

Glasgow Science Centre – RAISE Research Study

What is understood by Vocational Education and Training (VET) in the UK?

STEAM stands for Science, Technology, Engineering, Arts and Maths. The addition of arts was spearheaded by academics and students at the Rhode Island School of Design (RISD), who have planned an entire curriculum on bringing all five STEAM subjects together, creating the StemtoSteam.org site in the process (Anon., 2016).

The addition of arts recognises the importance of incorporating creative thinking and visual learning into STEM. One academic has recently argued that the concept of bringing the arts and science together is not a new one. In her article, Royal Holloway's Professor Kate Normington, highlighted how Leonardo da Vinci brought the two together in Renaissance Italy (Normington, 2016).

The **British Council** in its Introduction to the UK Skills System report (British Council, 2016) define the technical and vocational skills as adding to core skills and employability skills to make a fully skilled person:

Vocational skills are *"empirical skills that individuals acquire in a specific area of interest, usually from hands-on experience. They are often defined as the occupational and technical skills that are required to be, for example, a nurse, mechanic or chef."*

The Employability Scotland website (Anon., 2014) defines vocational training as:

"Vocational training focuses on the practical skills and knowledge required for particular jobs, trades and occupations. It is important in supporting workplace progression, improving the productivity of businesses and fulfilling individuals' aspirations.

Vocational training is delivered by a wide range of organisations, which include:

- Colleges and schools
- Training providers in the public, private and third sectors
- Local government
- Employers and employers' organisations
- Voluntary organisations and social enterprises
- Trade unions
- Government agencies

To be effective, vocational training ought to respond to the needs of employers, therefore providers should work in partnership with employers in the design and delivery of courses. This is one of the recommendations from the Review of Post-16 Education and Vocational

Training in Scotland (Scottish Government, 2011). The review also recommends the development of a learner-centred system that is founded on the following 12 principles:

- Is easy to understand and navigate
- Offers excellent insights on, and access to the world of work
- Operates coherently and collaboratively at local / regional level with appropriate governance arrangements
- Operates in a transparent and accountable environment so that learners, employers and communities can drive provider responsiveness and continuous improvement
- Is market-led with strong employer engagement throughout
- Is performance driven with a clear focus on outcomes and impacts
- Retains and attracts an increasingly ambitious and adaptive workforce
- Embraces innovation and creativity
- Gains more from current and future technologies
- Is responsive to the diversity of opportunities and needs across all parts of Scotland
- Offers the country exceptional public value
- Has strong international connections and impacts

Vocational training in Scotland typically takes the form of courses provided by further education colleges and private training providers, incorporating classroom and work-based elements.

The Modern Apprenticeship (MA) programme provides individuals with the opportunity to gain vocational qualifications while earning a wage. It also offers businesses the opportunity to train employees to industry-recognised standards.

Most vocational qualifications are developed, accredited and awarded by the **Scottish Qualifications Authority (SQA)**. The two main types of vocational qualification in Scotland are Scottish Vocational Qualifications (SVQs) and Higher National Certificates and Diplomas (HNCs and HNDs). The Scottish Credit and Qualifications Framework (SCQF) brings together all mainstream qualifications in Scotland into a single framework, allowing for comparisons to be made.

Under the newly introduced Employability Fund, Skills Development Scotland funds skills training to individuals, delivered in partnership with training providers and colleges. The Fund brought together earlier National Training Programmes, including Get Ready for Work, Lifeskills, Training for Work, Targeted Pathways to Apprenticeships and the New College Learning Programme, with the aim of providing a more flexible, outcome-focused provision for individuals that is responsive to the needs of employers and local labour markets.

Developing the Young Workforce (DYW, (2014) is Scotland's youth employment strategy and through DYW, the Scottish Government aims to reduce youth unemployment levels by 40% by 2021. The strategy aims to create an excellent, work-relevant education offer for young people in Scotland, giving them the skills for the current and anticipated jobs market. This includes creating new work based learning options, enabling young people to

learn in a range of settings in their senior phase of school; embedding employer engagement in education; offering careers advice at an earlier point in school; and introducing new standards for career education and work placements.

At Glasgow Science Centre, we informally surveyed 20 staff on what they thought Vocational Educational Training means. In the main, responses were:

- More practical than theoretical / academic;
- Education that is related to a job, “teach people skills that are to do with specific jobs”
- Hands-on and practical apprenticeships

What VET subjects are being offered in your country? How are subjects being structured to reflect VET status? What is the VET educational set up like in Scotland/United Kingdom?

A complete list of every government accredited qualification in Scotland is available on the Scottish Credit and Qualifications Framework database (<http://scqf.org.uk/the-framework/search-database/>). This includes both vocational and non-vocational courses and courses that have various levels of STEAM content included.

Below is a table of the 12 different levels of SCQF qualifications provided in Scotland along with their European Qualification Framework Equivalent. Many Scottish people will begin gaining qualifications from this framework at age 14 or 15, however based on ability they may start above SCQF Level 1.

SCQF	SQF qualifications		Higher education qualifications	SVQ, modern apprenticeships	EQF	
12	Some SQA qualifications are changing between 2013-16. See http://www.sqa.org.uk/rea-dyreckoner		Professional development award	Doctoral degree	Professional apprenticeships	8
11				Master degree	Professional apprenticeships/ SVQ 5	7
10				Honours degree	Professional apprenticeships	6
9						
8				Higher national diploma	Diploma of higher education	Technical apprenticeship/ SVQ 4
7	Advanced higher Scottish baccalaureate	Higher national certificate	Certificate of higher education	Modern apprenticeship/ SVQ 3		
6	Higher			Modern apprenticeship/ SVQ 2	4	
5	National 5, intermediate 1			SVQ 1	3	
4	National certificate 4, access 3				2	
3	National 3, access 3				1	
2	National 5, access 2					
1	National 5, access 1					

(CEDEFOP, 2016)

In most cases, an individual would apply to one of these courses directly with the school, college, university or employer delivering the course or via an organisation such as UCAS (<https://www.ucas.com/> University and College Admissions Service) or Apprenticeship scheme (<https://www.apprenticeships.scot/>). When applying for a course, program or apprenticeship the individual's previous qualifications and experience would be taken into account when selecting who will qualify for a place. When assigning places for apprenticeship schemes, factors such as age may be taken into account.

Traditionally, courses and qualifications in Scotland are considered to be either vocational or academic. Vocational qualifications focus on learning practical skills for use in a very specific occupation. Academic qualifications tend to have a broader focus, more theoretical learning and a less defined career path upon completion.

The Scottish Qualification Authority also awards accredited qualifications called **Scottish Vocational Qualifications** (SVQs). There are a range of subjects which are included in SVQ's, the full list of which can be found on the Scottish Qualifications Authority website (<https://www.sqa.org.uk/sqa/41339.2571.html>, Scottish Qualifications Authority, 2018)

Although all of these qualifications are considered vocational, not all of them would be considered a STEAM subject, however they will probably contain elements of STEAM skills to some extent. Studying an SVQ is just one example of many vocational qualifications that are offered in Scotland. Many of the qualifications that are considered to utilise STEAM skills on this list are only available to those who already hold a position within the industry and it is intended to be used as a formal qualification to show skills learned within that position.

A common way to gain employment in a position where you can access an SVQ is to apply for an apprenticeship. As an apprentice you would spend part of your week in the workplace and the rest of the time you would be expected to complete coursework to gain your qualification. However, when looking at the number of currently available apprenticeships, it is apparent that there are a very low proportion available in STEAM industries.

There is very little information on what happens to an apprentice after their apprenticeship has finished. There are three desirable options: they are offered an extended position as a qualified employee by the company that provided the apprenticeship, they successfully gain employment in a similar position with another employer or they move on to further education.

It is common, in Scotland, to associate STEM careers with academic study followed by a graduate position to learn vocational skills. Although there are some STEM qualifications that include learning vocational skills. For example, healthcare qualifications involve many work placements and practical workshops along with theoretical learning. Also, science and technology qualifications may not necessarily have work placements but they will include practical workshops and assessments.

Below are examples of how an individual could go about entering a vocational or STEAM career path in Scotland:

Example 1: Charlie Smith. (Electrical Engineering)

At school Charlie studied English, Maths, Physics and Art. These subjects allowed Charlie to gain vital skills such as numeracy, problem solving and creative thinking.

Charlie then went on to Strathclyde University studying towards a Masters of Engineering in Electronic and Electrical Engineering with Business Studies. During this course Charlie received a scholarship for a summer work placement with one of the country's largest energy companies, SSE.

After graduating Charlie joined SSE's Graduate Training Scheme, gaining experience in various work placements learning about energy distribution networks and the business of energy networks. After 10 years as an engineer Charlie has recently successfully applied to be a Chartered Engineer.

Example 2: Alex Gray (Costume and Set Design).

At school Alex studied Drama, Music and Maths at GCSE and A Level (England) before going on to study for a Bachelor of Arts degree in Costume Design and Construction at Queen Margaret University.

Upon graduating Alex accepted a position as a Wardrobe Supervisor. Despite not enjoying maths at school Alex now relies on their maths skills to do a lot of tasks. This involves a lot of problem solving using measurements, calculations and formulae to design, plan and construct items for the productions they are involved in.

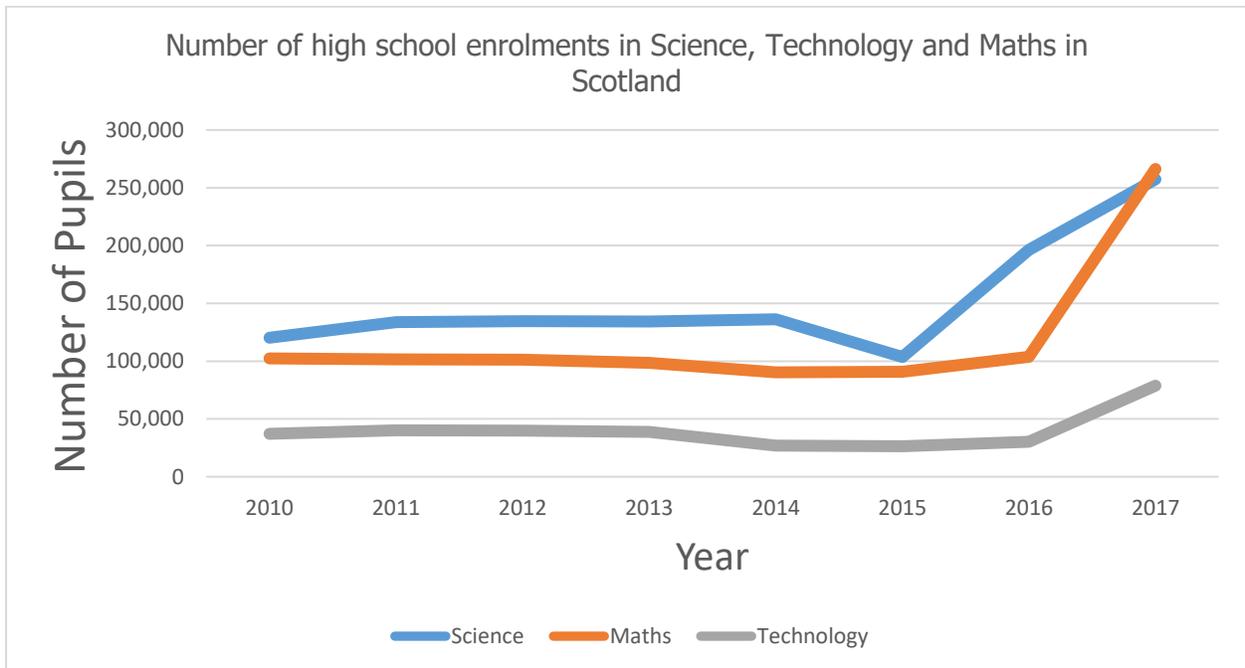
What are the statistics of the UK as regards STEM subject uptake from 2010 onwards?

The Scottish Qualifications Authority (SQA) has archives of the uptake of STEM subjects in Scotland from 2010 onwards. We have collated these numbers, showing trends in uptake and gaps. The original archives can be found on the SQA website (<https://www.sqa.org.uk/sqa/63001.8312.html>).

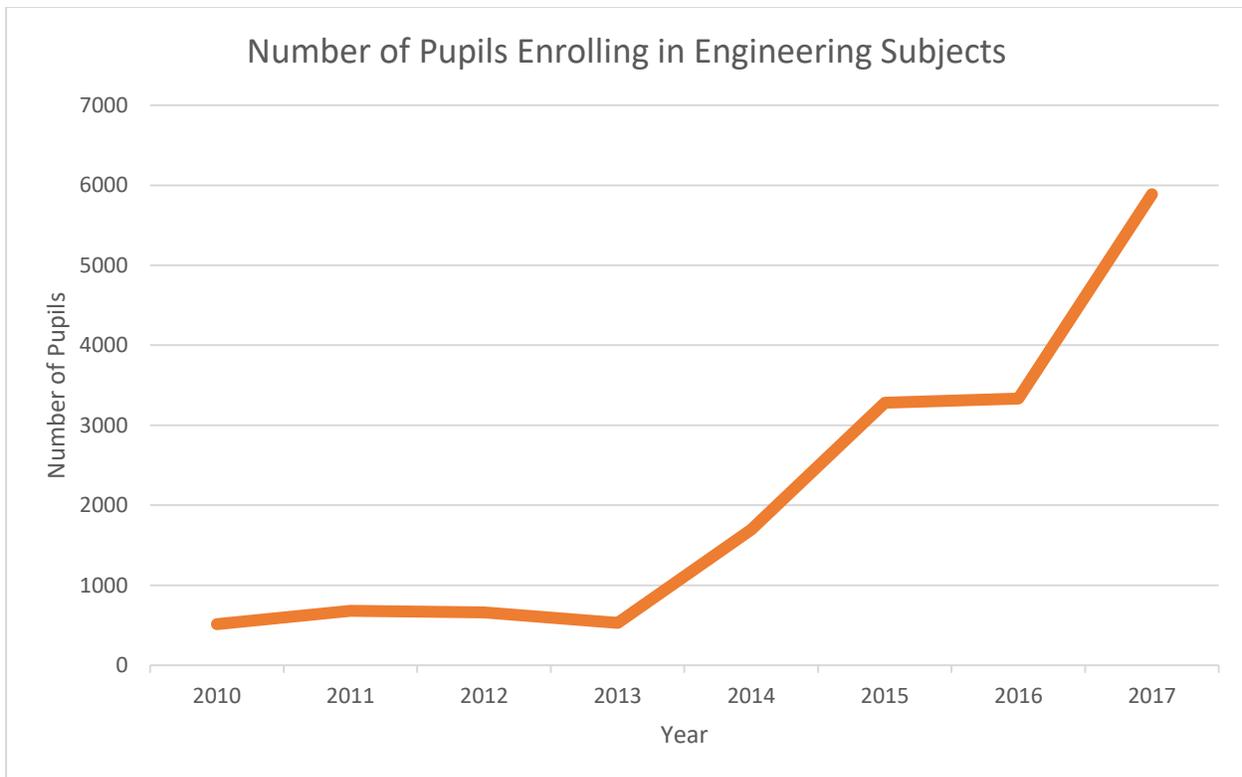
We have focussed mainly on the uptake of STEM subjects by high school students. In Scotland students choose subjects from as early as the second year of high school, with subjects divided into the following stages.

- National 3
- National 4
- National 5
- Higher
- Advanced Higher

The Scottish Curriculum changed in 2014, with the introduction of the National examinations, which replaced previous qualifications known as Standard Grades and Intermediates. For the purpose of clarity, these qualifications have been included in our reporting of STEM subject uptake.



(Scottish Qualifications Authority, 2018)



(Scottish Qualifications Authority, 2018)

The data shows that since 2014 the increase in uptake in the STEM subjects has been fairly rapid in Science and Mathematics. It can also be seen that the increase in uptake of Engineering subjects has been rapid since 2013, however this is likely due to changes in the Scottish curriculum at this time introducing more Engineering specific subjects.

Overall the increase in uptake of STEM subjects is encouraging, with 259,896 individual subject choices being made in 2010. By 2017 this number reached 608,238. This is a 134% increase in the uptake of STEM subjects across the country.

The Scottish Government commissioned a survey, carried out by Ipsos Mori in 2017 known as the STEM and language choices in school: Young People in Scotland Survey 2017. This report looked at the reasons for subject choices made by young people. There were no statistically significant differences between gender in their uptake of STEM subjects, however responses did show that females were less confident in their STEM skills. (Young People in Scotland Survey, 2017).

However, it was shown that young people from the most deprived areas are more likely not to choose a STEM subject than those from the least deprived areas (Young People in Scotland Survey, 2017).

The two predominant reasons for choosing or not choosing to study STEM subjects were related to pupil enjoyment of the subjects. Over half (56%) chose to study STEM subjects because they enjoyed it, whilst 36% of those not choosing STEM subjects disliked the subject matter (Young People in Scotland Survey, 2017).

The survey can be found on the Scottish government website (<https://beta.gov.scot/publications/young-people-in-scotland-survey-2017-stem-and-language-findings/>).

Developing the Young Workforce, Scotland's Youth Employment Strategy, Third Annual Progress Report, 2016-17 (Scottish Government, 2018) highlights progress in schools:

- School leavers gaining vocational qualifications at Level 5 – equivalent to a National 5, which is broadly similar to a good GCSE in England – to 10.7 per cent in 2015-16, from 7.3 per cent in 2013-14.
- Almost 2,000 young people enrolled in Foundation Apprenticeships – work-based learning for senior secondary pupils – in 2016-17, an increase from 480 in 2015-16 and 72 in 2014-15.
- Some 354 out of 356 secondary schools reporting that they have a “senior staff resource” dedicated to [Developing the Young Workforce](#) (DYW)

What are the current policies in the UK regards promotion of STEAM careers? Are there any initiatives to promote those types of careers?

Across the UK, STEM careers are promoted by a number of different organisations. STEM Learning (<https://www.stem.org.uk/>) is the largest provider of education and careers support within STEM, engaging with schools, universities and others who are working with young people across the country.

The Scottish Government published its STEM Education and Training Strategy in October of 2017. This strategy links to and builds on a number of related Scottish Government strategies and programmes, including Scotland’s Labour Market Strategy, Realising Scotland’s Potential in a Digital World and the Enterprise and Skills Review.

This strategy has a multitude of action points attempting to improve excellence, equity, inspiration and connection in STEM for all learners. A summary of the action points can be found on the Scottish government website (<https://www.gov.scot/Publications/2017/10/1386/downloads>) with a full version of the report also available (<https://beta.gov.scot/policies/science-and-research/stem-education-training/>).

In particular, the strategy supports the implementation of the specific STEM recommendations of the **Developing the Young Workforce** (DYW) programme, Scotland's youth employment strategy, through which the Scottish Government aims to create an excellent, work-relevant education offer to young people in Scotland, giving them the skills for the current and anticipated jobs market.

This includes: creating new vocational learning options; enabling young people to learn in a range of settings in their senior phase of school; embedding employer engagement in education; offering careers advice at an earlier point in school; and introducing new standards for careers guidance and work experience (Scottish Government, 2018).

There is currently more of a focus on STEM subjects rather than broadening into STEAM. We will focus on a number of the organisations who work in Scotland.

Skills Development Scotland (<https://www.skillsdevelopmentscotland.co.uk/>) is the national skills body. Through the My World of Work program, SDS promote the skills which are necessary for a number of different career options, including STEM.

SDS provide a number of different training opportunities including **Introduction to Work Place Skills** and the **Certificate of Work Readiness**. These certified qualifications are approved by the Scottish Qualifications Authority (SQA).

The Scottish Council for Development and Industry (<https://www.scdi.org.uk/>) runs the Young Engineers and Science Clubs Scotland (YESC) which is a primary and secondary school education programme. Through this programme they develop projects which encourage young people to take part in activities which might increase their enthusiasm from STEM subjects.

The STEM Ambassadors (<https://www.stem.org.uk/stem-ambassadors>) program is a UK wide initiative which recruits volunteers from STEM related jobs and industries to volunteer to demonstrate the value of STEM subjects both in everyday life and in relation to careers.

There are an estimated 30,000 STEM ambassadors across the UK, who are coordinated by regional organisations with a vested interest in STEM engagement with school pupils and adults alike.

CoderDojo, the global network of free computer programming clubs for young people is very active across the UK, with 42 individual clubs operating in Scotland alone. CoderDojo provides the opportunity for any young person aged between 7 and 17 to develop skills in programming, website creation and application design.

Funding for the promotion of STEM careers comes from a number of sources. The Scottish Government provides funding to the four science centres and as many as 15 science festivals across the country which allows them to engage with those from the most deprived areas of the country (Scottish Government, 2018).

The UK Government provides funding for the work of 4 independent national academies, the Royal Society, British Academy, Royal Academy of Engineering and Academy of Medical Science.

In addition, there are a number of other organisations who are dedicated to promoting STEAM careers and who regularly provide funding for this, either directly or in partnership with other organisations. This includes the Wellcome Trust, the Association for Science and Discovery Centres and the large number of universities across the UK.

Is there a list of employment opportunities which can be pursued in STEAM?

Although there are multiple locations where a list of employment opportunities in Scotland can be found, we have chosen to refer to the list contained on the My World of Work website (<https://www.myworldofwork.co.uk/my-career-options/job-profiles>). This list is collated and maintained by Skills Development Scotland who are a Government funded organisation who work with employers, education institutions and prospective employees to increase the amount of people who have the required skills to successfully join the workforce (Swinney, 2018).

This list is not an exhaustive list of careers or job roles. A complete list of every recognised job title is available from the [Standard Occupational Classification 2010](#) and the Standard Industrial Classification.

The list of jobs on the My World of Work website is useful to many individuals who may be looking for STEAM careers information because it is linked with a skills and strengths questionnaire which will help identify which industries users might be best suited to. From there users can view the job profile which interests them most and get information on the entry requirements and skills required to gain employment in that role.

Is there data available establishing what is the skill set which are currently missing in specific STEAM jobs? Which are the jobs where demand is bigger than supply, and vice versa?

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/303334/er84-the-future-of-work-evidence-report.pdf

Research into the skills gaps in Scotland has been investigated by Skills Development Scotland, who published a review in November 2017 which can be found at the following web link: <https://www.skillsdevelopmentscotland.co.uk/media/43852/jobs-and-skills-in-scotland-2017-main-report.pdf>

This review does not break down skills gaps into different sectors specifically enough to examine STEAM careers individually.

The 2015 Employer Skills Survey noted that there was a 37% increase in vacancy levels across employers in Scotland, which is lower than the national level of 42% during the same time period.

The number of employers facing Skills Shortage Vacancies (SSV's) rose from 3% in 2011 to 6% by 2015. In addition, 24% of vacancies were hard to fill in 2015 due to skills shortages.

Whilst it is not easy to establish the skills that are missing for specific jobs, many of the skills which are generally missing from potential employees in Scotland are those which are relevant to STEAM jobs.

72% of employers surveyed stated that the main skill lacking in applications was “specialist skills or knowledge needed to perform the role.” (UKCES Employer Skills Survey, 2015). In addition to this the main skills that are lacking are softer skills such as time management, customer service and team working.

A particular industry where a large future gap has been identified is in ICT and the digital sector, with estimates of 11,000 new jobs being required every year until 2020 (UKCES Employer Skills Survey, 2015).

In addition, the Royal Academy of Engineering suggests that there is a demand for 124,000 engineers and technicians to be recruited across the United Kingdom every year (Royal Academy of Engineering, 2018). In the UK, engineering accounts for 25% of gross value added for the UK economy and manufactured goods account for approximately 50% of the UK's exports, this is a large gap in the skills market. With additional constraints such as the

United Kingdom's exit from the European Union, the squeeze on the job market may get tighter.

Conversely, the Confederation of British Industry identified in 2008 that there were 10.1 million graduates in the UK but only 9 million graduate jobs available. (Confederation of British Industry, 2008). At that time, they estimated that only 42% of jobs will be graduate level by 2020.

A more recent study, *The Future of Work: Job and skills in 2030*, was produced by the UK Commission for Employment and Skills (UKCES). This report identified that there will be significant changes across key sectors.

There will be a requirement for an increase in jobs in health and social care due to demographic changes, social trends and investment in research and innovation. (UKCES, 2015). The United Kingdom has an ageing population and an increase in working parents so there will be big shifts in the requirements placed on the country's economy.

This report expected increased job requirements for the professional and business services sector, including within ICT and trade, meaning there will be a massive requirement for an increase in STEM skills associated with these roles. Other sectors identified as set for real change over the next 15 years include retail, education, manufacturing, creative and the construction sector.

However, it is being clearly identified by employers that more needs to be done to train up their current workforce to meet these skills gaps head on. The UKCES report shows that Scottish employers were the most likely to offer training, with 70% having funded or arranged training in the months surrounding the survey. (UKCES Employer Skills Survey, 2015)

Are these the same source – one is 2014 and one is 2015?

7. Which VET careers are difficult to attract people? What affects uptake of certain careers, versus others? (e.g. gender issues, stereotypes and so on)

In the UK, there are a lack of suitable applicants for jobs in the following professions (UK Visa Bureau, 2018) :

- Civil Engineering
- Mechanical Engineering
- Electrical Engineering
- Chemical Engineering
- Design and Development Engineering
- Production and Process Engineering
- Planning and Quality Control Engineering
- Other Engineering Professionals
- Engineering Technicians
- Medical Practitioners
- Social Workers
- Nurses
- Medical Radiographers
- Medical and Dental Technicians
- Biological Scientists and Biochemists
- Artists
- Dancers and Choreographers
- Musicians
- Arts Officers, Producers and Directors
- Graphic Designers
- Directors and CEOs
- Production, Works and Maintenance Managers
- Managers in Mining and Electricity
- Physicists, Geologists and Meteorologists
- Software Professionals
- Secondary Teachers (Physics and Chemistry)
- Management Consultants, Actuaries, Economists and Statisticians
- Buyers and Purchasing Officers
- Welding Trades
- Line Repairers and Cable Jointers
- Chefs/Cook

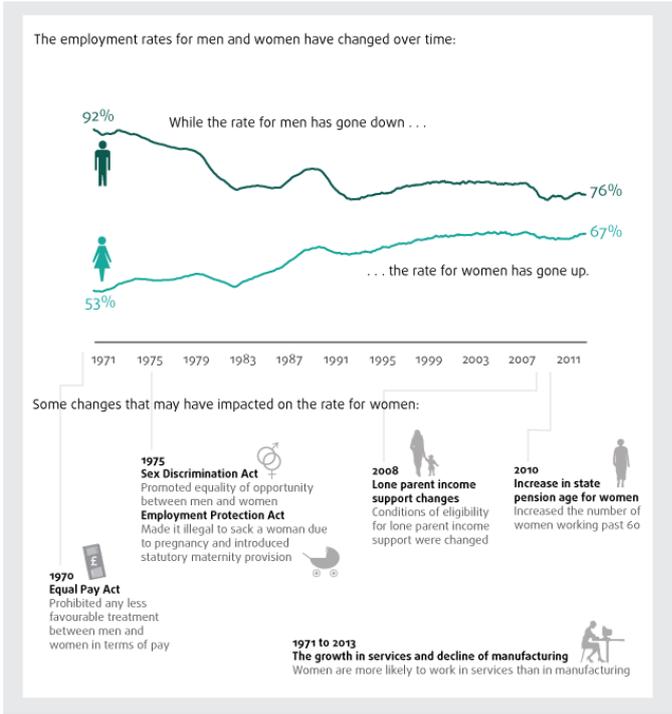
The demand for people in these positions is so great that the UK Visa Bureau will prioritise visa applications of people who have the skills to fill these positions. Most of the positions on this list demand the applicant have an advanced knowledge of specific STEAM skills (UK Visa Bureau, 2018).

When looking into why there is such a large skills gap for these occupations, there are many issues that may be considered a barrier to individuals taking up a careers in a STEAM industry, such as: Gender, disability, ethnicity, socioeconomic background or perceptions of STEM careers.

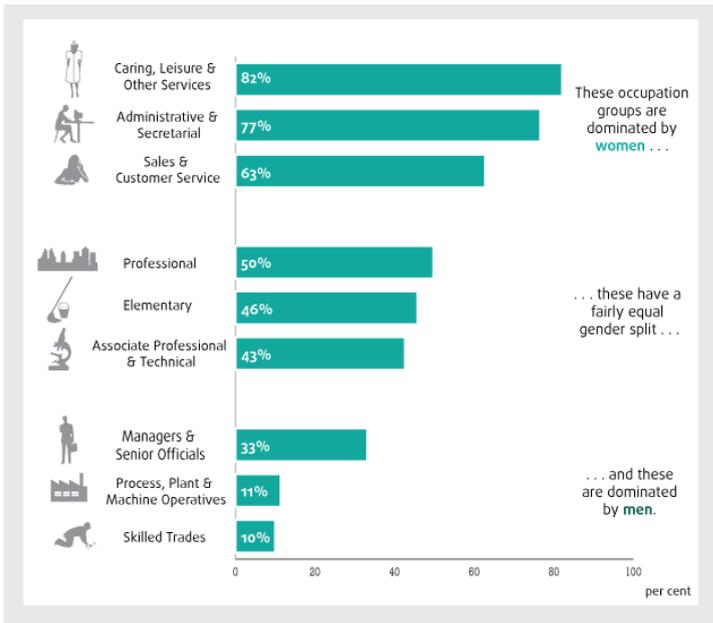
One specific barrier that people may find, when attempting to access a career in a STEM field, is gender stereotyping. Although there have been many laws passed to reduce the gap in employment rates overall, there is still an 11% gap in total UK employment rates between men and women (Office for National Statistics, 2013). One reason for this is, it is still considered culturally normal for woman to look after dependent family members instead of working. One contributing factor may be that, on average, in the UK males are paid 9.1% more than females (Office of National Statistics, 2018). Therefore, if a choice has to be made about who should leave work to look after a dependant, it may make financial sense for it to be a female. This may lead to more women spending time out of the labour market and, in many STEM industries, this can be enough time for large advancements to be made and will therefore reduce the employability of women when they try to return (Scottish Government, 2017).

The report "Tapping All Our Talents" states that "73% of women graduates were lost from STEM industry, compared with 48% male graduates."

Finding consistent, up to date information on the total percentage of males and females working in STEM careers in the UK is difficult because STEM permeates so many industries that the definition of a STEM occupation can be ambiguous.

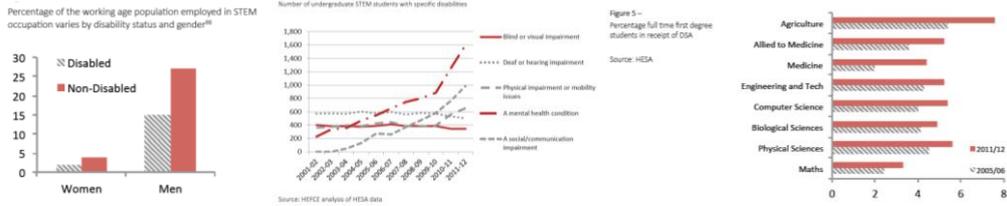


(Office for National Statistics, 2013)



(Office for National Statistics, 2013)

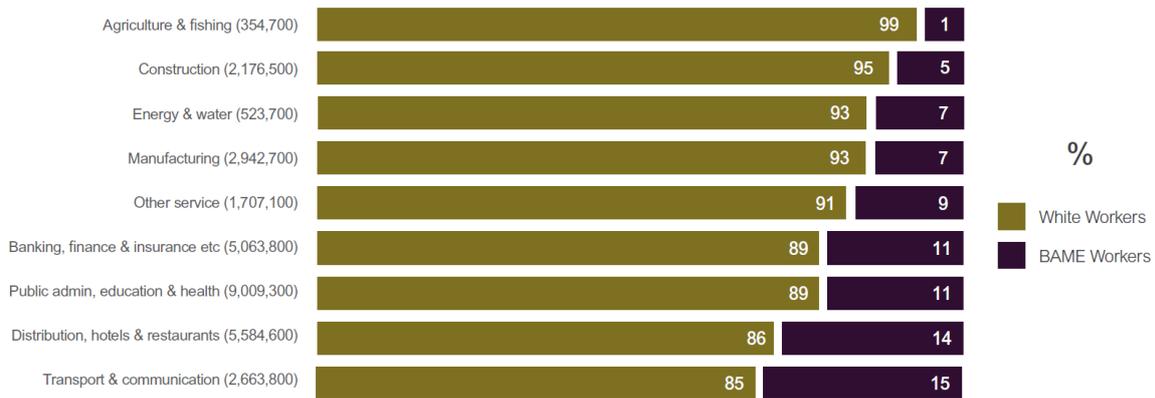
Another barrier some people may find when trying to access a career in STEAM is having a disability. According to the Equality act of 2010 it is illegal in the UK to discriminate against people with disabilities. All employers must provide reasonable adjustments to enable a person with a disability to work or learn.



(Campaign for Science and Engineering, 2014)

It has also been noted that a person’s ethnicity has an effect on the likelihood of them following a STEAM career path. In the UK, BME (Black or Minority Ethnicity) males are 28% less likely to work in a STEM occupation than non-BME males (Scottish Government, 2017). In the case of engineering graduates a BME individual is twice as likely to be unemployed as a white individual (Sutton, 2016). However, “Black, Asian and Minority Ethnic (BAME) people make up 13% of the UK population and are over represented in the UK higher education system where they account for 19% of the student population.” (Race for Opportunity, 2015)

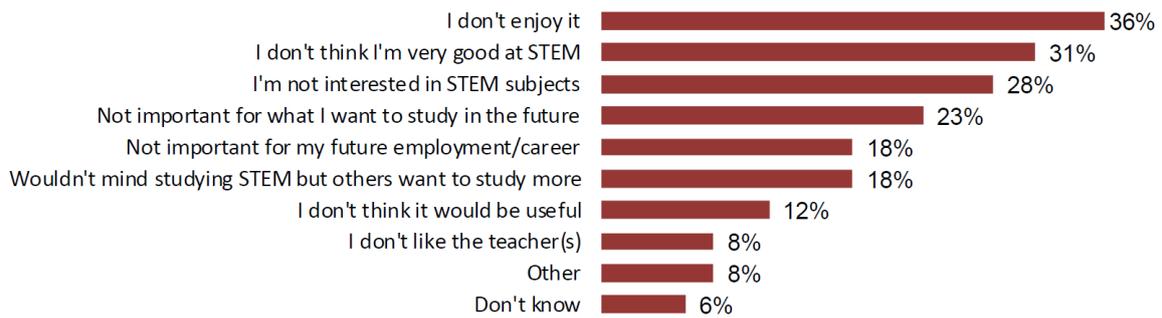
Figure 7: Industry of Employment by Ethnicity, UK, percentages, Oct 2013 - Sep 2014



(Race for Opportunity, 2015)

Socio Economic Status in Scotland is measured using the SIMD (Scottish Index of Multiple Deprivation), which ranks postal codes in Scotland from 1 (being most deprived) to 5 (being most affluent). The Young People in Scotland Survey found that, when deciding on school subjects, those from SIMD 1 were 14% less likely to choose a STEM subject than those from SIMD 5. Those who chose not to study a STEM subject listed the following as reasons why:

Reasons for not choosing/intending to study STEM



Base: Those who reported they had not chosen or did not intend to study STEM

(Social Research, 2017)

There is also a large disparity between upper and lower SIMD when it comes to family members encouraging young people to pursue a STEM industry career, 42% vs 26% respectively. (Social Research, 2017). We also know that students from a low SIMD are more likely to choose a university where they can continue living at home and also work while studying. This can negatively affect their success rates because the student may not be able to choose the course most suited to them and working may detract from their available time to study (Race for Opportunity, 2015).

There seems to be a lack of data regarding how many children from deprived backgrounds progress onto STEM careers (again because there is ambiguity on where the line of a STEM career lies).

A final potential barrier that people face when considering a career in a STEAM industry is public perception. Over 80 per cent of 10-14 year olds in a survey conducted by the Department of Education and Professional Studies at King's College London stated that 'scientists are brainy'. If students don't think they are amongst the cleverest in the class they are very unlikely to aspire to a science career, even if they enjoy science and do well in the subject. (Department of Education & Professional Studies, 2013)

COMPARISON OF SURVEY RESPONSES FROM YEAR 6, YEAR 8 AND YEAR 9 STUDENTS (% STRONGLY/AGREEING)

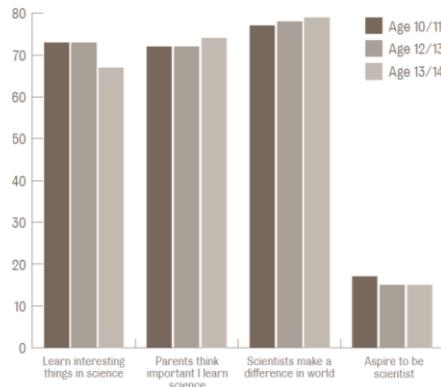
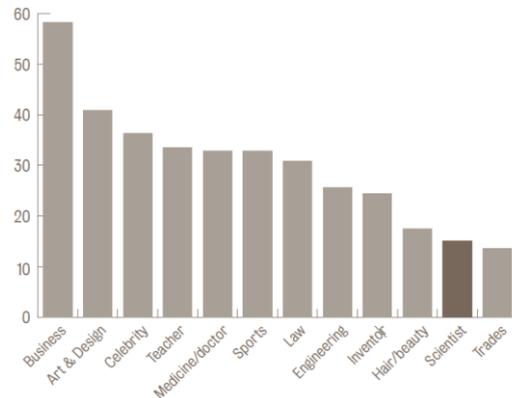


FIGURE 1 PERCENTAGE OF YEAR 9 STUDENTS AGREEING WOULD LIKE THIS JOB



(Department of Education & Professional Studies, 2013)

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