

Contents

1. Ministerial Foreword
 2. Introduction
 3. Progress towards Outcomes
-



4. Excellence



5. Equity



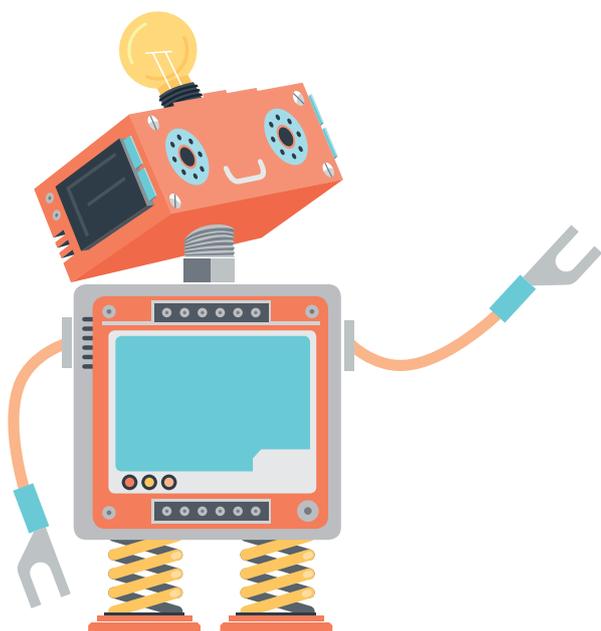
6. Inspiration



7. Connection

Annexes:

- A. STEM Definition
- B. STEM Strategy Key Performance Indicator (KPI) Data



Ministerial Foreword

1

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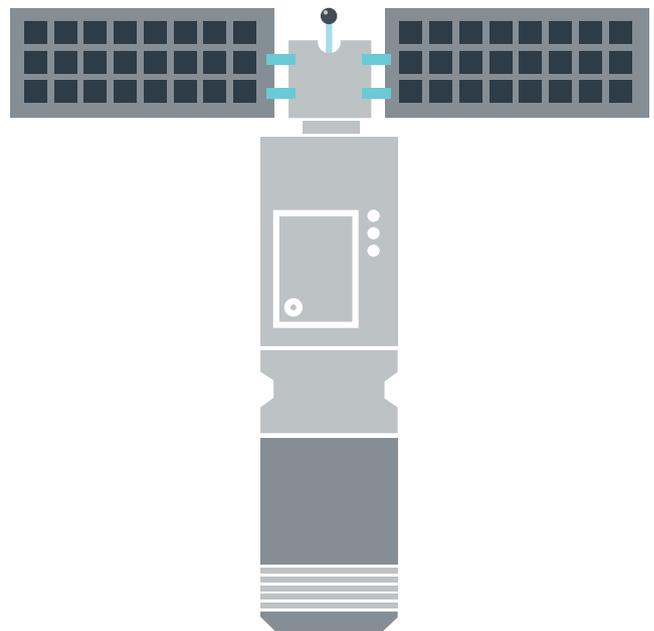
Richard Lochhead MSP

Minister for Further Education,
Higher Education and Science

Science and innovation are embedded in Scotland's heritage and culture. They are playing an ever-increasing role in Scotland's future within our increasingly globalised and complex world.

The current pace of technological change across the world is unprecedented - it is transforming the way we work, conduct business, buy goods and communicate with one another and live our lives. It is opening up new ways of manufacturing and creating new knowledge and innovations. This creates huge opportunities for economic growth and social benefit for the people of Scotland.

However, to achieve these benefits we need to develop and grow Scotland's expertise in the inter-related fields of Science, Technology, Engineering and Mathematics – STEM.



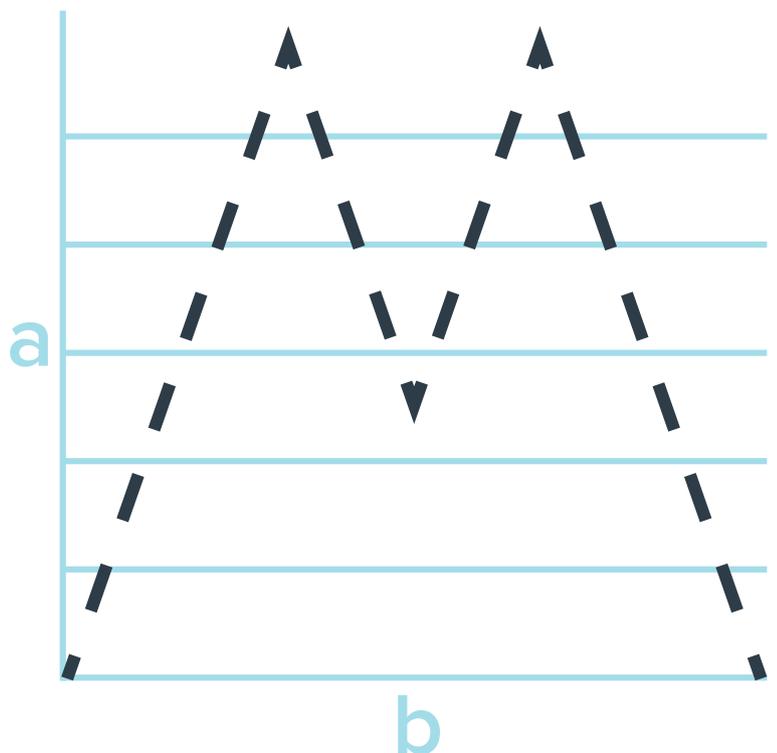
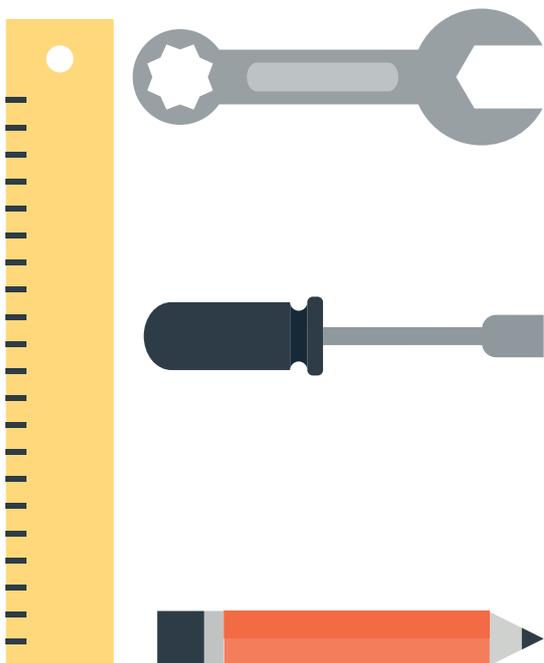
We must develop people’s skills so that they can gain employment in the fast-growing and well-paid specialist STEM sectors. We must also ensure that everyone is able to develop the confidence and understanding of STEM required to fully engage with STEM as it impacts on all employment types and careers and affects our daily lives. At the same time, STEM learning helps us with the complex questions we face such as climate change, helps us make informed lifestyle choices and opens doors to understanding and enjoyment of the world around us.

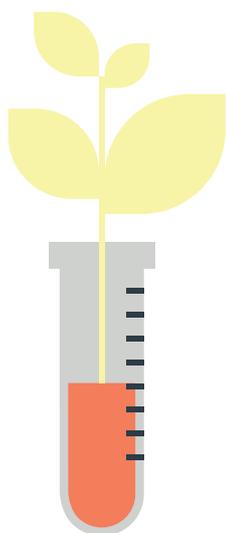
Central to our ambition for STEM in Scotland is increasing diversity. We will achieve this by ensuring equality of access and opportunity to study STEM and attract people from under-represented groups, such as women and girls and those from deprived communities, into STEM-related careers.

The Science, Technology, Engineering and Mathematics (STEM): Education and Training Strategy for Scotland was published on 26 October 2017.

The Strategy has a five year lifetime, up to 2022, and sets out an ambitious and comprehensive plan to drive forward improvements in STEM education and training in Scotland, for all ages.

Much progress has been made in this first year to initiate actions and establish active partnerships between stakeholders. In the second year of the strategy, we expect to start to see the impact of this work being demonstrated through improvements in STEM learning in early learning settings, schools, colleges and universities, the science and engagement sector and in community learning and development (CLD) settings.



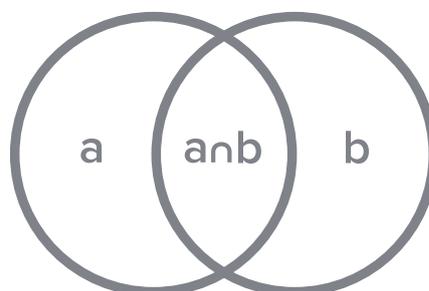


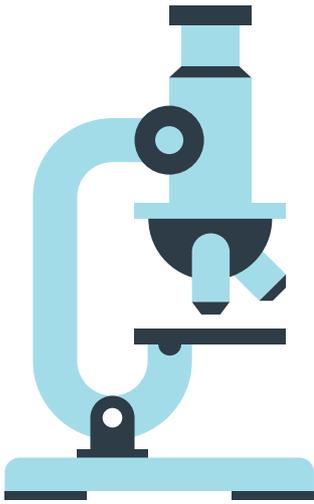
Introduction

2

The Strategy identifies four key challenges for STEM education and training in Scotland:

- We need to ensure children, young people and adults are encouraged to develop an interest in, and enthusiasm for, STEM that is reinforced throughout their lives.
- We need to ensure our education system has the right number of practitioners, including teachers, with the appropriate STEM capability, delivering excellent learning and teaching.
- We need to ensure that our education and training system is equipping people with the skills that employers need and that it has the flexibility to respond to the changes in labour market demand and the globalised economic context.
- We need to tackle the gender imbalances and other inequities that exist across STEM education and training including in relation to race, disability, deprivation and geography. These are unfair and undermine our ability to deliver inclusive economic growth in Scotland.





Addressing these challenges, the Strategy sets out a vision for everyone in Scotland to be encouraged and supported to develop their STEM skills throughout their lives. It has four key aims:



- to build the capacity of the education and training system to deliver **excellent** STEM learning so that employers have access to the workforce they need;



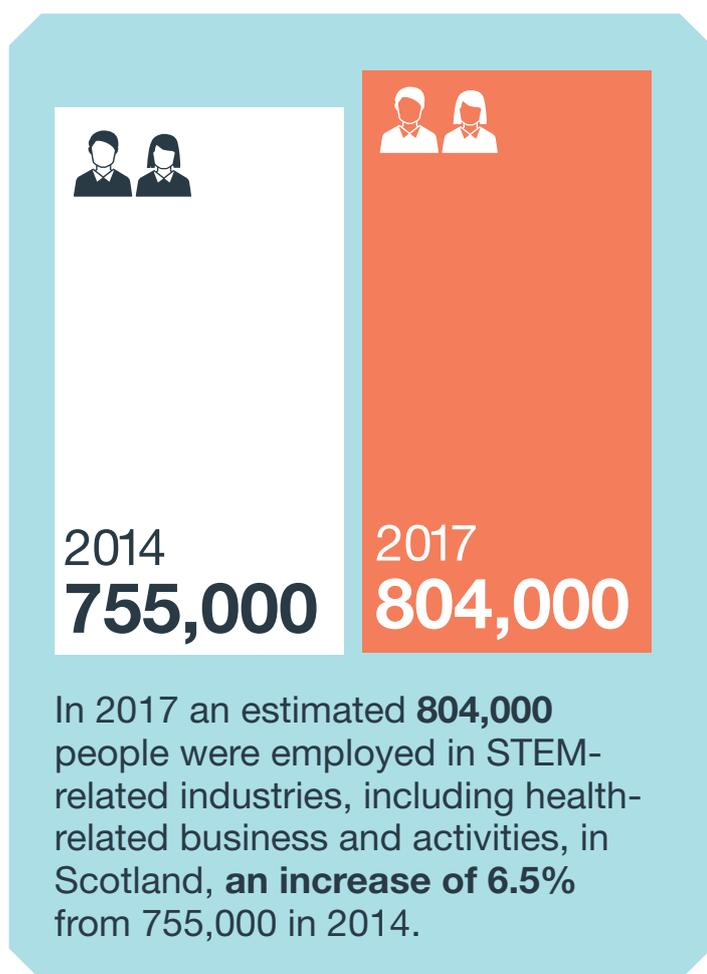
- to **inspire** children, young people and adults to study STEM and to continue their studies to obtain more specialist skills; and



- to close **equity** gaps in participation and attainment in STEM so that everyone has the opportunity to fulfil their potential and contribute to Scotland's economic prosperity;



- to **connect** the STEM education and training offer with labour market need – both now and in the future – to support improved productivity and inclusive economic growth.



The STEM Strategy connects with and links to a number of other priorities of the Scottish Government.

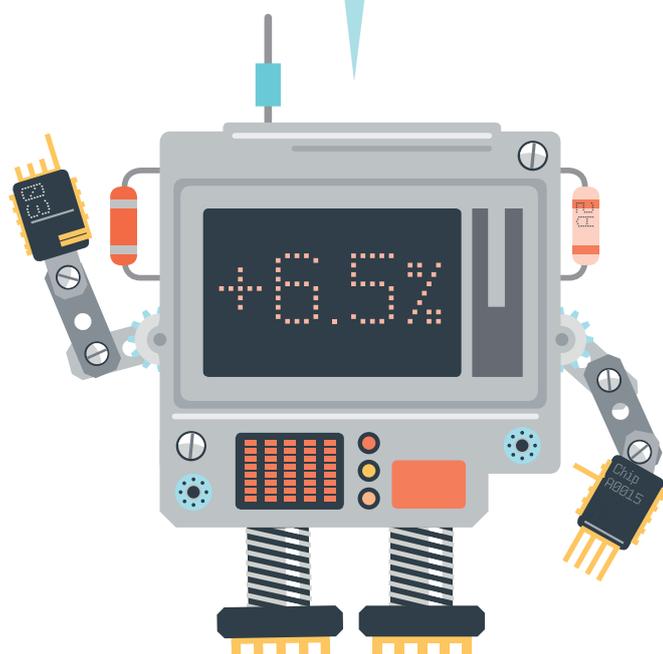
Mathematics and numeracy are part of, and underpin, STEM knowledge and skills. Numeracy is one of three priorities within Scottish education, creating a significant focus on numeracy across all education settings, which is reinforced by the aims of the STEM Strategy.

The [Developing the Young Workforce Programme \(DYW\)](#) is Scotland's youth employment strategy and aims to create an excellent, work-relevant education offer to young people in Scotland, helping to ensure young people have the skills they need for employment. The scope and objectives of the DYW programme and the STEM Strategy are not the same. The DYW programme focuses on young people and is concerned with all skills for employment in all occupations, whereas the STEM Strategy is for people of all ages and focuses on STEM skills for life as well as for work.

The two are closely connected and mutually supportive of one another. The STEM Strategy directly contributes to the objectives of the DYW programme because it addresses the need for all young people to have the STEM skills they need to thrive in all workplaces. At the same time, the DYW programme's focus on raising awareness about the world of work, and on building partnerships across the different sectors of education and with employers, will support the delivery of the STEM Strategy's actions in these areas.

The STEM Strategy also connects with and supports the aims of the [Learner Journey Review](#). The Learner Journey Review aims to deliver the best value for the learner, to ensure that all learners are on the right path for the right job. The report published on completion of the review set out the priorities for further improvements to the Scottish education and skills system to ensure all young people get as much as possible from the system. It also provided an opportunity to be absolutely clear about how we best align our system to deliver more choices, and to ensure that we value those choices equally. The STEM Strategy will support this ambition through building skills and raising awareness of the availability of options and career paths in STEM.

The scope of the STEM Strategy is focused on education and training and has been developed as a medium to long-term response to concerns



about STEM skills shortages in the labour market. Other programmes and strategies within Government are focussed on fair work and meeting skills shortages in the wider economy, including immediate skills needs. These include our work in developing a Future Skills Action Plan, establishing a National Retraining Partnership, the **Flexible Workforce Development Fund**, the **strategic plan of the Enterprise and Skills Board**, our **investments in City Deals**, the Fair Work Action Plan, and the **Disability Employment Action Plan**.

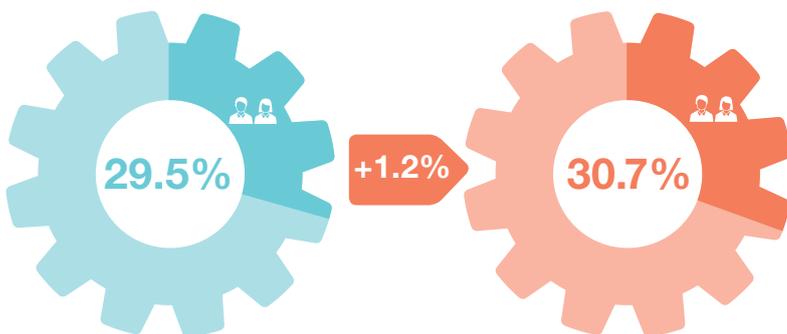
The forthcoming Future Skills Action Plan will set out how the wider skills system in Scotland should be orientated so that it has the agility and flexibility needed to meet the opportunities, challenges and disruption the future will present.

The STEM strategy will contribute to the success of the Future Skills Action Plan and the other plans and programmes above by building up STEM skills and awareness for everyone throughout education, training and science engagement. At the same time these wider plans and programmes will help to ensure there are pathways into employment for people to follow out of education and training across the labour market, including those sectors demanding STEM skills.

The Government's **Gender Pay Gap Action Plan** is due to be published early in 2019. It will identify a series of actions to reduce gender pay gaps across Scotland as part of the Scottish Government's inclusive growth vision. The actions in the STEM strategy on tackling gender imbalances in STEM will make a significant contribution to addressing occupational segregation and closing the gender pay gap.

Within the Scottish Government and across the different delivery bodies and partners involved, we are actively making links across all of these programmes to ensure that, collectively, our work is coherent and mutually supporting, progressing on a complementary basis to maximise the outcomes and to succeed on our ambitions for inclusive economic growth in Scotland.

This annual report fulfils Ministers' commitment to public reporting on progress, setting out the great work underway in Scotland to achieve our vision and develop STEM capability across the learning, training and skills landscape.



2014
Total employment

2017
Total employment

STEM related industries accounted for **30.7% of all employment in 2017** compared with **29.5% in 2014**, including health-related businesses and activities.

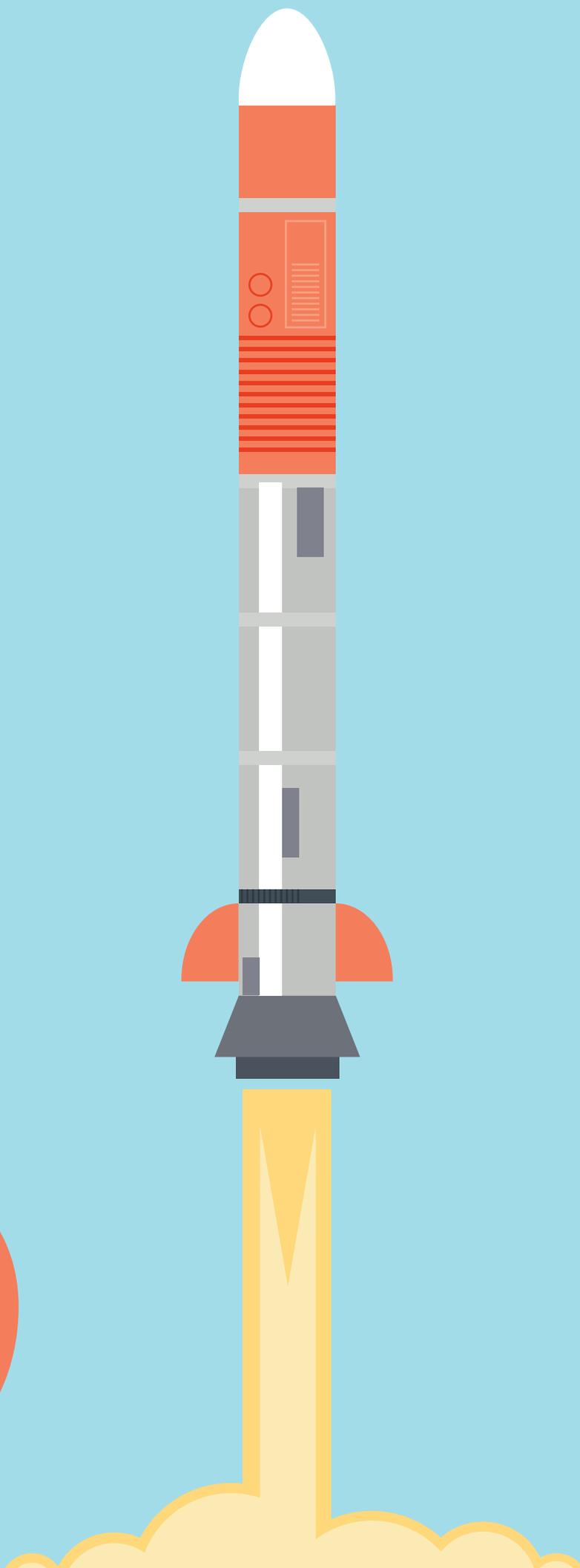


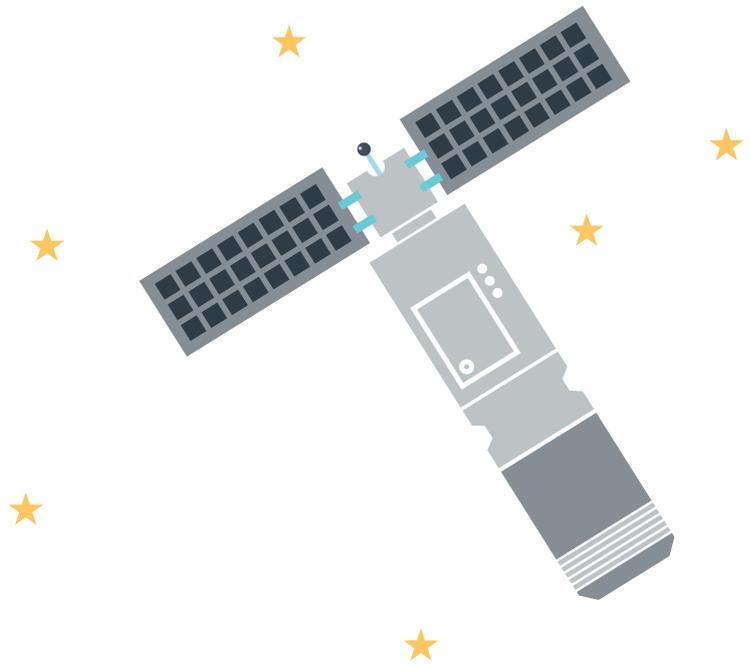
616,000

Excluding health-related business and activities, STEM industries accounted for the employment of **616,000 people**, **23.5%** of all employment in Scotland in 2017.

Progress towards Outcomes

3





The Strategy identifies a number of key outcomes we expect to see by 2022. These are:



- increases in the proportion of people undertaking STEM-related learning, engagement, study and training across all sectors including in school-level qualifications and awards, and participation in apprenticeship programmes **(Excellence and Inspiration)**;



- increased numbers of people who understand the benefits and value of STEM for themselves, their families and their communities **(Inspiration)**;



- increased practitioner confidence in STEM learning in the early years, primary years and in Community Learning and Development (CLD) settings and increased practitioner engagement in STEM professional learning opportunities **(Excellence)**;



- increased collaboration between schools, colleges, universities and employers **(Connection)**; and



- significant reductions in the equity gaps in participation and achievement in STEM learning, engagement, study, courses and training across all sectors in relation to gender, deprivation, rurality, race, disability and for care leavers **(Equity)**;



- increased employment in STEM-related occupations, and employers are more satisfied with the STEM skills and capability of the people they employ from schools, colleges, universities and from apprenticeship programmes **(Connection)**.

The STEM Strategy Implementation Group, chaired by the Minister for Further Education, Higher Education and Science, provides direction and oversight of delivery. This Group includes the key organisations responsible for implementing the Strategy. An External Advisory Group is making sure that the delivery reflects expert advice from a range of stakeholders. In addition, an Equalities sub-group has been formed to provide support and challenge and help us to ensure that equality and equity considerations are built into all the actions. The remit and membership of the Implementation Group and minutes of meetings are published on the [Scottish Government website](#).

In its first year, the focus of delivery partners has mainly been to put infrastructure and resources in place to underpin, facilitate and drive forward delivery of the aims and actions of the Strategy.

Key achievements have been:

- We have awarded 107 STEM Bursaries, totalling £2.08m, to encourage STEM career changers into teaching and have developed new routes into STEM teaching for graduates.
- Maths Week Scotland and school holiday maths challenges have been established as an annual event to raise the profile of numeracy and maths and promote the value, relevance and joy of the subject. Schools in every local authority and many early learning and childcare settings in Scotland took part in the second annual Maths Week Scotland in September 2018 with events for children, families and adults right across the country.
- Education Scotland has developed and published a self-evaluation framework to allow early learning and childcare providers and schools to evaluate and improve their STEM learning and teaching. The framework encourages providers and schools to collaborate with one another and work with external partners to improve STEM learning experiences for young people.

- A new team of Gender Balance and Equalities Officers has been appointed to extend and embed the approaches of the successful Improving Gender Balance project across all schools in Scotland.
- Education Scotland has launched the 'Enhancing Professional Learning in STEM' Grants programme to develop new STEM-related professional learning programmes and resources for early years and community learning practitioners, teachers and school technicians.
- We have initiated a new Young STEM Leaders programme to support young people to inspire each other to get involved with STEM.
- Science Centres and Festivals are working with the community learning and development sector to expand their reach into deprived communities.
- Colleges are leading the development of regional STEM Hubs to strengthen collaboration between partners including universities, Science Centres and employers. The STEM Hubs will facilitate the development of regional STEM strategies to progress the aims and aspirations of the STEM Strategy.



2018-19
107
approved
bursaries
£2.08m

The STEM bursary programme **exceeded its 2018-19 target (of 100)**, with **107 bursaries approved totalling £2.08 million.**

In Year Two we will build on the momentum developed in Year One. In particular:

- New Regional STEM Advisors will work with key partners to support practitioners through the Regional Improvement Collaboratives, helping to co-ordinate STEM regionally.
- We will promote and raise awareness of the links between outdoor learning and STEM subjects in the early learning and childcare sector, including the production of an online module.
- The newly-appointed Gender Balance and Equalities Officers will deliver gender training to schools and teachers, and develop a gender champion network and a gender kitemark to grow and spread best practice.
- A national STEM engagement campaign will be launched and implemented.
- New STEM Awards will be introduced with an initial focus on early learning and childcare and schools, to recognise and build on activities in these sectors.
- We will hold the first annual community learning and development STEM conference to showcase inspirational lifelong learning STEM practice.
- An online directory of quality assured STEM inspiration activities for schools will be developed.
- We will develop a comprehensive careers strategy for the all-age careers service in colleges and universities.
- Education Scotland will undertake a national thematic inspection of numeracy and mathematics as part of a range of national thematic inspections during 2018-19.

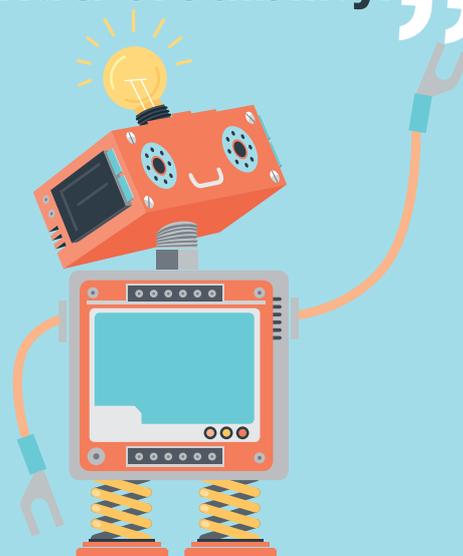
The following chapters expand on progress, set out future plans and examine our priorities as we enter the second year of implementation.

A STEM career changer bursary recipient said:

“

I am already getting **huge satisfaction** from working in the classroom and I'm looking forward to being able to use my experience in industry to prepare young people for the workplace.

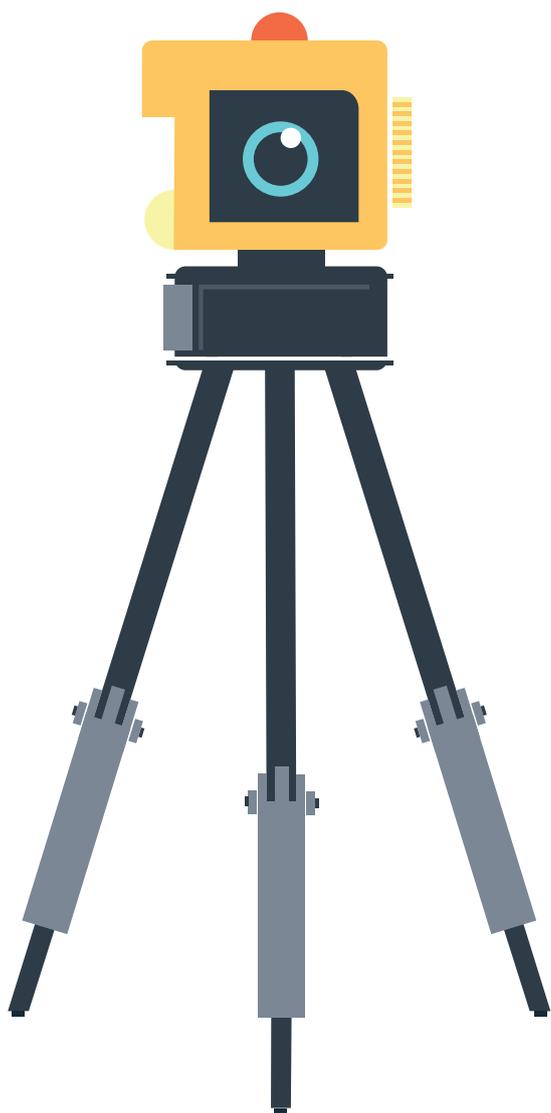
It's important to be able to explain how **the skills we teach are relevant to real jobs** and having a career under your belt gives your words **extra credibility.**”



Key Performance Indicators (KPIs) have been identified to measure progress against the aims and key outcomes of the Strategy. These indicators are long-term targets, reflecting the ambitions and five-year lifespan of the programme from 2017 to 2022.

While some of the KPIs are closely linked to obvious specific actions within the Strategy and should see early results (for example, Initial Teacher Education intake targets), many of the KPI targets will be dependent on a wide range of factors which the Strategy attempts to address across a number of actions and for which there are complex inter-relationships which could take some time to see results. For example, improving the gender balance in attainment in key STEM-related subjects will be dependent on a wide range of factors including early years and primary school activity, and work with parents, carers and families. We are still in the first year of implementation and data collection, and analysis is retrospective. In many cases the information we can provide at this point relates to the period before the Strategy was in place. This year's KPI analysis is, therefore, largely a baseline for measuring progress. These KPIs will be kept under review as we move forward with delivery of the Strategy.

We have linked activities to the KPIs throughout the report and the full indicators and summary data are set out in Annex B. Tables showing the full background data for the KPIs are being published separately on the [Scottish Government website](https://www.scot.nhs.uk/scotdirect/)¹.



¹ <https://www.scot.nhs.uk/scotdirect/>



Scottish Government

Careers Strategy Training STEM Ambassadors

STEM Engagement Campaign

Community learning Maths Week Scotland

SDS

STEM Advisors Education Numeracy

Learner Journey

Early Learning Literacy

RAISE SQA

National Retraining Partnership

Technicians

Science Festivals

Computing primary

University

STEM Bursaries

biology

Gender Pay Gap Action Plan

medical

Society

Mathematics Equity

secondary

Parents

STEM Hubs

Practitioners

biomedical

physics

Employers Digital

College Learners

Statistics

Disability Employment Action Plan

chemistry

Connection

STEM strategy

Caree Long Professional Learning

MyWoW

Science

Inspiration

Fair Work Action Plan

Apprenticeships

DYW

Excellence

STEM-Awards

Senior Phase

SFC

Engineering

Economy

Technology

Science Centres

Education Scotland

Lifelong Learning

Teaching Makes People

Young STEM Leaders

Regional Improvement Collaboratives

Flexible Workforce Development Plan

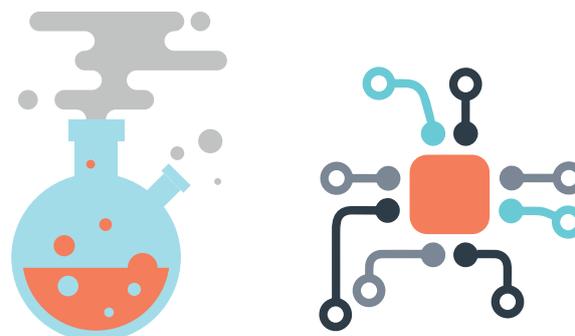
Interdisciplinary Learning

Lifeskills

Making Maths Count

4

Excellence



We will promote **Excellence** by:

- Improving the supply of STEM talent into the profession.
- Improving STEM learning and teaching, and delivering enhanced professional learning.
- Prioritising STEM in the expansion of apprenticeships.
- Maintaining our research excellence in our universities.

As a result of the actions in this section, by 2022, we expect to see:

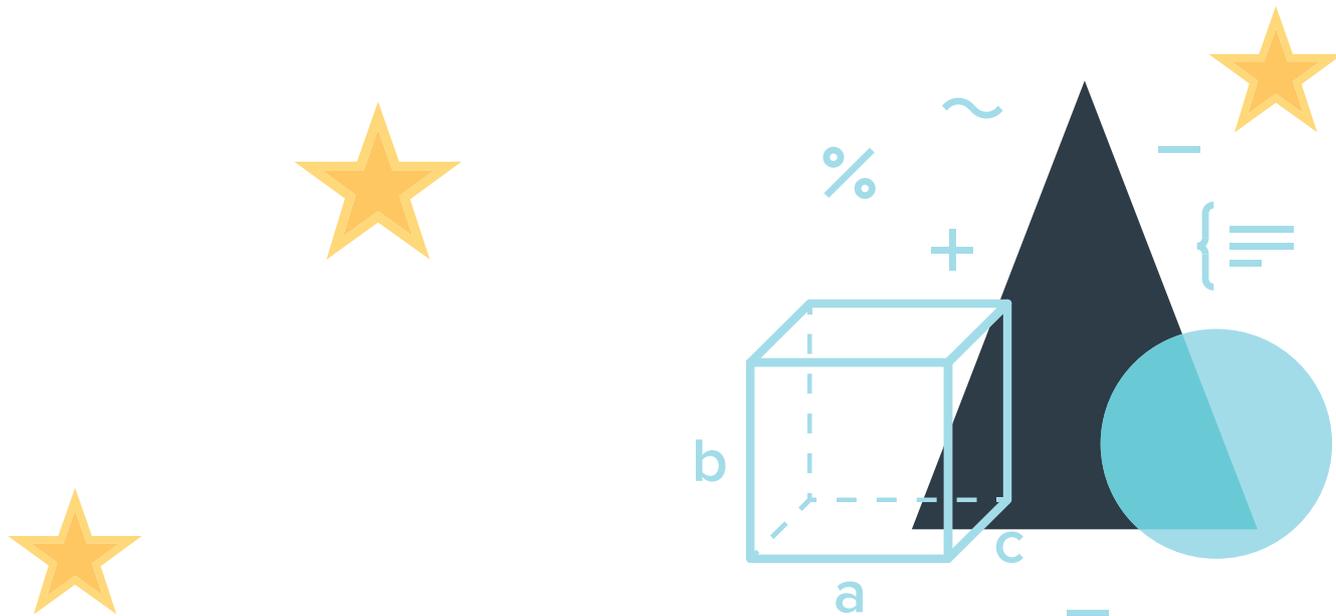
- Increases in the proportion of people undertaking STEM-related learning, engagement, study and training across all sectors including in school-level qualifications and awards and participation in apprenticeship programmes. (KPI I)
- Increased practitioner confidence in STEM learning in the early years, primary years and in CLD settings, and increased practitioner engagement in STEM professional learning opportunities. (KPI II)

Improving the supply of STEM talent to the teaching profession

107 STEM Bursaries of up to £20,000 were awarded to encourage STEM career changers into teaching in the 2018-19 academic year. These bursaries were targeted at secondary teaching in shortage STEM subjects – currently mathematics, physics, computing, chemistry and technical education. The 2019-20 scheme will open for applications early in 2019.

New routes into teaching for graduates have been available from January 2018 and, in 2019, the University of Dundee's new route will support 30-50 new STEM graduates into teaching.

Both these actions are contributing to and are being measured against KPI Ia which counts the number of students on Initial Teacher Education courses in STEM subjects. Targets are set for these courses for the subjects where there are shortages of teachers. These targets have been increasing each year and overall intakes for the STEM secondary teacher training courses are increasing in response to the setting of stretching targets.



Improving STEM learning and teaching and delivering enhanced professional learning

Education Scotland has published a self-evaluation framework for STEM learning to help schools and early learning providers improve STEM learning and teaching. A new STEM page on [Education Scotland’s National Improvement Hub](#) provides ‘one stop shop’ access to a wide range of STEM learning resources for practitioners. This includes access to the National Numeracy and Mathematics Hub that provides a wealth of professional learning specifically related to numeracy and mathematics. New STEM-related professional learning for early years and community learning practitioners, teachers and school technicians are being supported through the newly-established *Enhancing Professional Learning in STEM* grants programme. Developing these further will be a priority for the coming year.

We have continued to support the Scottish Schools Education Research Centre (SSERC) in financial year 2018-19 for its programme of professional learning for teachers, which is expanding to include more digital learning. We have also continued to fund the Raising Aspirations in Science Education (RAiSE) programme in partnership with The Wood Foundation. The programme, established to support improvements in primary science and STEM practice, is now engaging with its third tranche of local authorities. We continue to provide tailored support to local authorities to improve digital skills and computing learning in schools.

The Scottish Government is investing £1.6 M over four years (2014 to 2019) to support numeracy and mathematics professional development in local authorities. Building on this, in 2019-20, Education Scotland will undertake a national thematic inspection of numeracy and mathematics as part of their implementation of the [Making Maths Count report recommendations](#). This will evaluate the quality of children’s and young people’s learning experiences and attainment in mathematics and share examples of good practice.



63% of primary teachers who responded to an Education Scotland survey, **agreed or strongly agreed** with the statement ‘I am confident in delivering STEM learning in my practice.’ (KPI IIa)

A network of Regional STEM Advisors has been recruited to support learning and teaching in the 3-18 curriculum and raise STEM attainment. Their priority in the coming year will be to engage with regional teams including the RAiSE primary science leads, the college-led STEM Hubs and the Regional Improvement Collaboratives (RICs), and to work with the new Improving Gender Balance and Equalities team. Throughout 2019, the advisers will work with these key partners to support practitioners through the Regional Improvement Collaboratives, helping to co-ordinate STEM regionally.

We have provided funding to Inspiring Scotland to work with eight local authorities to improve outdoor learning as part of the expansion of early learning and childcare. We will use the RICs to share the learning from this project across the RIC areas across Scotland. In December 2018 we published, in collaboration with Inspiring Scotland and the Care Inspectorate, [Out to Play](#); practical guidance for creating outdoor play experiences for early learning and childcare. This guide is aimed at practitioners for whom there is a perceived difficulty in setting up or accessing outdoor space and who wish to increase and improve outdoor experiences for children, linking strongly to developing STEM skills. In 2019, we will continue to promote and raise awareness of the links between outdoor learning and STEM subjects in the Early Learning and Childcare (ELC) sector.

During 2019, we will also put in place a contract to produce two online modules on STEM and on outdoor learning accessible to all ELC staff. We will ensure this work is carried out in engagement with the ELC sector. We will also explore how to collect feedback on the module to measure the success of the online training. We will ensure this Scottish Government funded and co-ordinated training, along with all other training options available to ELC staff, are easily accessible through our new Online National Directory of ELC training programmes.

Each of these actions will complement each other and contribute to achieving the target against KPI II to increase practitioner confidence in STEM learning which is being measured through cumulative hours of STEM professional learning.

Prioritising STEM in the expansion of apprenticeships

Improving productivity through inclusive growth and quality jobs with greater alignment of investment in education and skills with industry needs are key drivers for the expansion of work based learning. Consequently, growth in the provision of apprenticeship frameworks, including STEM, reflect this need and this is reviewed annually.

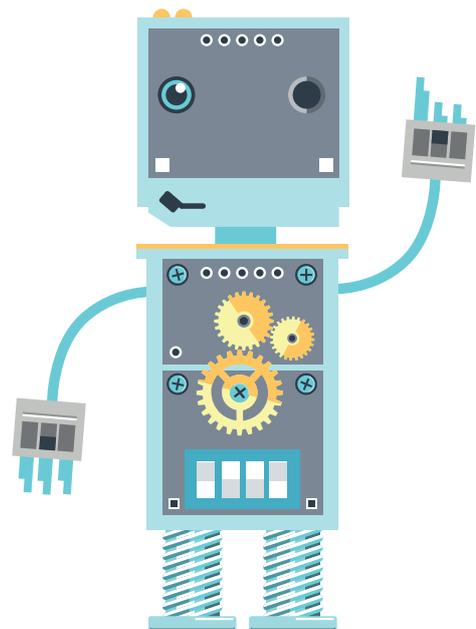
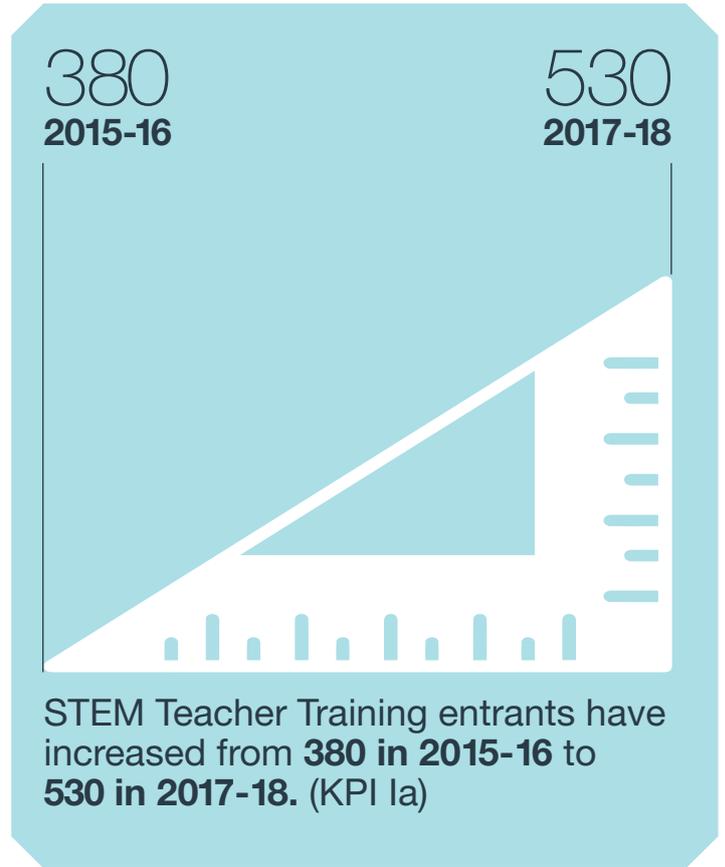
Foundation Apprenticeships provide senior phase school pupils (S5&S6) access to structured work based learning qualifications to industry-recognised standards at Scottish Credit and Qualifications Framework (SCQF) level 6 (equivalent to a Higher). Foundation Apprenticeships have been designed and developed with industry and the Scottish Qualifications Authority (SQA), and are aligned to key sectors of the economy with current skills shortages and projected future jobs growth. The Foundation Apprenticeships are delivered through partnerships between schools, a local college, or learning provider and local employers. The number of STEM Foundation Apprenticeship (FA) frameworks has increased from four in 2016 to six in 2017. The development of additional frameworks and the expansion of FA delivery saw the number of learners starting STEM FA Frameworks increase from 161 in 2016 to 552 in 2017. 2018 Foundation Apprenticeship data will be published later in February 2019.

A Graduate Apprenticeship is a fully-funded degree programme which provides work-based learning opportunities to new or existing employees. These programmes are designed to enable employees to study up to degree level (Bachelors or Masters) while spending the majority of their time in the workplace. They have been created in partnership with industry and the further and higher education sector. The Graduate Apprenticeships combine academic knowledge with skills development to enable participants to become more effective and productive in the workplace.

The apprenticeship starts target increased in 2018-19 to 28,000, in keeping with the Scottish Government’s commitment to increase apprenticeship starts to 30,000 by 2020. From this year, Graduate Apprenticeship (GA) starts will be included in the apprenticeship total and contribute towards the Scottish Government’s commitment. These annual statistics will be published in June 2019, and Skills Development Scotland will publish a separate Graduate Apprenticeship publication in March 2019.

By the end of 2018, 14 of Scotland’s universities and colleges were delivering Graduate Apprenticeships, in 12 subject areas covering sectors including ICT/Digital, Cyber Security, Data, Civil Engineering, Engineering, Construction and Business. Nine of the 12 new Graduate Apprenticeship (GA) frameworks developed for delivery in Academic Years 2018-2019 are STEM.

This work is being measured against KPI Ic and KPI Id around provision of apprenticeship opportunities, which is showing positive progress.



5

Equity

We will promote **Equity** by:

- Tackling inequity in STEM learning and careers.
- Improving participation in STEM further and higher education courses and apprenticeships.
- Increasing access to public science engagement events.

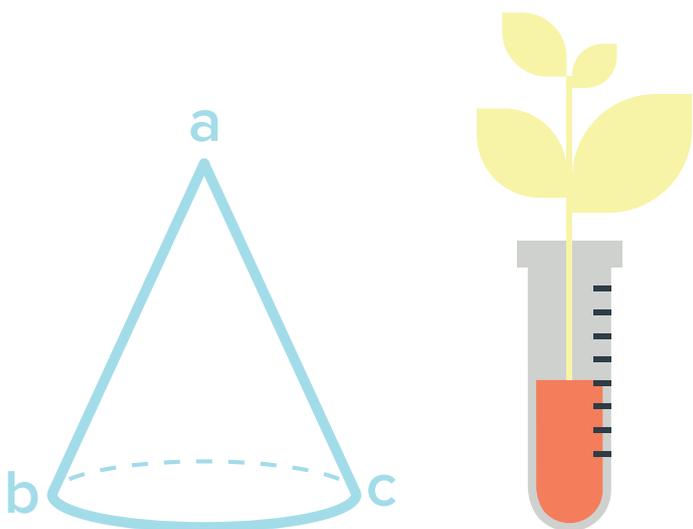
As a result of the actions in this section, by 2022, we expect to see:

- Significant reductions in the equity gaps in participation and achievement in STEM learning, engagement, study, courses and training across all sectors in relation to gender, deprivation, rurality, race, disability and for care leavers. (KPI III)



Tackling Inequity in STEM learning and careers

Following a positive evaluation of the three-year Improving Gender Balance pilot (published in June 2018), a new team of Gender Balance and Equalities officers has been recruited. The officers will work with schools and early learning providers to expand and embed the approaches developed in the pilot on practical ways to address gender bias and stereotyping and tackle inequity in learning. The pilot was jointly led by the Institute of Physics, Skills Development Scotland and Education Scotland. Drawing on this work, Education Scotland has already published a suite of Improving Gender Balance Action Guides for teachers and early learning and childcare practitioners. An SCQF accredited module of professional learning for practitioners is currently being trialled, in partnership with Skills Development Scotland. In 2019, the team will provide gender and equality training to practitioners, and will establish a gender champion network and a gender kitemark, to grow and spread best practice. The work will be undertaken with the six new Regional Improvement Collaboratives along with the new Regional STEM Advisers. There will be external evaluation of the impact of this work which will inform the future direction of interventions and build capacity for local evaluation. The programme will also be informed from wider evidence gathered via the Regional STEM advisers, the college-led STEM Hubs and through the education inspection and review process.



This action is contributing to KPI III which is measuring gender and deprivation gaps in STEM at school, college, university, in apprenticeships and in STEM engagement. Over the medium to long term we expect this action to lead to an improved gender balance in the STEM National Qualifications, STEM Awards and STEM learner pathways. We are measuring this through KPI IIIb on gender balance in attainment in physics and computing at SCQF level 6 (Higher level) which are school STEM subjects which see the greatest gender imbalance.

Improving participation in STEM further and higher education courses and apprenticeships

A new social media campaign to increase gender balance in participation in STEM study at college and university was launched in November 2018, led by Young Scot. The joint Scottish Government and Young Scot campaign encourages young women to subjects traditionally studied by males at both college and university level by challenging stereotypes and highlights possible career paths and advantages to studying STEM for all young people.

Each college and university has now produced a Gender Action Plan (GAP) outlining how they will advance equity and reduce gender disparities within STEM subject areas. A first progress report was published by the Scottish Funding Council in December 2017 and progress reports will now be published annually, with the next one due in February 2019. Any adjustments required will be managed through the Outcome Agreement process. The ambition of the GAP is that, by 2030, no college or university subject will have a gender imbalance greater than 75% of one gender.

Skills Development Scotland has worked with Equate Scotland to provide mentoring support to female apprentices in STEM. As part of this project, Equate Scotland has developed an SQA accredited module for employers that will provide them with the knowledge and skills to establish their own in-house mentoring specifically aimed at women in STEM sectors. This module was successfully piloted during summer 2018 and will be delivered by West Lothian College on behalf of Skills Development Scotland and Equate Scotland.

Skills Development Scotland's team of Equality Executives also work at a local level with individual training providers and employers to help them identify areas of under-representation and take positive action to address these. This includes working with providers and employers in STEM sectors to attract more women. Examples of positive action include holding women only information evenings or taster events, and actively targeting marketing and recruitment materials at female audiences across industries such as Engineering, Plumbing or Oil and Gas. This team also works closely with Careers Advisers and school staff to promote STEM industries to learners, specifically highlighting apprenticeships as a pathway into these sectors.

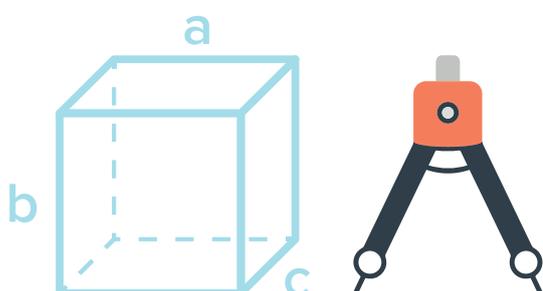
These actions are contributing to KPI III to reduce the equity gaps in participation and achievement in STEM learning, engagement, study, courses and training, and will impact on KPI IIIa, b, c and d. In 2016, 8.1% of STEM Foundation Apprenticeship starts were female and in 2017 13.2% of STEM Foundation Apprenticeship starts were female.

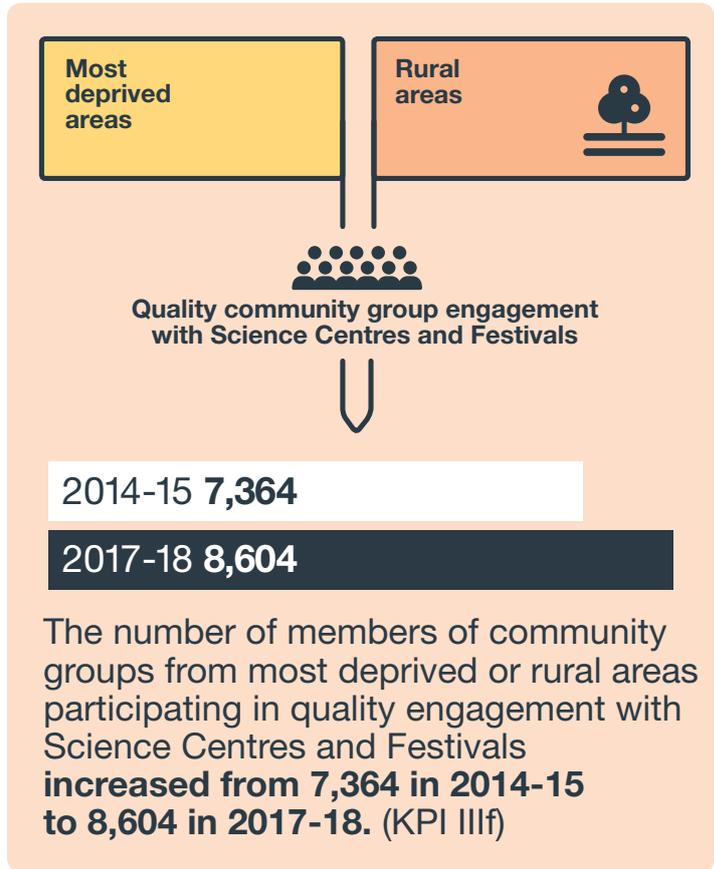
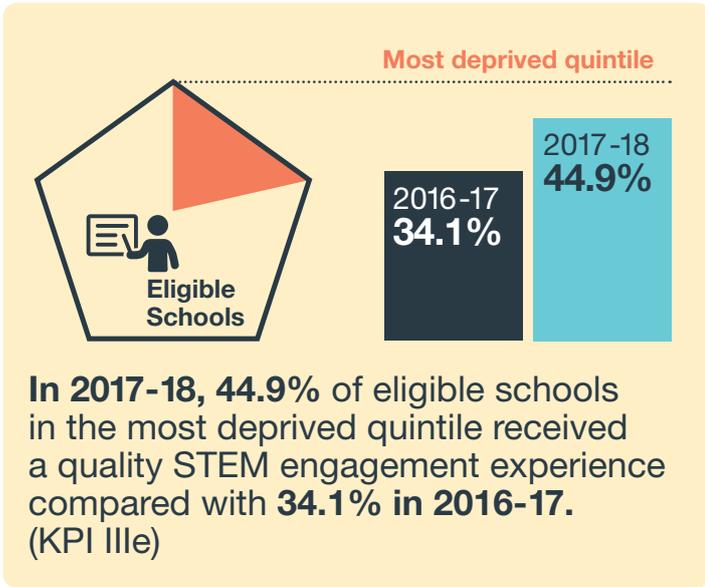
Increasing access to public science engagement events

Prior to the STEM Strategy, we provided Aberdeen, Dundee and Glasgow Science Centres and Dynamic Earth in Edinburgh with extra subsidies to help them engage with schools and communities in more deprived and rural areas. This year we have conducted an in-depth analysis of this work to help determine how to further improve the offer to under-served audiences. As a result, the number of schools and range of community groups eligible for subsidy has been expanded for 2018-19. This will further remove perceived barriers to access these inspirational resources. Data will continue to be collected and analysed over the period of the Strategy to further develop the impact.

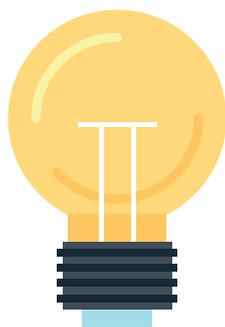
Through these subsidies, the Science Centres have developed their work with under-served communities in their local areas. Over the first year of the Strategy we have brought the Science Centres together with the larger Science Festivals and the Community Learning and Development sector to share best practice and develop a vision for genuinely community-led engagement. This vision will be further developed and implemented during 2019.

These actions also contribute to KPI III, and are being specifically measured against KPI IIIe and f, where improvements have already been seen with a 10.8 percentage point increase in the proportion of schools from the most deprived quintile that receive a quality STEM engagement experience from funded Science Centres, and a 4.5% increase in the number of members from community groups from the most deprived or rural areas participating in quality engagement with Science Centres.





6 Inspiration

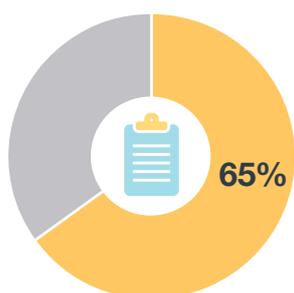


We will promote **Inspiration** by:

- Creating positive STEM role models, mentors and coaches.
- Promoting the opportunities and benefits of STEM learning and careers.
- Recognising and celebrating success.

As a result of the actions in this section, by 2022, we expect to see:

- Increases in the proportion of people undertaking STEM-related learning, engagement, study and training across all sectors including in school-level qualifications and awards and participation in apprenticeship programmes. (KPI I)
- Increased numbers of people who understand the benefits and value of STEM for themselves, their families and their communities. (KPI IV)



65% of respondents to the **2017 Young People in Scotland survey** said they had chosen or thought they would choose to study a STEM subject. (KPI IVa)



In 2018, **77% of 8,684 young people who participated in MyWoW Live!** said that, as a result, they are more likely to think about studying science/technology subjects at school

Creating positive STEM role models, mentors and coaches

We have initiated a new Young STEM Leaders programme to support young people to inspire each other to get involved with STEM. The Scottish Schools Education Research Centre (SSERC) is leading the development and management of the programme, working in partnership with the Science Centres and Festivals, and youth organisations, including Young Scot. The Scottish Government has committed a total of £500,000 to the programme over financial years 2018-19 and 2019-20. The focus will be on providing training and support for young people to enable them to effectively carry out a STEM mentoring role, and the development of accreditation routes, to help ensure young people's participation is valued and recognised. Young people in both school and community learning and development settings will be supported. The impact of the programme will be externally evaluated.

This action will contribute to progress being measured under both KPI I and KPI IV. It will take time for the programme to build momentum and start to impact these KPIs. In the meantime, the monitoring and evaluation of the Young STEM leaders programme will guide the progress of this action.

Promoting the opportunities and benefits of STEM learning and careers

The second annual Maths Week Scotland took place in September 2018 to promote and encourage greater enthusiasm for, and increase participation in, mathematics through showcasing how mathematics counts in everyday life and work. The Deputy First Minister, in partnership with the Scottish Mathematical Council, created a school holiday 'maths challenge' which was issued to all primary 6 children in Scotland initially at Christmas 2017, and then at Easter and Summer holidays and Christmas in 2018 to encourage family enjoyment of maths and problem-solving puzzles outside the classroom.

The role of parents, both in influencing decisions and supporting learning at home, is key to delivering many of the ambitions within the Strategy. Work is underway to develop an accessible guide on STEM for parents and new STEM content for the [Parentzone Scotland website](#). Parental Engagement will also be a focus for the Regional STEM Advisors and the Improving Gender Balance and Equalities team.

In 2018, we brought together representatives from the many sectors that deliver STEM engagement events and content. As a result, a steering group of volunteers was formed to develop a national STEM engagement campaign. The aim of the campaign is to improve the visibility and impact of the wide range of activities that take place annually across Scotland. This will be done by bringing them together under an umbrella identity in a similar way to Scotland's Themed Years. This identity for STEM engagement activities is under development and will be launched and implemented with the support of sector partners during 2019.

In 2017-18, Skills Development Scotland's My World of Work Live (MyWoW Live!) programme, a hands-on experience of science and technology learning linked to STEM careers, continued across three sites in Glasgow, Shetland and Inverness. In the period April – September 2018, 8,684 young people participated in MyWoW Live! and 77% said, as a result, they are more likely to think about studying science/technology subjects at school. 93% of parents said that

after experiencing MyWoW Live! they believed their child would be more motivated about STEM subjects in school and 97% of teachers said MyWoW Live! increased their awareness about careers in STEM.

Skills Development Scotland is building on the success of MyWoW Live! with a revised offer that includes virtual and mobile face-to-face delivery through recruitment of regional delivery staff to extend the reach of the programme to more remote and rural locations. A review of the first phase of the revised programme delivery will be undertaken with recommendations for further expansion by December 2019. Next steps for programme expansion are to be agreed by March 2020.

Colleges and universities are now being encouraged to promote higher levels of progression from school to further education and onward to higher education through Outcome Agreements.

Each of these actions will contribute to progress being measured under KPI I and KPI IV, promoting both Excellence and Inspiration themes. It will take time for these actions to impact the measurement of participation in STEM and young people's attitudes being looked at in these KPIs. In the meantime, more detailed progress with these actions will be monitored by the Strategy Implementation Group.

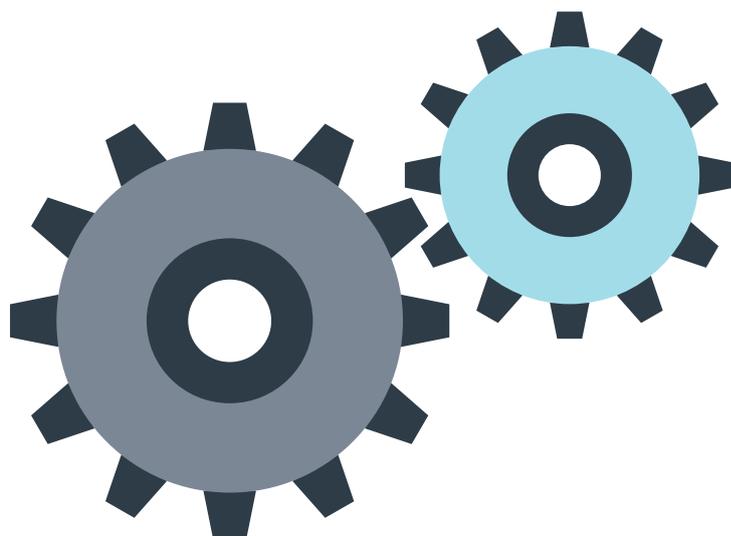
Recognising and celebrating success

A key focus for 2019 will be the introduction of new STEM Awards with an initial focus on early learning and childcare, and schools, to recognise and build on activities in these sectors. We will also hold the first annual community learning and development STEM conference to showcase inspirational lifelong learning STEM practice.

This action is being specifically measured against KPI Ig around participation in STEM-related Youth and Adult Achievement Awards, with baseline data to be collated in 2019.



Connection



We will promote **Connection** by:

- Improving the support available to schools
- Delivering up to date advice and information on STEM careers.
- Increasing the responsiveness of colleges, universities and the apprenticeship programmes to the needs of the economy.

As a result of the actions in this section, by 2022, we expect to see:

- Increased collaboration between schools, colleges, universities and employers. (KPI V)
- Increased employment in STEM-related occupations and employers more satisfied with the STEM skills and capability of the people they employ from schools, colleges, universities and from apprenticeship programmes. (KPI VI)



79%

A recent data gathering exercise undertaken by Education Scotland in collaboration with local authorities and employer groups indicates that **79% of secondary schools are now benefitting from meaningful and productive partnerships with employers.** (KPI V)

Improving the support available to schools and increasing responsiveness

A new college-led STEM Hub network has been created at a regional level to strengthen collaboration between partners including universities, Science Centres and employers, and to facilitate more joint professional learning between secondary schools and colleges, and primary and early learning settings. The creation of the 13 regional hubs has already strengthened the links between key stakeholders at a regional level to enable smooth delivery of many of the actions within the Strategy. The hubs have collated a baseline of regional activity that identifies the areas

of strength and good practice within the region and areas where further development is required. At the same time, the hubs will influence and be incorporated in the development of regional STEM strategies that are currently being developed and refined in each college region, with progress being monitored through the Outcome Agreement process and reviewed by the STEM Hub Steering Group on an annual basis.

College Regional STEM Strategies will indicate priorities for joint-working between schools, colleges, universities and employers, in which the regional hubs will play a key supporting role bringing together stakeholders and facilitating Career Long Professional Learning and STEM engagement. The Scottish Funding Council has developed guidance on the use of credit activity in primary and secondary schools delivered through colleges, providing the work ties in to the STEM Strategy themes.

The 21 DYW Regional Groups are charged with addressing local employers' skill and workforce needs by bringing schools and employers' closer together, through a whole range of activity both within schools and on employers' premises. DYW Groups do not generally classify activity by occupation or industrial sector, but rather reflect the needs of local employers who form the majority of the Regional Boards. This means that much of the activity that takes place will involve activity with employers in industries with a high level of STEM occupations: construction; engineering; life sciences; and medical care. Activities include employer visits; work experience; talks by employers and other workers; and increasingly curriculum participation with contextual learning on either a regular or one-off basis. The Groups are engaged in activity to address gender imbalance in occupations and this typically concentrates on activities to promote interest from women and girls in STEM subjects and occupations. A recent data gathering exercise, undertaken in collaboration with local authorities and employer groups, indicates that 79% of secondary schools are now benefitting from meaningful and productive partnerships with employers.

A key focus for 2019 will be the development of an online directory of quality assured STEM inspiration activities for schools by external partners, including employers. Work will take place to scope and decide on the criteria and process for including activities. Together with the STEM Hubs, this will address a key issue identified in

our consultation on the Strategy which was the need for more co-ordination of such activities and a better understanding of what kinds of activities had the most impact in terms of sustaining engagement and interest in STEM into the long term. The Scottish Government funds the Scottish Council for Development and Industry's Young Engineers and Science Clubs and their activities have been aligned with the aims of the Strategy, particularly around equality of opportunity in the context of gender, rurality and deprivation.

These actions will contribute to both KPI V and KPI VI, but will be particularly measured against KPI V looking at employer engagement with education. Options for collecting data for this KPI are currently being actively explored with partners.

Delivering up-to-date advice and information on STEM careers and increasing responsiveness to the needs of the STEM economy

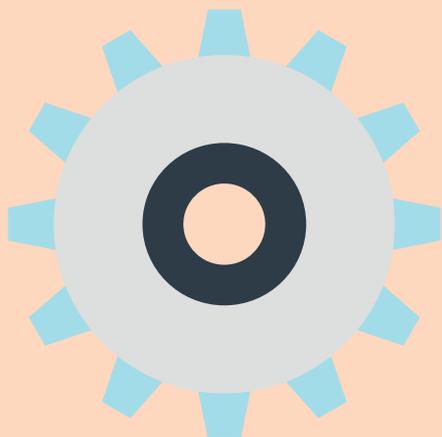
Skills Development Scotland is developing a new system to make sure that STEM labour market information is available to careers advisors and teachers in an easily accessible form. There will be additional support and resources for teachers to help them use this information to put STEM learning into context.

The Scottish Funding Council is conducting an audit of current practice in industry placements for students at college and university. The aim of the audit is to establish a baseline on which to measure future actions relating to placements. The results of the audits will be available in Spring 2019.

In 2019, as part of our work to follow up the Learner Journey review, we will develop a comprehensive careers strategy for the all age careers service in colleges and universities. This will link with the Careers Education Standard already in place for education from 3-18.

Each of these actions will contribute to delivering against KPI VI concerning college learner placements with employers in STEM-related occupations and measured through KPI VIb around employer satisfaction with STEM skills and capability of employees. Data against this KPI will be monitored and activity adjusted accordingly if needed.

Annex A



What is STEM?

In the STEM strategy, we take a broad view of what STEM is:

STEM stands for Science, Technology, Engineering and Mathematics. We include numeracy and digital skills within our definition of STEM. Both of these are vital to enable everyone to participate successfully in society as well as across all jobs, careers and occupations. STEM education and training seeks not only to develop expertise and capability in each individual field but also to develop the ability and skills to work across disciplines through interdisciplinary learning.

STEM education and training helps us develop the following skills and capabilities:

- Growing our understanding and appreciation of the natural and physical world and the broader universe around us
- Interpreting and analysing data and information
- Research and critical enquiry – to develop and test ideas
- Problem solving and risk assessment
- Experimentation, exploration and discovery of new knowledge, ideas and products
- Collaboration and working across fields and disciplines
- Creativity and innovation – to develop new products and approaches

All of these are increasingly important to success in a changing and technologically-driven world. They are also important for helping us to develop as active citizens, making informed decisions for ourselves and for society.

We recognise, in particular, the importance of creativity and innovation for economic growth and the strong synergies that exist between STEM and creativity.

The separate parts of STEM are:

- **Science** enables us to develop our interest in, and understanding of, the living, material and physical world and develop the skills of collaboration, research, critical enquiry, experimentation, exploration and discovery.
- **Engineering** is the method of applying scientific and mathematical knowledge to human activity and **Technology** is what is produced through the application of scientific knowledge to human activity. Together these cover a wide range of fields including business, **computing science**, chemicals, food, textiles, craft, design, engineering, graphics and applied technologies including those relating to construction, transport, the built environment, biomedical, microbiological and food technology.
- All of STEM is underpinned by **Mathematics**, which includes numeracy, and equips us with the skills we need to interpret and analyse information, simplify and solve problems, assess risk and make informed decisions. Mathematics and numeracy develop essential skills and capabilities for life, participation in society and in all jobs, careers and occupations. As well as providing the foundations for STEM, the study and application of mathematics is a vast and critical discipline in itself with far-reaching implications and value.
- **Digital skills** play a huge and growing role in society and the economy as well as enabling the other STEM disciplines. Like mathematics, digital skills and digital literacy in particular are essential for participation in society and across the labour market. Digital skills embrace a spectrum of skills in the use and creation of digital material, from basic digital literacy, through data handling and quantitative reasoning, problem solving and computational thinking, to the application of more specialist computing science knowledge and skills that are needed in data science, cyber security and coding. Within digital skills, as noted above, computing science is a separate discipline and subject.

It is often the interconnections between these separate parts that are important in life and in work.

This broad definition allows for different interpretations of data about STEM in education and training in what is, in practice, a complex set of inter-related disciplines and skills encompassing a very broad field of study. It is often more important to know about the differences that exist within STEM courses (for example, gender imbalances between courses) than it is to know what the total ‘amount’ of STEM is. There are different options for defining STEM, dependent on the aspect under consideration i.e. education, the level of education or training, industry (businesses) or occupation (jobs).

For the purposes of reporting progress with the Strategy we have chosen to define STEM in different, but related, ways across the different sectors. Full details are available in our definitions paper, published separately on the [Scottish Government website](#).²



² <https://www.gov.scot/policies/science-and-research/stem-education-training/>

Annex B

Key Performance Indicators – Summary

Note

In December 2017, we published a set of Key Performance Indicators (KPIs) for the STEM Strategy. These KPIs were selected on the basis that they related most closely to the key changes that we want to see resulting from delivery of the actions set out in the Strategy and, where possible, to primarily reflect progress as a result of the actions that will be taken and not significantly influenced by other external factors such as demographic and general labour market changes. Where well established data sets existed, we set stretch aims for the targets. For others, either further data collection was needed or they did not lend themselves to stretch aims. This annex provides an update on the status of each of the KPIs. In describing the status of each KPI we have given a picture of previous trends to set changes in the statistics in context.

In each case, we have used the most up-to-date published information to determine the baseline and the status of the KPI. They use different data collections, and so the actual years being reported on vary because of timing differences between collection and publication of data and publication of this report. These time lags also mean that the information will refer back to a time before the Strategy was in place, and so changes that are evident in the statistics presented here may not be fully attributable to the Strategy.

We will continue to monitor and evaluate individual actions and KPIs as new data becomes available to assess performance and determine if any changes in approach are required.

- I. **Increases in the proportion of people undertaking STEM-related learning, engagement, study and training across all sectors including in school-level qualifications and awards, and participation in apprenticeship programmes. (Excellence and Inspiration)**



KPI

Baseline value and progress (where applicable)

- a. **Meet Initial Teacher Education student intake targets for all STEM subjects.**

In order to address teacher shortages in certain STEM subjects targets are set for the number of students to be taken onto initial teacher education courses in these subjects. These targets reflect the demand for teachers in each subject and have been increasing each year. While these targets have not been met overall, intakes for the STEM secondary teacher training courses have increased from 380 in 2015-16 to 530 in 2017-18, and setting stretching targets is helping to drive progress.



<p>b. Increase the number of passes at SCQF level 5 in Mathematics by 10% by 2022.</p>	<p>We have taken the 2017 SQA results as the baseline. The number of post-review passes in that year were 28,166, with 28,336 passes in 2018. Numbers for previous years were 28,849 (2014), 24,676 (2015) and 27,515 (2016). Therefore, the figures for both 2017 (the baseline) and 2018 (the current year) are similar to each other and slightly less than 2014 but these increases should be seen in the context of a falling cohort size with the S4-S6 cohort falling each year from 135,548 in 2014 to 125,476 in 2018.</p>
<p>c. Increase overall provision of Foundation Apprenticeship opportunities to 5,000 new starts by 2019 and expand provision and Foundation Apprenticeship opportunities across all Scottish secondary schools.</p>	<p>Cohort 1 of the Foundation Apprenticeships (2016-2018 delivery) is the first year of delivery after the initial pilot phase and is the baseline year. The overall number of starts in 2016 was 346 of which STEM starts were 161. In 2017, the total number of FA starts was 1,245 of which 552 were STEM starts. The 2018 Foundation Apprenticeship report showed that approximately 71% of secondary schools were involved in Foundation Apprenticeship Delivery across Cohort 1 and 2. The next report will be published later in February 2019.</p>
<p>d. Increase the number of apprenticeship opportunities in STEM-related subjects at SCQF Level 9 and above.</p>	<p>The Graduate Apprenticeship programme is still relatively new. The first cohort began in September 2017 and the second cohort in September 2018. Data on these cohorts will be published in March 2019 and will be included in the next Strategy annual report.</p>
<p>e. Increase the proportion of those who successfully completed a recognised qualification at college in a STEM subject.</p>	<p>For college courses at HE level, the proportion of successfully completed courses that were in STEM subjects was 27.9% in 2014-15, 28.4% in 2015-16, 29.1% in 2016-17 and 28.3% in 2017-18. For college courses at FE level, the proportion of successfully completed courses that were in STEM subjects was 25.2% in 2014-15, 25.3% in 2015-16, 23% in 2016-17 and 23.5% in 2017-18.</p>
<p>f. Increase the proportion of Scottish Domiciled qualifiers on Full-time First Degree STEM courses.</p>	<p>2015-16 is the baseline year. The proportions of Scottish domiciled qualifiers on full-time first degree courses is similar across the three years of 2015-16, 2016-17 and 2017-18 but has shown slight increase overall. This reflects a trend prior to 2015-16. The proportions in 2015-16 were 34.6% (excluding medical courses) and 51.2% (including medical courses). In 2017-18 the proportions were 35.2% (excluding medical) and 52.5% (including medical).</p>
<p>g. Increase in the number of participants in STEM-related Youth and Adult Achievement awards.</p>	<p>No baseline data or trends exist. Baseline data will be available by March 2019.</p>

II. Increased practitioner confidence in STEM learning in the early years, primary years and in CLD settings and increased practitioner engagement in STEM professional learning opportunities. (Excellence)



KPI	Baseline value and progress (where applicable)
<p>a. Increase the cumulative hours of STEM professional learning accessed by early years, schools, college and CLD practitioners annually.</p>	<p>Education Scotland introduced new data gathering measures in 2017-18 to track provision of professional learning in STEM. Responses from 44 organisations showed that they collectively provided 109,969 cumulative hours of STEM professional learning between 1 August 2017 and 31 July 2018. At the same time, early learning and childcare and school practitioners were surveyed. Responses from 876 practitioners showed they accessed an average of 21.3 hours of STEM professional learning between 1 August 2017 and 31 July 2018. Of the respondents, 63.4% agreed or strongly agreed with the statement 'I am confident in delivering STEM learning in my practice.' Education Scotland will take steps to improve and align data gathering in 2019-20 to ensure it provides a robust and comprehensive account of the provision and to help track progress.</p>

III. Significant reductions in the equity gaps in participation and achievement in STEM learning, engagement, study, courses and training across all sectors in relation to gender, deprivation, rurality, race, disability and for care leavers. (Equity)



KPI	Baseline value and progress (where applicable)
<p>a. Reduce the gap between the percentage of school leavers with one or more award in STEM subjects at SCQF level 6 or better from the least and most deprived SIMD quintiles to 31 percentage points by 2020 and to 25 percentage points by 2022.</p>	<p>2015-16 is the baseline year when the gap was 36.8 percentage points. Data from previous years show that the current value (35.6 percentage points) is a reduction on the gap in all previous years. Between 2015-16 and 2016-17 there was a slight increase in the proportion of school leavers with one or more STEM award at SCQF level 6 in the most deprived quintiles and a slight decrease in the proportion of school leavers with one or more STEM award at SCQF level 6 in the least deprived quintiles.</p>
<p>b. Improve the gender balance in attainment in key STEM-related subjects at SCQF level 6 by increasing the number of females passing physics by 15% and computing by 20%, by 2022.</p>	<p>2017 SQA data is the baseline year. Prior to that, female passes in Physics had declined from 2,262 in 2014 to 1,899 in 2017 – with some variations across the years. For physics, they declined again slightly in 2018 to 1,863 passes. For computing, female passes declined from 670 in 2014 to 480 in 2017 – again, with variations from year to year – and then increased by 72 passes to 552 female passes in 2018.</p>

<p>c. Improve the gender balance in STEM subjects studied at college and university.</p>	<p>The percentage of female enrolments across the STEM subjects at universities has been, in general, increasing marginally from 2014-15 to 2017-18. In 2017-18, it ranged from 66% for the biological sciences to 19% for Engineering and Technology and 21% for Computer Science. There were very slight increases in the proportion of female enrollments in engineering/technology and computing between 2014-15 and 2017-18 but a slight decrease for mathematics. In the college sector, while there remains a lot to be done, progress has been encouraging. The percentage of female enrolments across STEM courses at HE level in colleges has been gradually increasing from 13.9% in 2014-15 to 17.8% in 2017-18. In 2017-18, they ranged from 57.0% for the sciences to 2.8% for Nautical Studies and 8.0% in Engineering. At FE level, while there was a dip in 2015-16 (28.8%), over the four year period there has been an increase in the proportion of females taking STEM courses from 30.8% in 2014-15 to 32.3% in 2017-18. While figures are variable across the types of course, there are promising increases for Engineering with female enrolments increasing from 14.8% in 2014-15 to 25.5% in 2017-18.</p>
<p>d. Increase gender balance in the uptake of STEM-related Foundation Apprenticeship opportunities in the senior phase of school.</p>	<p>Females represented 8.1% of starts in STEM Frameworks for cohort 1 (2016) and 13.2% of starts in STEM frameworks in cohort 2 (2017).</p>
<p>e. Increase the proportion of schools from most deprived quintile that receive a quality STEM engagement experience from funded Science Centres.</p>	<p>Baseline taken as 34.1% in 2016-17, the year prior to the launch of the STEM Strategy and the first to use data from SIMD16.</p> <p>The proportion in 2017-18 was 44.9% of eligible schools, which represents a large increase on previous figures. This has been driven by changes to policy and funding for the Science Centres. However, it must be noted that figures may also be affected by the re-configuration of the SIMD data zones in 2016 from the previous data in 2012 and a slight decrease in the total number of eligible schools.</p>
<p>f. Increase the number of members of community groups from the most deprived or rural areas participating in quality engagement with Science Centres and festivals to 10,000 by 2022.</p>	<p>The baseline has been taken as 8,235 visits by members of eligible community groups in 2016-17, the year prior to the launch of the Strategy and the first year of increased subsidy. The trend since 2012-13, when the subsidy was initiated separately, has been for increasing numbers of participants as the centres have developed relations with community groups in their areas. The subsidy was increased in 2016-17 with an increase of over 1,000 participants from the previous year. In 2017-18 the number of visits increased again to 8,604. This represents the highest participation since the subsidy was started.</p>

IV. Increased numbers of people who understand the benefits and value of STEM for themselves, their families and their communities. (Inspiration)



KPI

- a. Increase the proportion of young people who say they feel studying STEM is important for them and/or for their future careers in the Young People in Scotland Survey.

Baseline value and progress (where applicable)

Baseline data gathered in 2017 survey and will be available every two years. Almost two thirds (65%) of respondents said they had chosen or thought they would choose to study a STEM subject. Of these, 52% said they had chosen a STEM subject because they felt it was important to them and/or for their future career. 56% said that it was because they enjoyed STEM.

V. Increased collaboration between schools, colleges, universities and employers. (Connection)



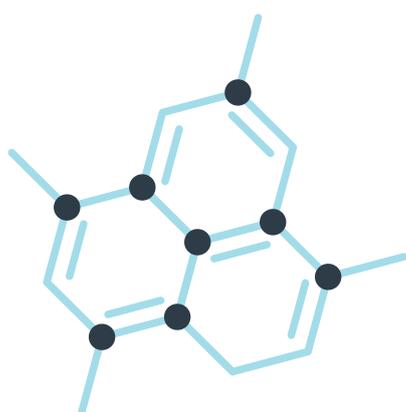
KPI

- a. Increase the number of employers engaged with education to support young people of all ages to understand STEM career opportunities and develop skills for work (including career advice, work inspiration, work experience placements, etc.)

Baseline value and progress (where applicable)

We currently have no robust mechanisms for measuring the numbers of employers engaged with STEM. However, a recent data gathering exercise undertaken in collaboration with local authorities and employer groups indicates that 79% of secondary schools are now benefitting from meaningful and productive partnerships with employers. Scotland's 21 Developing Young Workforce Regional Groups are engaged in building both strategic partnerships between schools and employers and a whole range of other complimentary activity. Whilst the Groups do not currently separately identify STEM-based activity, their activity is driven by the needs of local employers which includes a high proportion of STEM-type activity reflecting current and future needs.

We are actively exploring with partners, including the DYW Regional Groups, how best to collect and report on this KPI.



VI. Increased employment in STEM-related occupations and employers are more satisfied with the STEM skills and capability of the people they employ from schools, colleges, universities and from apprenticeship programmes. (Connection)



KPI	Baseline value and progress (where applicable)
<p>a. Increase the numbers of placements and internships with employers for college learners within STEM curricular areas.</p>	<p>An audit of current practice in industry placements has been conducted in colleges and universities with the aim of establishing a baseline from which to measure future actions. The output from the audit will be available in Spring 2019.</p>
<p>b. Reduce the proportion of STEM employers in Scotland experiencing skills shortages.</p>	<p>The proportion of STEM employers in Scotland with at least one skills shortage vacancy was 6.4% in 2015 and 7.7% in 2017.</p>





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