

Science, Technology, Engineering, Maths

STEM IN A NUTSHELL

This Nutshell explains what STEM is and why STEM skills are important.

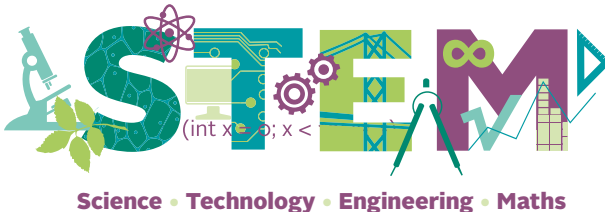
What and why STEM

STEM (science, technology, engineering and maths) subjects give all young people important skills for their future lives and work. Employers are looking for young people with these skills, but there's a big shortage (skills gap).

The skills which come from doing STEM subjects are used in many different jobs from cooking to commerce; finance to farming; apps/game development to animal welfare; and brewing to building.

Some jobs might be STEM-specific, for example developing new food and drink products or calculating the likelihood of rain tomorrow. Others might be in a STEM-type workplace, for example a librarian in a medical school or a lawyer in an energy company.

Whether or not young people end up working in a STEM job or workplace, they need the skills which STEM subjects give them.



Everyone needs STEM skills

There are STEM jobs at all levels. STEM skills are useful in almost any job sector you can think of.

The top ten skills which employers of 2020, worldwide, want are:

- Complex problem solving
- Critical thinking
- Creativity
- People management
- Coordinating with others
- Emotional intelligence
- Judgement and decision making
- Service orientation
- Negotiating
- Flexibility

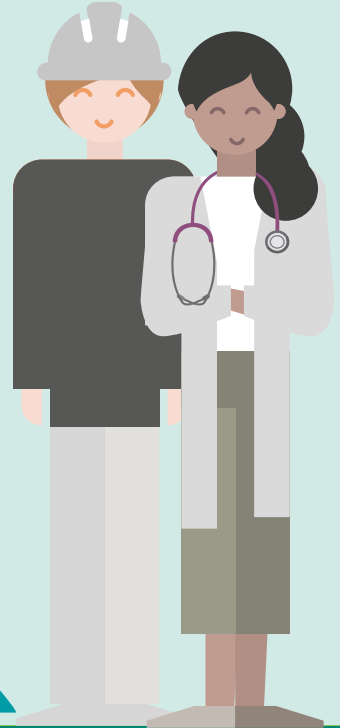
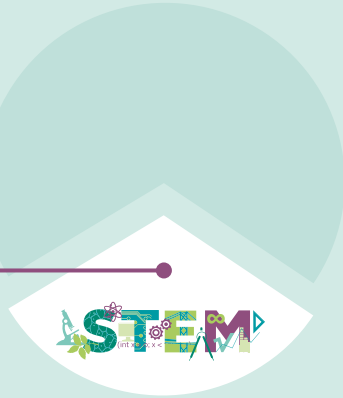
These are STEM skills.

STEM isn't about lists of facts to be learned but about ways of thinking

265,000 skilled entrants required annually

to meet demand for engineering enterprises through to 2024

In 2017, STEM-related occupations accounted for around **one third (32%) of all occupations** in Scotland



13,000 new IT jobs every year
in Scotland for the next decade

Now 2028

51,200 new STEM-related jobs
between now and 2028

How you can encourage your child

There are many ways for children to learn STEM subjects and skills through Scotland's Curriculum for Excellence (from age three to 18). In secondary school this includes national qualifications in subjects such as physics, biology and computing science. There are also Foundation Apprenticeships, National Progression Awards and Skills for Work courses.

The number of girls doing STEM subjects is increasing yearly, but there's still a long way to go.

There's a huge drop off in the number of girls studying core STEM subjects at the age of 16 (regardless of their academic performance). This limits their chances of a future career in STEM.

You can help your child see the point of STEM subjects and skills:

- Emphasise the message: STEM subjects and STEM-based jobs are for everyone: women and men
- Talk about STEM in a positive way, so you encourage your child to believe in themselves and their ability to understand and enjoy STEM subjects
- Let them know that these subjects are good choices for them and show them how they fit with their interests
- Help them discover the connections between what they do in school and the things they care about. It depends on your child's age and interests, but it might include how their mobile phone works; how their clothes are made; what goes into designing a computer game; or understanding how chocolate gets into the packet. If they can see the point of, or value of, these subjects, they are more likely to stick with them and do well at them
- Talk with your child about how you use STEM skills in your everyday life or your job
- Look for opportunities to improve your own number skills
- Take the time to find out about STEM jobs and careers and just how many different options there are
- Explore the different routes into these careers such as college, university, apprenticeships etc.
- Encourage your child to feel confident and capable with STEM subjects. You can give them all sorts of experiences and opportunities outside school: watching weather forecasts and environmental programmes together on TV; family outings to science festivals and museums, which are often free; cooking and baking, and talking about the different processes involved or where food has come from



Why STEM is important right now

Young people need STEM skills to keep their options open, whether or not they end up working in a STEM-related job or area. This is because the job areas in Scotland which are growing right now, and which will continue to grow, are:



Food and drink
*including agriculture
& fisheries*



Creative industries
*including
digital & IT*



**Sustainable
tourism**



**Energy including
renewables**



Construction



**Financial and
business services**



Life sciences



Engineering

These eight areas need people, at all grades, with STEM skills.

Also, many of the jobs which people used to do, won't be around. Many have already gone or are disappearing fast. Others will change as mobile internet, cloud and robotic technology takes hold. Worldwide, the biggest employment decline is in office and administrative jobs. The biggest increase is in business and financial operations; management; computer and mathematical; architecture and engineering.

So young people need to be flexible, to learn and to keep learning, and to be smart about what they choose to learn. STEM skills are portable: young people can use them in any job. They make young people adaptable: so they can change alongside their changing world.

The STEM connections

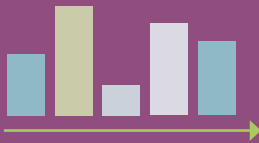


Everyone means all genders
all abilities
all levels
all backgrounds

STEM
(science, technology,
engineering and maths)
**subjects are for
everyone**

STEM is not a list of facts to be learned: it's a way of thinking

STEM skills are important for all fields. Employers want young people with STEM skills, with the right attitudes and aptitude, and who are flexible



Parents can help young people opt into STEM subjects by showing the connections between these and the world of work.

Young people are more likely to continue with STEM subjects if they see the value of them for their future jobs and careers

World of work

Certain industries and jobs are in decline; others are expanding.

The expansion is in fields in which people need to have STEM skills.

Not enough people have these skills: so there are vacancies and opportunities



Being a STEM parent

FIND OUT ABOUT:

STEM subjects, skills and careers

Subjects included in STEM at:

education.gov.scot/improvement/Documents/sci43-DefiningSTEM.pdf

and at Parentzone at:

education.gov.scot/parentzone/learning-in-scotland/curriculum-areas/stem

What STEM skills are at:

mykidscareer.com

Career information and advice at:

myworldofwork.co.uk

Apprenticeships:

apprenticeships.scot

Apprenticeships in a Nutshell

npfs.org.uk/downloads/apprenticeships-in-a-nutshell

SPEAK TO:

your children, your school, your children's teachers, careers advisers

TAKE YOUNG PEOPLE TO:

inspiring science places such as

museums, science centres and nature/marine places. Many are free, or partly free, or have passes/concessions for children and local people. Have a look around to see what's around near where you live.

LOOK AT:

ways in which you can learn and work with your child,

such as the NPFS 'Learning Together' online numeracy tutorials

youtube.com/playlist?list=PLOYfhw7VpEowOhE9fh7EdC6jHG_Tegiai

CHECK OUT:

other nutshells in this series:

- Career conversations
- Career education
- Creativity, enterprise and employability: skills for learning, life and work
- Curriculum for excellence
- Cyber security skills
- Digital skills
- Skills

All these and more at:

npfs.org.uk/downloads



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