the education community in Scotland.

Technicians are a crucial resource to the Scottish education community, providing a significant level of specialist knowledge and skills, allowing for the delivery of practical STEM-based activities in different learning environments. We are proud to support the school technician profession by providing quality Professional Learning.



COVID-19 restrictions had a detrimental impact on practical STEM-based activities and resulted in school technicians working from home and unable to complete many parts of their jobs. While competency-based Professional Learning cannot be effectively replicated online, we worked hard to provide as much meaningful Professional Learning as possible utilising digital technology and broadcast via SSERC_TV (our official YouTube channel).

3 of the top 5 playlists are technician-based videos and were accessed nearly 1000 times during lockdown.

Playlist	+	Playlist starts	Views	Watch time (hours) ↓
<input type="checkbox"/> Total		1,854	4,131	128.9
<input type="checkbox"/> Microbiological Techniques		581 31.3%	1,471 35.6%	36.4 28.2%
<input type="checkbox"/> Physics Videos for Technicians		359 19.4%	864 20.9%	34.8 27.0%
<input type="checkbox"/> Primary		272 14.7%	451 10.9%	12.7 9.9%
<input type="checkbox"/> Secondary Technology		53 2.9%	100 2.4%	11.2 8.7%
<input type="checkbox"/> Ssercmeets		88 4.8%	126 3.1%	10.0 7.8%
<input type="checkbox"/> Secondary Chemistry		134 7.2%	411 10.0%	8.6 6.6%
<input type="checkbox"/> Primary Bottle Science		63 3.4%	121 2.9%	3.1 2.4%
<input type="checkbox"/> Physics Teacher Virtual Summer School		51 2.8%	100 2.4%	2.4 1.9%
<input type="checkbox"/> Secondary Physics		57 3.1%	102 2.5%	2.1 1.6%
<input type="checkbox"/> Secondary Biology		35 1.9%	69 1.7%	1.7 1.3%

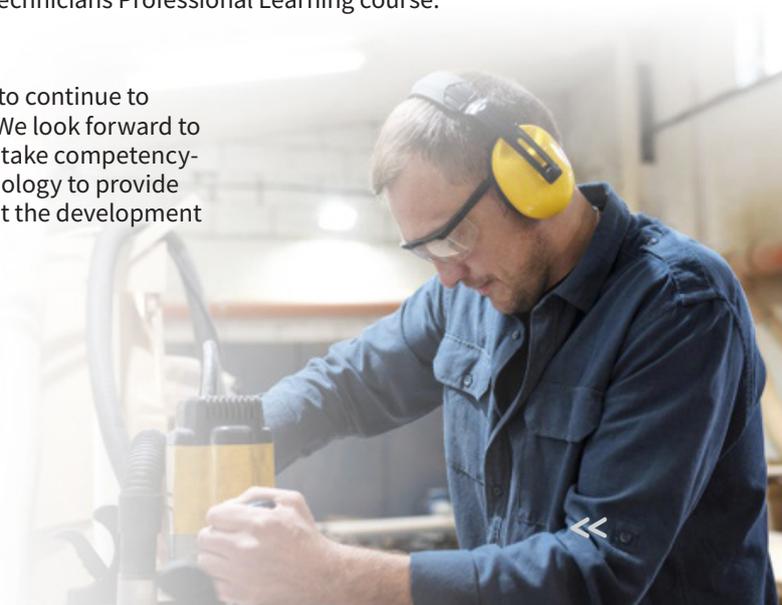
We took the opportunity of additional development time to design two new SCQF credit and levelled competency-based Professional Learning courses for technicians:

- Working with Technology in Technical: 3D Printing and Laser Cutting
- Working with technology in Science: Data Logging.

We are developing a Safe Glasswork and Repair for Technicians Professional Learning course.

Looking forward

During the pandemic, we utilised digital technology to continue to support the Scottish Technicians' Advisory Council. We look forward to welcoming technicians back into SSERC HQ to undertake competency-based PL, but we will continue to utilise digital technology to provide twilight 'information and update' sessions to support the development of this key group of education professionals.



Outreach work

Aim

To increase capacity and capability to offer an increased volume and range of Professional Learning via SSERC accredited centres outwith Dunfermline.

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.

The onset of COVID-19 has meant the same for SSERC accredited centres as SSERC itself, with all practical training courses coming to a halt as the country entered lockdown.

We continue to develop the accredited centre programme with eight accredited centres currently operating across Scotland and three new applicants who have begun the process. This has meant that we can now furnish more technician staff with local access to meaningful and quality Professional Learning.

Looking forward

We will expand the number of SSERC Accredited Centres across Scotland and increase the number of SCQF credit and levelled courses available. Where appropriate, we will allow the delivery of SSERC attendance based PL courses via our accredited centres.



Notre Dame High School Greenock - Inverclyde Council SSERC Accredited Centre.

“The option to gain SCQF Level 6 CPD qualifications in microbiology is something that teachers and technicians in Scotland really value, and the ability to access these courses at centres such as West College Scotland makes the CPD more accessible to the sector. We’ve had great uptake not only in the 3 day Safety in Microbiology training course but also in the one day refresher courses. Delegates regularly report how valuable the experience is to their day job, and a number of Modern Apprentices have used this SSERC accredited training to help gain permanent posts as technicians.”

Curriculum and Quality Leader for Science, Greenock Campus, West College Scotland.



Outreach digital

Aim

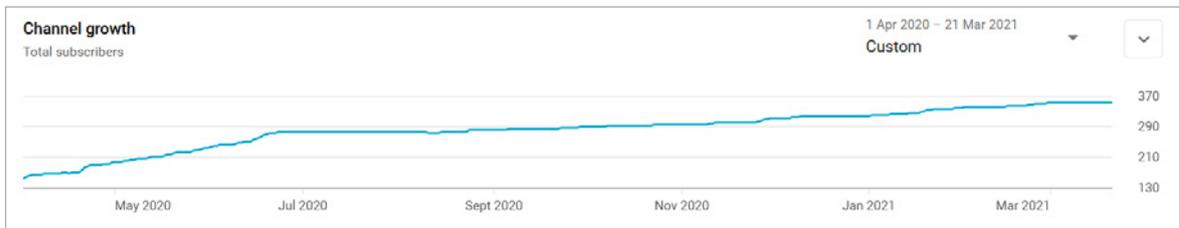
To increase capacity and capability to offer an increased volume and range of Professional Learning via the use of digital technology and communication.

The unique selling point of SSERC is that our Professional Learning involves practical, hands-on experiential activity. This can be challenging to reconfigure to support online delivery – which was a strong feature of educational activity during this reporting period. This annual report features creative and innovative approaches to overcoming this problem and includes the launch of SSERC_TV.



SSERC_TV (our YouTube channel) has allowed us to reach education professionals in Scotland with continued access to meaningful Professional Learning. It also supported much of our activity, developed during lockdown, to support home learning (#doingourbit).

Channel growth was continuous throughout the year.



Thousands of views and a growing number of subscriptions.



Top 10 channel Playlists accessed over 1800 times and Top 10 channel videos with a total of over 21,000 video views.

Playlist	Playlist starts	Views	Average view duration	Watch time (hours)	Video	Impressions	Impressions click-through rate	Views	Average view duration
Total	1,854	4,121	1:52	128.9	Total	141,144	3.9%	21,214	2:05
Microbiological Techniques	981	31.3%	1,473	35.6%	Investigating Forces with Rocket Mouse	4,800	4.1%	1,731	8:21
Physics Videos for Technicians	359	19.4%	884	20.9%	Sleepy Dragon	4,220	3.4%	1,233	5:01
Primary	272	14.7%	451	10.9%	Balancing butterfly	3,449	9.2%	1,676	7:01
Secondary Technology	53	2.9%	100	2.4%	Science Inquiry in Primary Science	4,572	5.5%	1,047	4:01
Secondary Chemistry	88	4.8%	126	3.1%	Investigating Friction with a Balloon Hovercraft	3,365	3.7%	753	3:01
Primary Bottle Science	134	7.2%	411	10.0%	Balloon Zip Wire	4,111	4.7%	1,124	5:21
Physics Teacher Virtual Summer School	63	3.4%	121	2.9%	Investigating Buoyancy with Dancing Raisins	1,988	3.4%	673	3:21
Secondary Physics	57	3.1%	102	2.5%	A Remarkable Century of Physics	2,389	1.4%	223	1:11
Secondary Biology	25	1.3%	49	1.2%	Investigating Forces by making a climbing bug	1,823	5.3%	817	3:01
					Diagnostic Questions (Physics Teacher Virtual Summer School)	3,715	1.4%	206	1:01

We also have additional YouTube channels:

- Young STEM Leader
- STEM Ambassadors in Scotland



The SSERC website

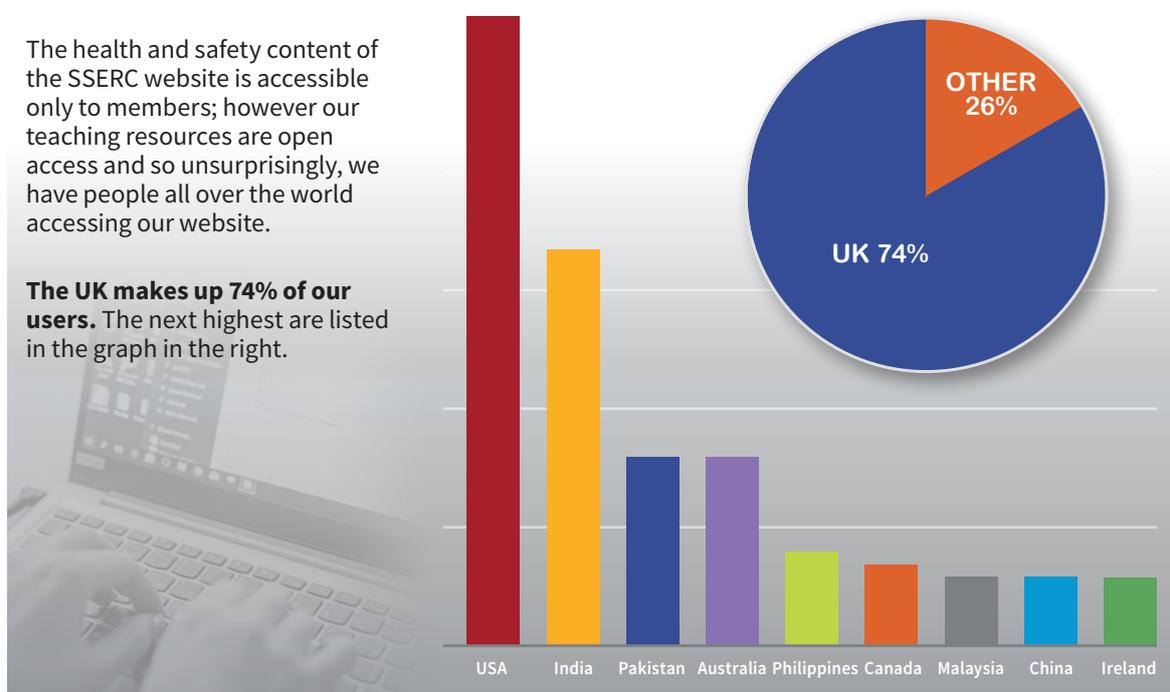
Our website continues to offer significant support to the education community.

Figures for 1st April 2020 – 30th March 2021

Users	Total 86,505	UK 63,527 76.74% from UK	Scotland 44,483 71.31% from Scotland
Sessions	Total 131,735	UK 106,131	Scotland 81,620
Pageviews	Total 497,043	UK 400,438	Scotland 307,956
Pages per session 4.24			

The health and safety content of the SSERC website is accessible only to members; however our teaching resources are open access and so unsurprisingly, we have people all over the world accessing our website.

The UK makes up 74% of our users. The next highest are listed in the graph in the right.



SSERC Online Learning

To support our growing portfolio of online learning activity we took the opportunity during lockdown to develop and pilot a new online learning platform. This has been successfully used to support the following self-study courses:

- Early level STEM - numeracy and maths.
- Laying the foundations of computing science.



All our existing self-study courses will be transferred over to SSERC Online Learning and some new ones developed including:

- Vex go.
- Sphero bolt.
- Laying the foundations 2.
- Micro:but v2.
- Let's play @computing science.



Social Media

We continue to use our social media channels to promote our ongoing activity.

Our main social media channels are:



Looking forward

The organisation has made significant investment in its ICT infrastructure in order to support our digital ambitions. The onset of the pandemic acted as a conduit to fact-track some of this activity. While much of our activity moving forward will take a blended delivery approach, face-to-face delivery for practical based activity will be a key feature. We will continue to make improvements to the SSERC website and investigate the use of additional social media channels. SSERC Online Learning will be used to support an expansion of our self-study learning opportunities.

Advisory Service

Aim

To further develop and promote the Advisory Service.

In a year dominated by the coronavirus pandemic, the SSERC Advisory Service has continued to operate and indeed to expand both its provision and reach.

Key functions

- Specialist health and safety advice for schools and LAs.
- Unlimited access to specialist advisors in Primary Science, Biology, Chemistry, Digital Skills, Physics, Technology, Technician Services and Health and Safety.
- Guidance and compliance advice for radiological health and safety legislation through our Radiation Protection Adviser.
- Free management of health and safety courses for Curriculum Leaders. Other face-to-face and digital specialist health and safety courses, including radiological protection, which are heavily subsidised or free.
- Access to the SSERC website - curriculum support materials, health and safety advice and resources e.g. exemplar risk assessments for both specific subject and whole school activities.
- Recommendations on equipment and design of specialist accommodation.
- Free consultancy and technical information.
- Apparatus testing for safety, performance and conformity with standards.

Response to COVID-19

As the understanding of the science around the pandemic evolved, so did SSERC's guidance. Advice was developed in consultation with bodies such as the Scottish Government, Health Protection Scotland and our sister organisation CLEAPSS. When the first lockdown began in March 2020, teachers and technicians were initially concerned about routine, mandatory checks on certain materials, including radioactive sources. SSERC drew up and disseminated advice.

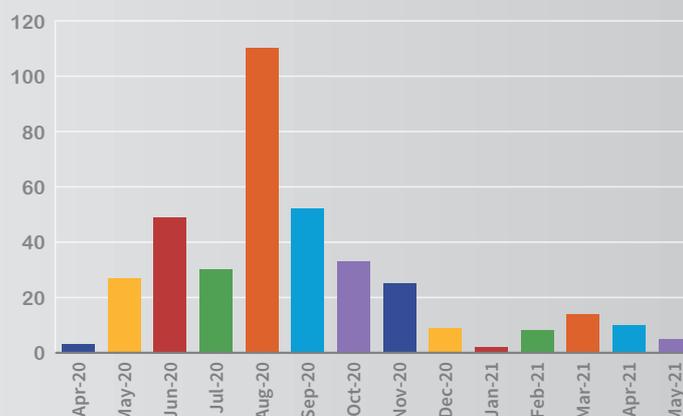
When schools were scheduled to return, an area of concern was the use of equipment in practical subjects. As scientific studies became available showing that contracting the virus by touching a surface was rare if good hand hygiene was adopted, our close relationship with the Scottish Government allowed us to quickly adapt our advice.

In Design and Technology, issues around local extract ventilation (LEV) came to the fore. SSERC's technology team developed appropriate guidance.

SSERC also produced guidance on pupils carrying out practical work at home, recognising that a potentially unsupervised environment and the possible presence of younger siblings required a re-evaluation of risk.

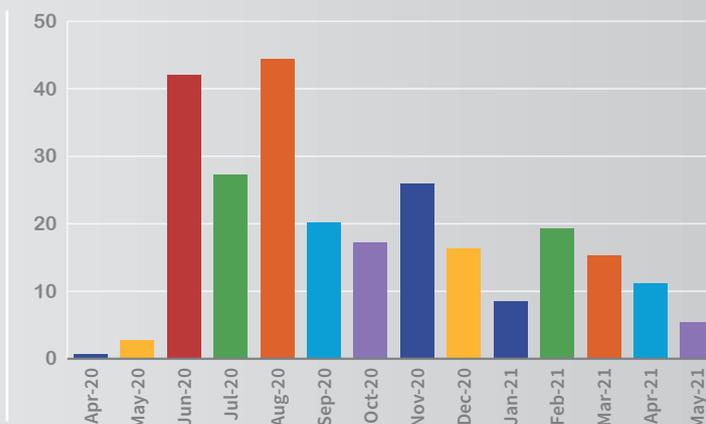
COVID-19 related queries

Over the course of this period we dealt with nearly 400 queries specifically about COVID-19 and schools, peaking as schools began to return to carrying out practical work in the Autumn.



% H&S 'hits' related to COVID-19

During this period though, much of the work of the advisory service continued as normal. On the website, there were over 105,000 page views during this period and even at the peak less than half of these related to COVID-19.



Advisory related courses

Having already run online versions of some health and safety courses and having developed a self-study course, the Advisory Service was well-placed to support school staff with safety-related Professional Learning, even at times when they were confined to home. Online courses were run again and the development of another two self-study courses was fast-tracked. Practitioners appreciated this, commenting:

"This course has been a really good way for myself and my team to do some very constructive work while the world has gone a bit crazy so thank you."

and

"...thoroughly enjoying all the content being provided online... Feeling very supported and valued."

For a number of years, SSERC has offered a free face-to-face health and safety induction course for students on a one-year teacher education course. This year, the provision was online. Gratifyingly, a major institution that had not taken up the offer of face-to-face courses in the past took part in an online session. Another university was unable to have all students attend an online course. They were offered a self-study option. For the first time, the vast majority of trainee science teachers in Scotland have had a chance to have health and safety training from SSERC, training that emphasises our unique and continuing role of supporting them throughout their careers.

In-house Health and Safety

SSERC has engaged BrightSafe, an arm of the organisation that provides our HR support, to help us cover aspects of in-house health and safety. With their assistance we have carried out a thorough and extensive review of all our practices and documentation. In particular, implementing a more formalised programme of staff development in Health and Safety.



International Standard on Science Equipment

SSERC has been a major contributor to *BS EN 61010-2-130:2021 Safety requirements for electrical equipment for measurement, control, and laboratory use. - Part 2-130: Particular requirements for equipment intended to be used in educational establishments by children*. This publication has been several years in the making. Suppliers consulting the standard will be able to design equipment that schools will know is suitable for particular age groups.

Support for PSDOs

The SSERC primary team has been working with Local Authority Primary Science Development Officers (PSDOs), to support health and safety in primary science. This has included a health and safety update for all PSDOs, reviewing slides created by a PSDO for safe working in technology, and support for individual officers.

Art and Design

Much of SSERC's existing advice is appropriate to Art and Design. We have a number of relevant risk assessments in our Whole School and Technology sections and many of the chemicals used are listed on our Hazardous Chemicals pages.

What we have lacked is a web resource that makes this guidance easily accessible to teaching and support staff in Art and Design. SSERC is currently working with a representative from the National Society for Art and Design to remedy this.

Looking forward

We will continue to support our members with advice relating to the safe return to school and provide guidance to ensure that practical based STEM activities can once again become a core part of the curriculum at all stages. We will further expand our self-study Professional Learning offerings and examine what additional support we can provide to other practical based curriculum areas.



Evaluation and research activity

Aim

Use evaluation and research data to influence the direction of all SSERC workstreams. To allocate time to undertake specific evaluation and research activity within SSERC and publish using various channels, e.g. website, academic journals, social media.

As an organisation, we are rightly proud that our Professional Learning is held in high regard. We are grateful that our delegates take the time to complete our post-course evaluations. Releasing a teacher from a classroom activity to participate in Professional Learning, or indeed for a teacher to undertake Professional Learning in their non-contact time, is an investment of human and finance resource from self, school and local authority and moving forward, we want to be in a position to evidence the impact of this investment.

Effective teacher professional development should have a focus on improving learner outcomes. This should be demonstrated through robust evidence and includes both professional collaboration and professional challenge. An effective evaluation process will encourage participants to think and prepare in advance of the intervention and then reflect, change, and re-evaluate post-intervention.

During this financial year, we have developed a 5 step evaluation process that aims to collect data relating to the impact of Professional Learning on self, peers and learners. Our new evaluation process will be launched in April 2021.



Publications

We continue to circulate our inhouse publications via the SSERC website:

- Early Years and Primary STEM Bulletin.
- STEM Bulletin.
- Advisory Service Bulletin

In addition, we contributed articles to the AHDS *Head to Head* and GTCS *Teaching in Scotland* magazines.

We were pleased to have two academic articles published in the *School Science Review*:

- Toys that can foster engagement and improve understanding. **Catherine Dunn, *School Science Review*, June 2020.**
- Investigating friction and checking the understanding of variables using toys that both engage interest and promote understanding. **Catherine Dunn, *School Science Review*, September 2020.**

A further article relating to the Young STEM Leader Programme has been accepted for publication in *School Science Review*.

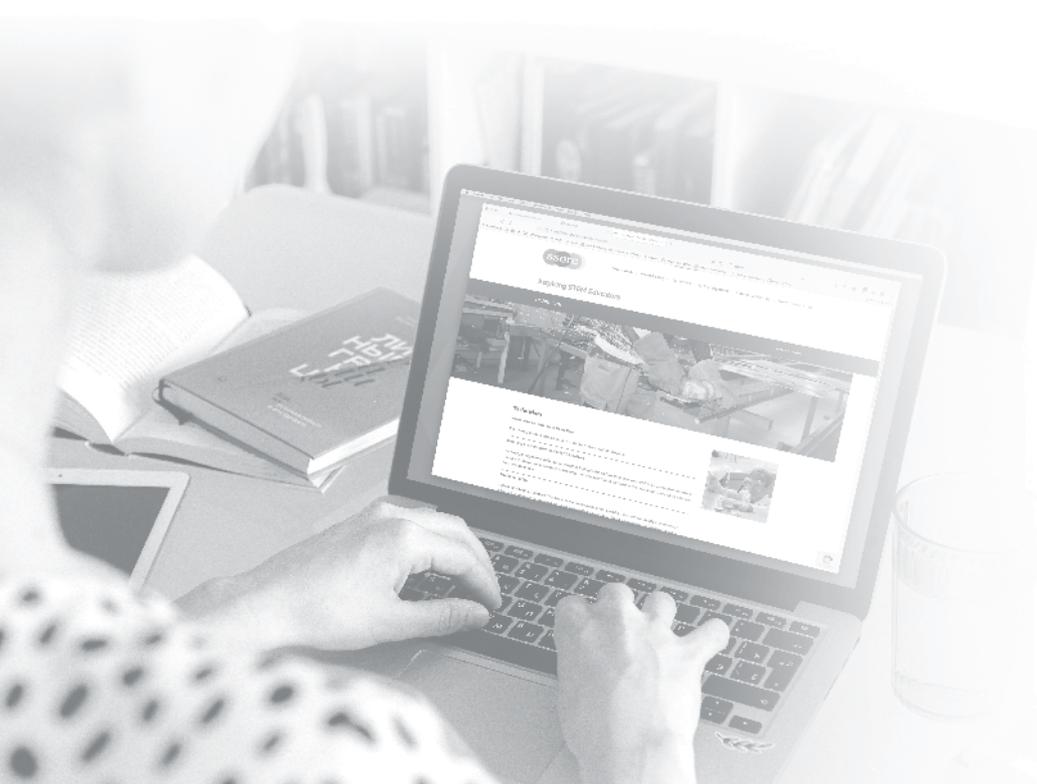
Looking forward

As well as collecting and publishing impact data via our evaluation process, we will collect and publish a range of equality, diversity and inclusion (EDI) information. We are proud that 10 members of the SSERC team have completed a certificated EDI course. Our in house publications will offer the opportunity for articles written by external contributors and paid-for advertising opportunities.

SSERC bulletins



The SSR is an ASE publication.



The STEM Ambassador Programme

STEM Ambassadors are volunteers studying STEM subjects or in a STEM-based career, who work with young people, teachers, and youth workers to bring STEM subjects alive through real-life experiences. The role of the STEM Ambassador Hub is to recruit and support STEM Ambassadors as well as work with schools, non-school groups, and employers to enable them to access and make the most from the programme.

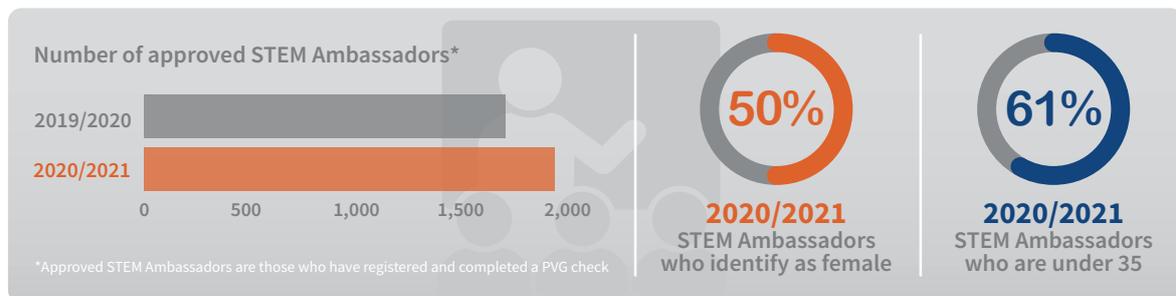


STEM Ambassador East @SSERC (SAE)

In April 2020 SSERC took over the contract to run the East of Scotland STEM Ambassador Hub, one of three Hubs in Scotland. The contract started during the COVID-19 lockdown, yet despite this the Hub has seen a successful year reengaging with partners, employers and developing new ways for STEM Ambassadors to volunteer.



Volunteers



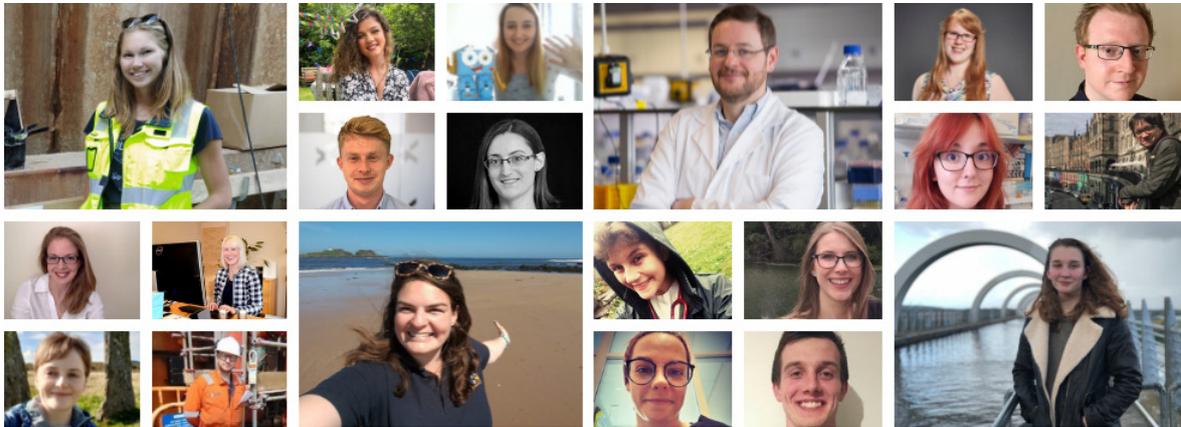
During the financial year 2020/2021 the Hub continued to grow the STEM Ambassador numbers, recruiting and providing PVG checks for over 200 new volunteers. The Hub has also increased the percentage of STEM Ambassadors who are female and the percentage who are under 35, growing the representation of diversity within our programme.

Activities



As a result of COVID-19, this year was challenging for volunteering with volunteers, schools and non-school groups affected. As a Hub we worked to create opportunities for STEM Ambassadors to volunteer remotely. This time was also a good opportunity to focus on STEM Ambassador development opportunities, providing training so that STEM Ambassadors were still engaging with the programme, but were also gaining new skills that can be implemented when volunteering opportunities arise.





Highlights

As part of Maths Week Scotland SAE was successful in an application to the Small Grants Fund to develop an escape-room-themed maths resource designed in collaboration with STEM Ambassadors and Young STEM Leaders. The kit contained five challenges, each designed by a STEM Ambassador with inspiration from their jobs. The kit also contained 50 ‘careers cards’ with profiles of STEM Ambassadors and how they use maths in their day-to-day job. The resources were sent out to six schools across the East of Scotland for the Young STEM Leader groups to trial. Kits will be circulated around other groups in the cluster.

Improving Gender Balance and Equalities training

During the year, the opportunity arose to develop a series of training delivered by Education Scotland’s Improving Gender Balance and Equalities (IGBE) team. The focus of the series was to develop and deliver more inclusive activities as well as learning tips and techniques to be more inclusive, including language. Over 100 STEM Ambassadors registered across these six training sessions. All sessions were rated by attendees as ‘Good’ or ‘Very good’ with attendees expressing that they now have increased confidence and more knowledge of the impact of gender imbalance.

British Science Week

For British Science week SAE supported West Lothian Primary schools to interview STEM Ambassadors as part of the week. This was one of the few opportunities where STEM Ambassadors were able to participate remotely in live activities. Pupils interviewed STEM Ambassadors and the sessions were recorded and provided to the other primary schools in West Lothian. This was a fun and engaging way for learners to learn about different STEM careers including careers in Formula 1 and forensic science.

STEM Ambassadors in Scotland

In the financial year 2020/2021 SSERC continued as the liaison lead for the STEM Ambassador programme in Scotland. Whilst COVID-19 created many challenges but it also gave the opportunity for the three Scottish STEM Ambassador Hubs to collaborate across a range of activities. This collaboration not only allowed new initiatives to be trialled but also ensured the successful delivery of many exciting projects.





Marvellous Maths

During Maths Week Scotland the Hubs created the ‘Marvellous Maths’ resource where STEM Ambassadors created short videos about maths in their day-to-day role. These were placed on YouTube and a supporting document was created to help schools access them. In partnership with the RAISE Programme, RAISE authority schools also had the opportunity to submit questions to STEM Ambassadors in the videos during the week. STEM Ambassadors enjoyed this opportunity for interaction when it had been limited so far because of COVID-19. Over 20 STEM Ambassadors provided videos and we received over 40 Q&A submissions. The feedback was excellent, with teachers saying they found the videos ‘extremely useful’; these were also enjoyed by the learners.

Participating teacher: “The videos sparked the interest of the pupils in STEM careers.”

STEM Ambassadors in Scotland (SAiS) Week

In February 2020, the three Hubs collaborated on running our first ever STEM Ambassadors in Scotland Week – a celebration of STEM Ambassadors and STEM in Scotland. The aim of the week was to mobilise our STEM Ambassadors in meaningful activities directed at schools and non-school groups. Initially the week was to include lots of live online sessions learners could access. As a result of the second Scottish lockdown this was changed and we created a catalogue of video resources that could be accessed by teachers and learners at a time to suit them. For the week STEM Ambassadors created short careers videos about with a focus on different STEM jobs in Scotland. We also ran a ‘Careers Carnival’ with STEM Ambassadors from different sectors presenting about their career followed by Q&A from Hub staff. These were recorded and published during the week. As well as these resources we also ran a ‘Spotlight Live’, a short lunchtime lecture by a STEM Ambassador on a topic of their choosing. During SAiS Week we had a lecture on the space sector in Scotland. To support the week a specially designed event page on the SAE website was created to act as a portal to resources as well as a ‘menu’ of opportunities which was sent to practitioners who had expressed interest in getting involved.



All the resources are still live and to date over 200 centres from across Scotland have now accessed the resources. Over 60 STEM Ambassadors were involved in creating the resources and the success of the event has made it an ongoing feature in our events calendar.

Global Science Show

For British Science Week the three Hubs partnered with the Global Science Show to create a STEM Ambassadors in Scotland special edition. The Global Science Show takes place on Twitter over the course of a day where participants are allocated a 10-minute slot to share whatever content they want. STEM Ambassadors shared videos, activities, pictures, and diagrams on a variety of topics, including citizen science, naval architecture, floating wind turbines, magnetic induction, and the statistics of Harry Potter. The content shared by the Global Science Show account has gained over 70,000 impressions, and 1,374 direct engagements. The Twitter account for the West of Scotland, that was primarily used to promote the event for the 3 Hubs, reached 7,000 impressions on the day and, 54 direct engagements.

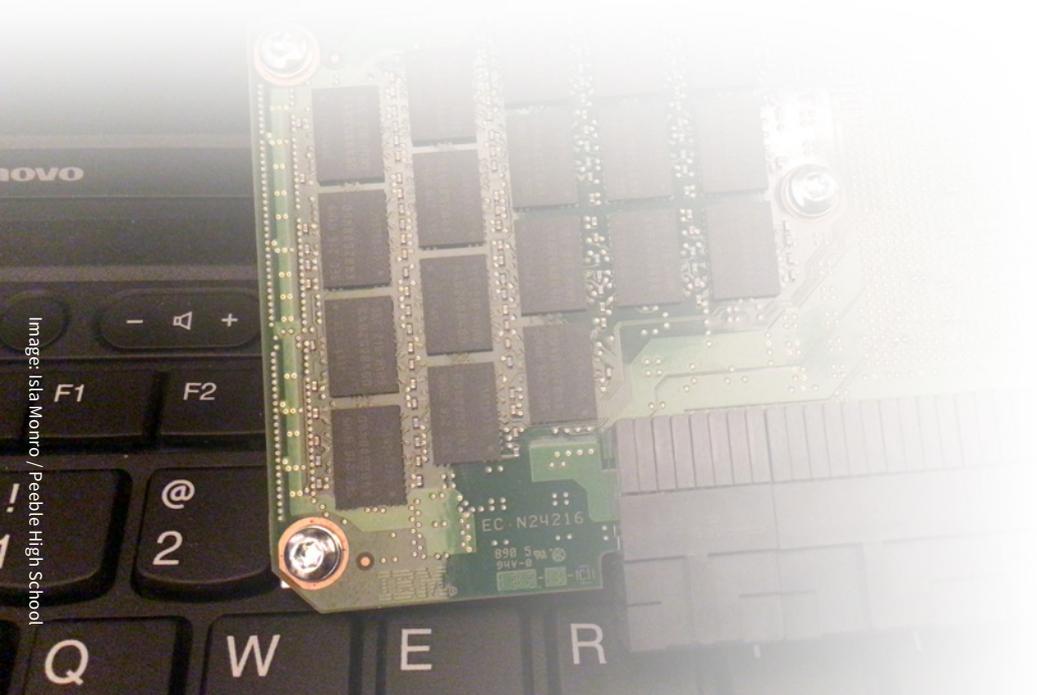


Investors in volunteering

During 2020 the Scottish Hubs identified the opportunity to participate in the Investors in Volunteering (iIV) programme which is the UK quality standard for good practice in volunteer management. Initially the Hubs completed the 'Step Into' programme, an opportunity to evaluate our programme against the iIV framework, before completing the award. This allowed us to implement best practice across the programme. Following the successful completion of this we are now aiming to complete the full award in 2021/2022.

Looking forward

The level of successful and impactful collaboration between the three Scottish hubs acted as a conduit to the formation of a single STEM Ambassador Hub in Scotland. From April 2021, SSERC will have responsibility for the management of a single STEM Ambassador Hub in Scotland, building on the success of the three predecessor hubs and on the significant level of collaboration witnessed in financial year 2020/2021.



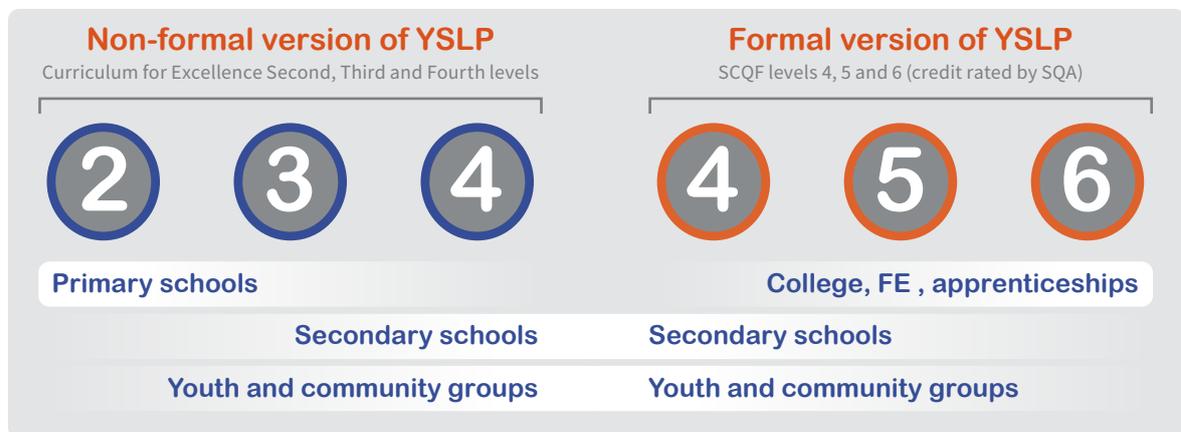
Young STEM Leader Programme (YSLP)

The Young STEM Leader Programme (YSLP) is an award open to all young people in Scotland to inspire, lead and mentor their peers through the creation and delivery of STEM activities, events and interactions within their schools, communities or youth groups.

The YSLP project team at SSERC has been working with key partner organisations and groups to develop robust programme content at all levels and to train and support Tutor Assessors and Young STEM Leaders across Scotland.



The programme is available across six levels, split into two versions: non formal and formal.



National launch and #YoungSTEMLeaderWeek

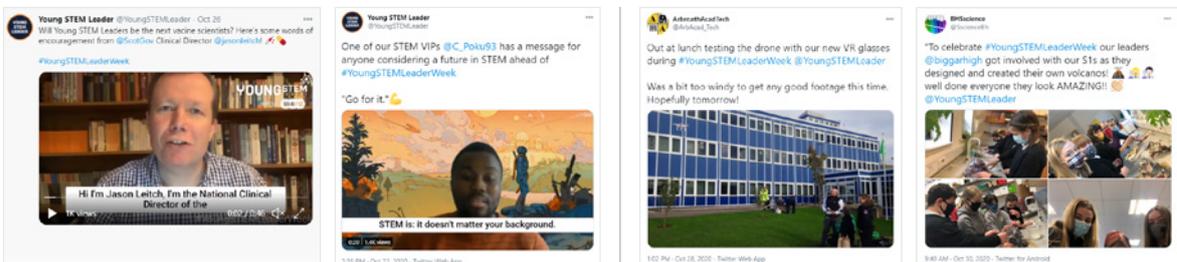
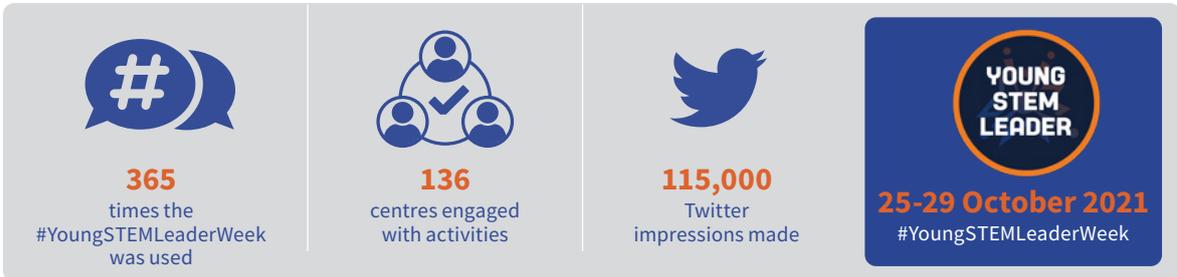
Following a series of open Tutor Assessor training events, the programme was officially launched with the inaugural #YoungSTEMLeaderWeek, a social media campaign in October 2020. A number of activities were planned for the week, including:

- STEM VIP interviews between groups of YSLs and role models in STEM, including STEM Ambassadors.
- Videos from partner organisations and political figures.
- Daily challenges related to the four elements of the programme: Discover, Create, Inspire and Lead.
- Professional Learning events for Tutor Assessors.
- The second #YoungSTEMLeaderWeek is planned for 25-29 October 2021.



Young STEM Leader at All Saints Secondary School in Glasgow.



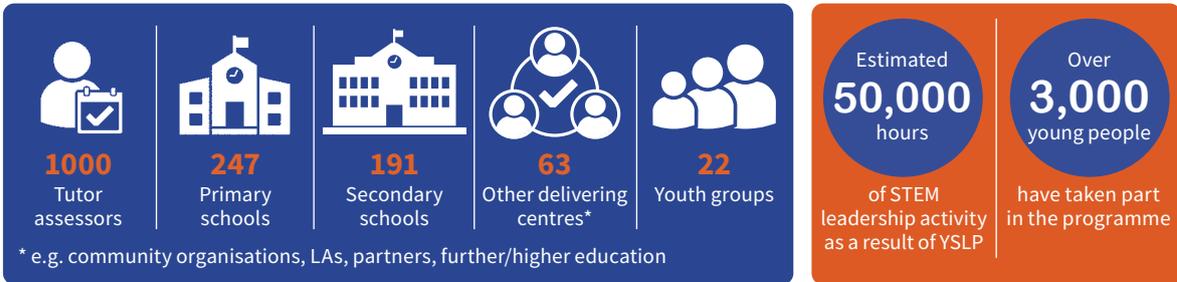


Interviews and videos with STEM role models were a key part of the social media campaign.

Many centres got involved with the daily challenges linked to the four elements of YSLP: Discover, Create, Inspire and Lead.

Participation

There has been considerable growth in YSLP participation and despite challenges faced with lockdowns and online learning, many YSLs have continued with the award digitally.



ARTAVs

To support our quality assurance processes and promote the programme at a regional level, 16 Associate Regional Trainers and Verifiers (ARTAVs) were appointed from the existing pool of Tutor Assessors in November 2020. Working as consultants for SSERC around one day per month, the ARTAVs' main role is to undertake External Verification activity. In addition, ARTAVs work within their Regional Improvement Collaboratives (RICs) to:

- Deliver Tutor Assessor Training and programme information sessions, both regionally and nationally.
- Give one-to-one support to Tutor Assessors in their area.
- Connect with local authority STEM contacts to promote the programme.
- To get in touch with an ARTAV, visit www.youngstemleader.scot/the-team.



Partnerships and auto-awards

The YSLP team has been engaging with various STEM award providers to align the YSLP to existing awards and programmes. This provides the opportunity for young people completing other STEM programmes to gain additional recognition through a Young STEM Leader award. Examples of partnership and auto-award include:

YSLP auto-award partners



Looking forward

With the aspiration that every young person in Scotland will have access to the Young STEM Leader Programme by the end of 2022, a Development Plan has been created to support the national roll-out of the programme and make the programme accessible to all.

Through a bidding process, partners were invited to apply for the Young STEM Leader Development Fund for projects to support the improvement priorities in the development plan. Grants of up to £5,000 were awarded to Aberdeen Science Centre, Dynamic Earth, Glasgow Science Centre and Youth Link Scotland to work on projects over the 2021 calendar year. The team will also be working closely with the new STEM Ambassadors in Scotland Hub to grow our existing partnership and provide new ways for YSLs and STEM Ambassadors to work together.

Find out more about the YSLP

- > www.youngstemleader.scot
- > youngstemleader@sserc.scot
- > [@YoungSTEMLeader](https://twitter.com/YoungSTEMLeader)



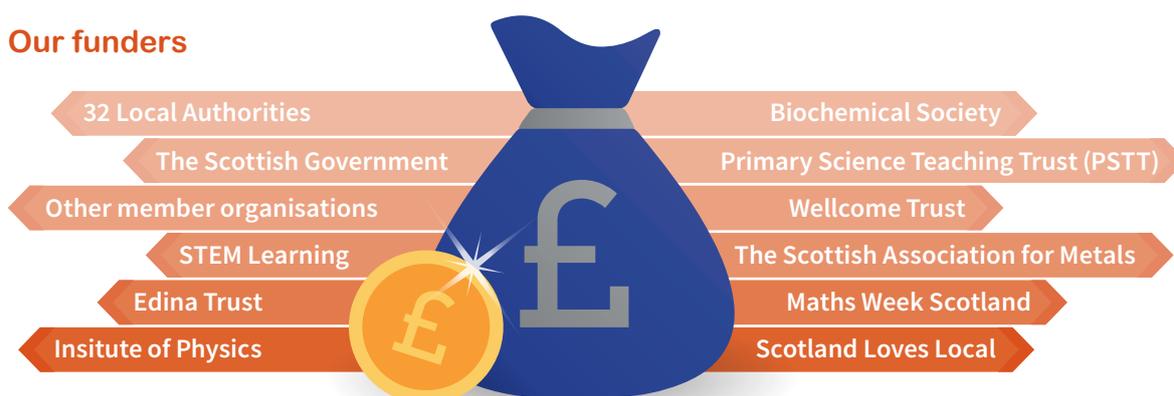
Business development activity

Aim

To increase income streams from non-traditional sources to allow for increased capability and activity.

A significant proportion of our funding comes from the Scottish Government, however the national importance of our work is reflected in the fact that we also attract significant funds from external sources, including some outwith Scotland. As a membership based organisation, we continue to be grateful for the ongoing support of all 32 Local Authorities in Scotland and our other members.

Our funders

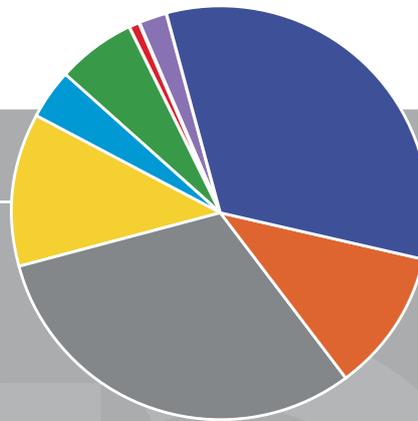


Every £ provided by membership fees attracts an additional £1.98 of funding to invest in Scottish education and training.

Income

2020/2021

	£'000s	%
Main Scottish Government grant	£765	33%
Other Scottish Government grants	£261	11%
Membership subscriptions*	£720	31%
Income from STEM Learning**	£268	12%
Income from PSTT	£83	4%
CIRS	£143	6%
Edina Trust	£30	1%
Other income	£45	2%
Total income	£2,315	100%



* Local Authorities, colleges and independent schools.

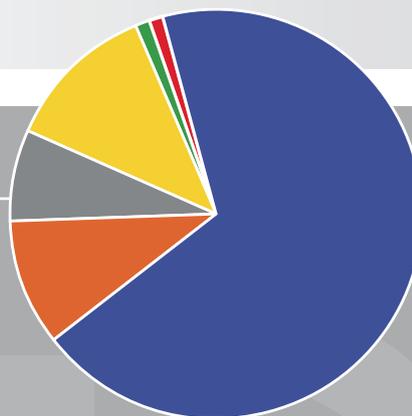
** This includes course income where the schools were funded through Enthuse bursaries.



Expenditure*

2020/2021

	£'000s	%
● Staff and secondees**	£1,616	68%
● Supplies and services	£246	10%
● Property costs	£175	7%
● Operating and administration costs	£287	12%
● Grants distributed	£4	0%
● Governance costs	£25	1%
● Other expenditure	£26	1%
Total expenditure	£2,379	100%



* Expenditure before pension scheme remeasurements

** Includes operating costs of defined benefit pension scheme.



Other activity

We were pleased to be awarded a Scotland Loves Local grant to create a digital garden within an unused space at SSERC HQ. The space will be co-designed and maintained by two local primary schools. We also thank Fife Council for supporting this project.



We have signed up for the Amazon Smile programme. Same products, same prices, same services as the Amazon you know, but with Amazon donating 0.5% of the price of your eligible purchases. Choose SSERC Ltd as your charity of choice.

At times, we have space room capacity at SSERC which we are able to 'hire' out to other organisations. While this service was negatively impacted by the pandemic, we will be offering this in the financial year ahead.

During the pandemic we continued to 'loan' out digital equipment to support home learning.

Looking forward

We continue to seek opportunities to enhance our current range of products and services and we look forward to announcing some significant new programmes and activities in financial year 2021/2022 including our Education/Industry Partnership programme. We will also look to extend our corporate social responsibility to benefit the local communities of Rosyth and Dunfermline.



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