



Education
Scotland
Foghlam Alba

Mosshead Primary School

SEED number - 8324727

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Date of submission: May 2022

STEM Nation Award element evidence submission



For Scotland's learners, with Scotland's educators




Leadership in STEM

Self Evaluation for Self Improvement

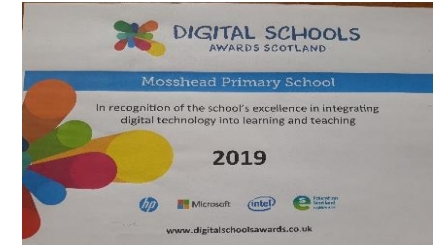
Self evaluation using the Ed Scot STEM framework > Action Plan (see below) detailed through Cluster and School Improvement Plan (info below)

Mosshead Primary
STEM Improvement Plan
2019-21




First school ever to attain the Cyber Resilience and Internet Safety Award

First cluster team to attain the digital schools award



- STEM was on the Cluster Improvement Plan 2019-21
- STEM was on the School Recovery Plan 2020-21
- STEM was on the School Improvement Plan 21-22
- STEM is planned for the School Improvement Plans 22-24





Leadership in STEM

West Partnership: Definition of Collaboration

Collaboration involves working together, to understand and improve pedagogy for agreed purposes, which leads to better outcomes, informed by evidence and critical self-reflection.

Principal Teacher and class teacher participated in West Partnership Collaborative Learning Network cohorts 2020-21, with a focus on STEM including a professional enquiry.



Teachers across the cluster worked in stages to plan, share ideas and moderate learning in STEM (funded through and Education Scotland STEM grant.



DHT delivered CLPL across the East Dunbartonshire STEM Community which was opened to the West Partnership and supported by Education Scotland.

EDC STEM COMMUNITY
STEM as a rich context for learning
Erin Smyth - Mosshead Primary School

Education Scotland
Forlams Alba

This event is being supported by Education Scotland's Enhancing Professional Learning in STEM Grants Programme through the Scottish Government STEM Education and Training Strategy.

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS
Learning and Leading through the Evidence

P7 pupils from Cluster Primaries met at Bearsden Academy to plan the P7>S1 STEM Conference.



Leadership in STEM

Leadership of Learning/ Leadership of Change

- 2 Teachers (P5 and PT) undertook the STEM Leaders training with Glasgow as part of West Partnership work.
- 2 Teachers (P7) undertaking an extensive CLPL project involving self evaluation and planning for STEM pupil based enquiry work (winning the WP award).
- Maths Champions (3 teachers) attend EDC CLPL and cascade training/ leads Maths development work.
- Digital leaders (staff and pupils) cascade info and lead CLPL to support and improve learning and teaching which was highly commended through our digital schools award.
- CT/PT/DHT leadership across STEM/ Eco/ Digital.
- STEM Ambassadors from Cluster Secondary.
- Parent Leadership through clubs/ STEM Fayre.
- Pupil Leadership through pupil enquiry STEM projects.
- Young Stem Leader accreditation. YSLs lead learning across P1-7 both in school and for remote learning. 2 Trained YSL Tutor Assesors.



It was helpful and encouraged me to think about a career involving Science, Technology, Engineering and Maths.
P7 pupil

The Bearden Academy pupils made us want to go and learn more about Science and maybe take it as a subject in high school.
P4 pupil

Bearden Academy STEM leaders support STEM events in Mosshead Primary, encouraging all pupils to engage with STEM subjects.



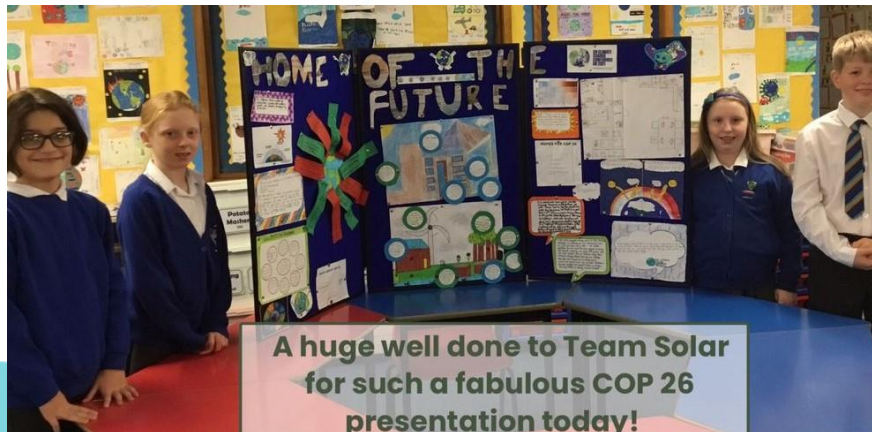
Leadership in STEM

Pupils lead learning through enquiry based STEM projects.

 **Mosshed Primary** @MosshedPS · Mar 11
Primary 7 working hard on their Plastic Pollution Projects #mosshedSTEM #STEMnation



Overall winners of the pupil enquiry STEM project for the West Partnership, STEM the Flow competition

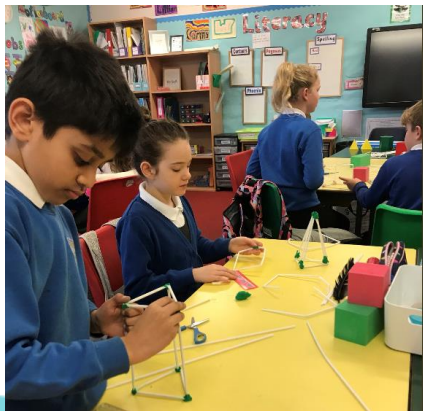


For Scotland's learners, with Scotland's educators



Leadership in STEM

Young STEM Leaders have a key role in planning and delivering STEM opportunities for all stages, including lots of practical, collaborative tasks.



Young STEM Leaders shared their work at the SSERC conference at the Technology and Innovation Centre in Glasgow

For Scotland's learners, with Scotland's educators



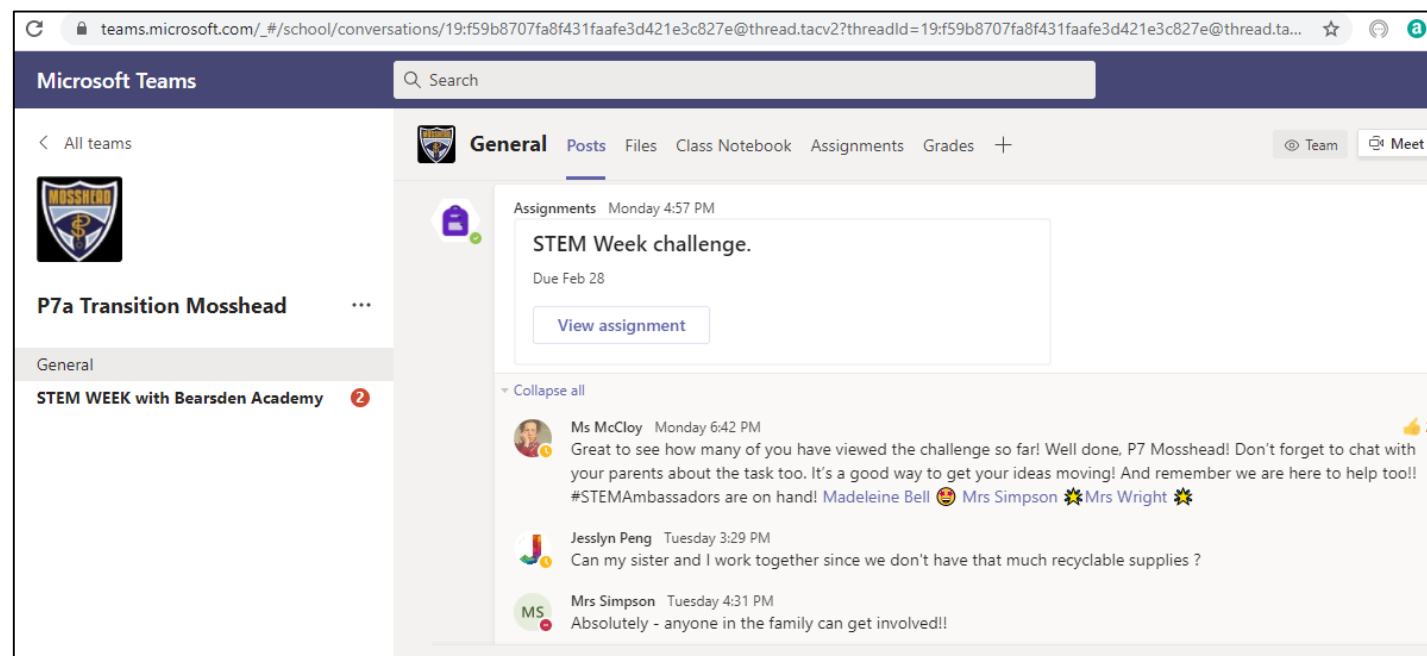
Family and community STEM learning

P7 Transition STEM Focus Week
Mosshead Primary P7 > Bearsden Academy S1
Cluster and Family focus on STEM

22nd February kicks off **#TeamBA P7 STEM week**. This will be led by Mrs Wright, Head of Design and Technology and Mrs Simpson, Head of Chemistry.

They will be joined by their wonderful team of STEM Ambassadors and will share with you introductions to their departments and a range of curriculum activities which you can complete in your own time.

You can share completed activities with us on your P7 Transitions TEAM. There may even be some tasks for the whole family too! You can also share your work via Twitter @BearsdenAcademy @BearsdenTechDept @BearsdenAcadem1 @bearsden_guid

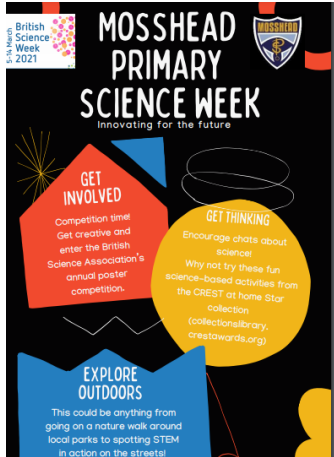


For Scotland's learners, with Scotland's educators



Family and community STEM learning

STEM Learning at home for P4-7 during lockdown



Introduction to Innovation of the future

DAY ONE - Innovation of Renewable Energy

Experiment pages

DAY TWO - Innovation of Transport

Experiment pages

DAY THREE - Innovation of Space

Experiment pages

DAY FOUR - Innovation of Health

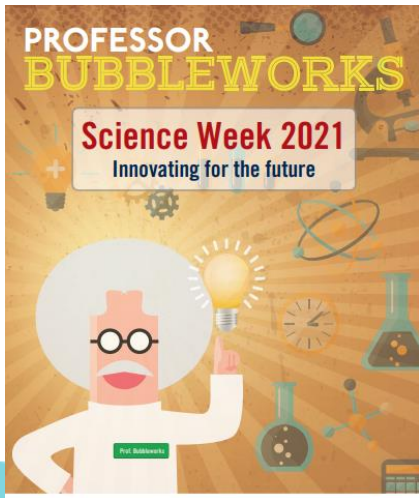
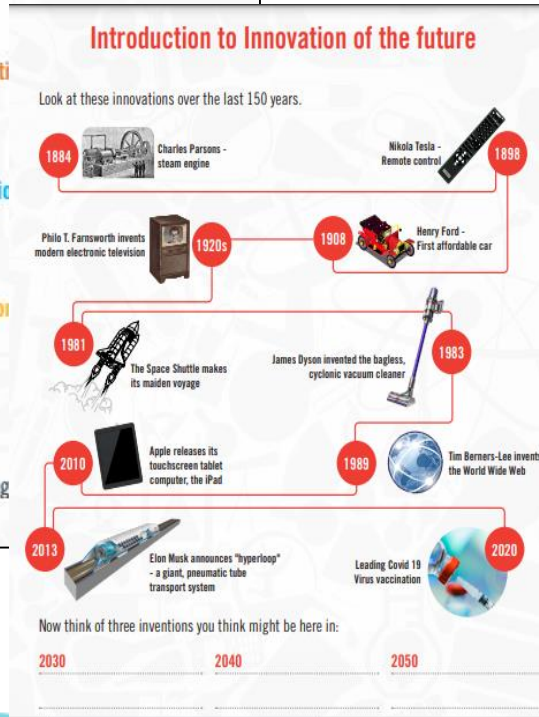
Experiment pages

DAY FIVE - Innovation of the Future

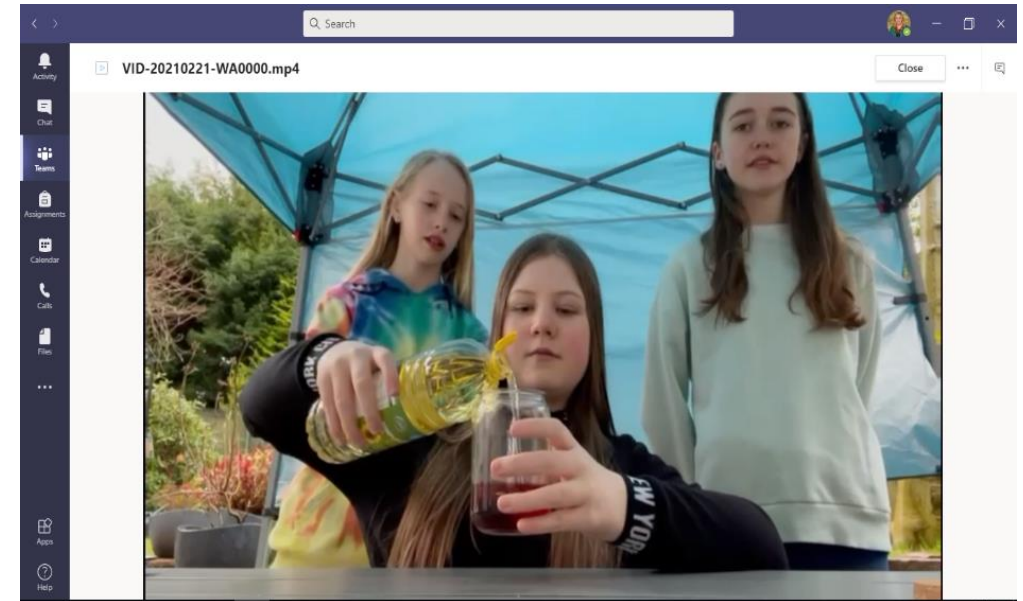
Experiment pages

Review

Continue the learning



Young STEM Leaders planned experiments for everyone to do at home during lockdown and created videos for TEAMS to introduce these.



For Scotland's learners, with Scotland's educators



Family and community STEM learning

Starters for STEM shared for family learning at home

Starters for STEM

STEM LEARNING

Starters for STEM are 10 activities that parents can use at home to help children develop their science, technology, engineering and maths skills. These activities are easy to resource and provide children with the stimulus to talk about the world around them. If you see a link you can explore how to extend these activities, you will need to sign up, for free, to access these materials. Don't forget to share your work on social media

#ScienceFromHome

Nature Treasure Box

Use an empty egg box as a treasure box to collect things from the garden.

Can you collect lots of

Has spring sprung?

Look outside. Can you see how the trees and plants are changing? What flowers can you see?

What can you hear?

Sit really quietly somewhere either in or outside. What can you hear? Can you hear any bird song? Can you identify the birds?

Oh Crumbs!

Take a biscuit and put it in a sealed bag. Now try and crush the biscuit into little pieces while it is still in the

As much use as a chocolate teapot!

Think up some silly products, such as a chocolate teapot. It would melt as soon as you added hot water. Draw pictures of your ideas.

<https://youtu.be/xOKrd62HIc0>

Starters for STEM

STEM LEARNING

Starters for STEM are 10 activities that parents can use at home to help children develop their science, technology, engineering and maths skills. These activities are easy to resource and provide children with the stimulus to talk about the world around them. If you see a link you can explore how to extend these activities, you will need to sign up, for free, to access these materials. Don't forget to share your work on social media

#ScienceFromHome

Worm charming

How many worms do you think you can charm out of the ground in 5 minutes? Does anything help you to charm the worms to the surface? What about sprinkling some water on the ground? Or dancing on it?

Ice hunt

Freeze some treasures in a block of ice in the freezer. Now can you rescue them? What is the best way of getting your treasures back?

Magic magnets

Have you got a fridge magnet? What sorts of things in your house are attracted to it? Can you sort them?

www.stem.org.uk/rxfjvh

How tall are you in feet?

Draw around your foot onto some paper and cut it out. Use your paper foot to find out how many 'feet' tall are you? What else can you measure?

One cup of Lego

What can you build with just one cup of Lego?

Rocket mice

Cut a circle shape from a piece of paper and then cut it from one edge to the middle. Tape it into a cone and add some mouse features. Balance your cone mouse on top of an empty plastic bottle. Press down on each side of the bottle with some force and shoot your mouse into space. What makes a difference to how far your mouse travels?

www.stem.org.uk/rxetug

Human body

Have you ever wondered what is inside the human body? Here you can look inside and explore the skeleton, the circulation system and the digestive system. See what the key features are and find out how the parts work.

www.stem.org.uk/rx34f3

As if by magic!

When light travels from one material to another it bends. Draw a small arrow pointing left or right on a piece of paper. Fill a large, transparent glass with water. Hold the arrow behind the glass of water. What happens? Try this out with letters of the alphabet. Does it work with them all?

explorify.wellcome.ac.uk/

Gloop!

Put 2 tablespoons of cornflour into a bowl and mix it with water until it seems like a very thick liquid. Play with it over the bowl. Stir it with a spoon, hit it gently, put some in your hand, roll it into a ball, open up your fingers

Is it a liquid or a solid?

www.stem.org.uk/rxqx7

Bake some bread

There is so much going on 'science wise' in bread baking. What job does the yeast do? Can you see the bubbles? Why does it rise like that? What is yeast? How much larger has your dough grown whilst it proved?

www.stem.org.uk/rxq5uy

Explore Earth & Space

Join the alien explorer, Paxi, on his adventures around Earth and Space.

Discover the Solar System, comets and how scientists are investigating whether there is life on Mars.

<http://www.stem.org.uk/cx6yuu>

During Maths Week children had to interview adults at home to find out how they made use of maths in their jobs.

Raising Attainment in Numeracy in East Dunbartonshire

East Dunbartonshire Council

Interview an adult to find out how they use maths to help them carry out their job. This could be someone at home or another adult in your family.

Job Title: Chartered accountant

Employer / Company Name: Deloitte

Deloitte.

I use my maths skills every day to...

- calculate costs
- solve problems
- work out savings
- analyse data

I find my job rewarding because it helps me pay the bills. It uses my brain meeting intelligent people

Career journey:

- four jobs
- lawyer - accountant
- tax adviser

28th Sept - 4th Oct 2020

Raising Attainment in Numeracy in East Dunbartonshire

East Dunbartonshire Council

Interview an adult to find out how they use maths to help them carry out their job. This could be someone at home or another adult in your family.

Job Title: Golf club manager

Employer / Company Name: East Jnfawshier Golf Club

The East Renfrewshire Golf Club

I use my maths skills every day to...

- Doing the accounts
- Counting membership numbers
- Work out change
- Work out invoices

I find my job rewarding because Because I am working with people who are having fun. And I like the job back when things are done well.

Career journey:

- Started golf professional
- Studied management
- became golf club manager

28th Sept - 4th Oct 2020



Family and community STEM learning

We like to share our STEM work on Seesaw (for parents/ carers) and Twitter (for the wider community).

Learning in STEM is shared with all parents through our Seesaw app.



Today we learned about what plants need to grow. We planted tomato plant seeds and watched a bit of The Green Planet. 🍅🌱🌍

Science

Seen by 24

0 ❤️ 16 💬 0



Mosshhead Primary @MosshheadPS · Mar 11

P2a loved making their fruit kebabs in our Food Technology lesson. 😊😊



Mosshhead Primary @MosshheadPS · Mar 13

P1a were put to the test to build a bridge for the teddies. They worked together in teams to use the least number of KAPLA bricks and cups. #MosshheadSTEM #STEMnation #MosshheadP1



Mosshhead Primary @MosshheadPS · Mar 11

Some paper strips and a wooden dowel were all we needed to learn a wee bit about Newton's laws of motion - well done, P7! #mosshheadp7 #mosshheadstem #STEMnation



Mosshhead Primary @MosshheadPS · Mar 11

Primary 5 have been learning about water filtration. We enjoyed investigating which materials best filter dirty water. #mosshheadstem #STEMnation



Mosshhead Primary @MosshheadPS · Mar 13

Joint winners! Victory dance! 🎉 #MosshheadSTEM #MosshheadP1 #STEMnation



For Scotland's learners, with Scotland's educators



Family and community STEM learning

“Let’s Focus on STEM” Family Leaflet shared with all families

Mosshead Primary

STEM (Science, Technology, Engineering and Maths) allows us to make connections in the individual curricular subjects and enhance learning experiences in each.

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

Whether or not young people end up working in a STEM job or workplace, they need the skills which STEM subjects give them. Employers want young people with STEM skills, with the right attitudes and aptitude, and who are flexible.

By providing STEM opportunities for our children at home and at school we hope to stimulate an interest and enthusiasm in the power and potential of STEM.

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 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.

Gender & STEM

Women are under-represented in Science, Technology, Engineering and Maths careers. The number of girls doing STEM subjects is increasing yearly, but there's still a long way to go. We support and encourage all of our pupils to participate equally in STEM, ensuring gender balance in all areas of the curriculum. At Mosshead, STEM is for everyone!

Parents and carers have a role to play here too. When buying toys, games or books try to avoid buying stereotypical girl gifts and boy gifts.

What you can do

- Watch [Girl Toys v Boy Toys](#) to see how unconscious bias can contribute to gender inequality.
- Take a look at [Let Toys Be Toys](#) and [Let Books Be Books](#) for useful information and resources.
- Choose shops with the [Toppers](#) good practice award where the [Toppers](#) standard has been met.

Activities to try at home

You are probably already doing lots of STEM without even realising. Simple things such as making paper aeroplanes, building with Lego, investigating food miles, going on a colour walk are all STEM!

Here are some STEM starters for you to try at home. There are lots more at www.stem.org.uk

#ScienceFromHome

| | | | |
|--|---|--|---|
| <p>Nature Treasure Box</p> <p>Use an empty egg box as a treasure box to collect things from the garden.</p> <p>Can you collect lots of things of the same colour? What about different colours? How many different things can you collect?</p> <p>https://www.stem.org.uk/activities</p> | <p>Has spring sprung?</p> <p>Look outside. Can you see how the trees and plants are changing? What flowers can you see? Can you identify the birds? What about the bees?</p> <p>https://www.stem.org.uk/activities</p> | <p>What can you hear?</p> <p>Go nearby quietly some where where it is outside. What can you hear? Can you identify the birds? Can you identify the bees?</p> <p>https://www.stem.org.uk/activities</p> | <p>Oh Crumbs!</p> <p>Take a biscuit and put it in a sealed bag. How big will it be? Crush the biscuit and see how small the pieces are! Is it still in the bag? Can you pour the biscuit into a bowl? What things can you usually pour out? Is the biscuit a solid or liquid?</p> <p>https://www.stem.org.uk/activities</p> |
| <p>Printing and Blotting</p> <p>What can you find in your house that prints in the bath? Are there things that float?</p> <p>What do you notice? Can you see them?</p> <p>https://www.stem.org.uk/activities</p> | <p>What did you have for dinner?</p> <p>Draw a picture of a big bowl and then draw what you had for dinner last night.</p> <p>Find out what type of foods you ate for your meal and if they produce protein, carbohydrates, vitamins, and minerals. Can you find out why your body needs these types of food?</p> <p>https://www.stem.org.uk/activities</p> | <p>Water Cycle in a Bag</p> <p>Take a clean plastic sandwich bag. Carefully pour some water into it. Put it in a bowl full. Seal it and tape it to a window that gets the sun. Watch what happens inside the bag when the sun is shining on the window. Can you explain what's going on?</p> <p>https://www.stem.org.uk/activities</p> | <p>Parts of a Flower</p> <p>Ask your parents or carers if you can take a flower from the garden. Carefully observe it. Can you name the different parts? Do you know what they do? How might they help the flower?</p> <p>https://www.stem.org.uk/activities</p> |

How you can encourage your child

- 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 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 the 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.
- Take the time to find out about STEM jobs and careers and just how many different options there are.
- 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.

STEM at Mosshead

There are many ways for children to learn STEM subjects and skills through Scotland's Curriculum for Excellence. At Mosshead, we provide a wealth of opportunities for our children to engage in practical STEM investigations.

- Young STEM Leaders**
STEM clubs, Lego-led STEM activities
- Careers Education**
School Careers Fair, My World of Work, Developing the Young Workforce
- Digital Technology**
No Digital, no One Coding, M105, My World of Work
- Digital Schools**
Digital Schools Award, Cyber Excellence and Internet Safety
- Learning for Sustainability**
Openness Skills, Outdoor Learning, Eco Committee
- Extra-Curricular**
Forest Schools, Code / STEM clubs, Young STEM Leaders

Useful Websites

- <https://www.stem.org.uk/>
- <https://www.classroomscience.com/news/acc-home>
- <https://education.gov.scot/parentszone/news-in-scotland/curriculum-areas/stem>
- <https://www.adhington.bristol.ac.uk/stem/>
- <https://boles-primary.com/school-life/curriculum/core-subjects/stem>
- <https://www.walkeprimary.nhs.uk/school/stem>
- <https://education.gov.scot/parentszone/Documents/InnovationMar16.pdf>
- <https://www.lettoysbeboys.org.uk/>
- <https://www.bbc.co.uk/news/health-science>
- <https://mki4career.com/>
- <https://www.myworldofwork.co.uk/>



STEM partnership working



P5 and P6 pupils from Cluster Primaries met at Bearsden Academy to participate in the Glasgow Science Festival – Creating Engineers – K'nex Competition.



Parents and STEM ambassadors from the Cluster Secondary supported the judging of this competition.





STEM partnership working

Forest Schools



Working with the Mugdock Ranger at Forest Schools. Forest Schools support outdoor STEM learning for P1-4.

STEM Ambassadors

Dr Alexander, a physicist, worked with P1 to talk about jobs in Science and worked with P6 on experiments with magnets.





STEM partnership working

Parent ran a coding club in association with a local business and a member of staff. Coding Club presented their work at the STEM Fayre.



Parent ran a STEM club and over the year had pupils from P3-P7.



Mosshead have linked with Donald from Wildside Nature @wildsidenat who ran workshops for P1-3 on Buzzing Bees, P4-5 on the Polar Regions and P6-7 on the Rainforest. Donald continues to link with the school beyond his visit providing lots of links to share with staff, pupils and their families.



Mosshead Primary @MossheadPS · Mar 13

P4 and 5 have had a fantastic morning with @wildsidenat learning about different animals and their adaptations for living in the polar regions. We've learnt about the size, diets and habits of lots of these creatures. Thank you! #mossheadstem #stemnation





STEM partnership working

STEM Fayre

Parent Council run a STEM Fayre alternate years and support partnerships between school and local businesses/ career links.



Pupil feedback following the STEM Fayre

It was really exciting – we liked the chemistry experiments.
P1 pupil

We enjoyed the prosthetic arm, the engineering and the wind farm.
P4 pupil

It was helpful to hear how the STEM subjects can lead to a career in such exciting jobs.
P7 pupil

It was a great way to learn more about STEM, we really enjoyed it.
P3

We learned how stuff is made, coding, how our brain works, taste buds and engineering!
P3 pupil

It was interesting to experience all the STEM stations and all the presenters explained everything so clearly.
P7 pupil

We enjoyed learning about how everyone has different taste genes so they taste stuff differently.
P5 pupil

We enjoyed the prosthetic arm, the engineering and the wind farm.
P4 pupil

We enjoyed learning about renewable energy.
P5 pupil

We thought the wind farm was really interesting and we enjoyed our optician visit.
P1 pupil

We liked the variety of different stations to choose from in the hall.
P6 pupil



STEM partnership working

Careers' Week Planning 2022

Careers Week 16-20th May [Numeracy Day on 18th]

Mosshead Primary Teachers Share Point - Careers Fair 2022

- Whole bank of resources including video clips and activities – all detailed in resource list
- Sways that have been created by p7s – all about different jobs

<https://glowscotland.sharepoint.com/sites/8324727/Shared%20Documents/Careers%20Fair%202022>

DYW planners - T:\Staff Resources\All Staff\Forward Planning\DYW

Work through your DYW planner – My World Of Work <https://www.myworldofwork.co.uk/>

STEMaStory - T:\Staff Resources\All Staff\Forward Planning\STEM

Use the STEMaStory planners to see the Career Education Standards and the jobs that these link to.

Money Advice Scotland

Monday 16/5 for P3-7

Teams links have been sent to teachers – please let me know if you have not received one. Timings on timetable. Please have your webcam set up for answering questions and also check you can access the chat box. All pupils should have something to write on / with (whiteboards will be fine).

SSEN Poster Competition

'The Welcoming City of the Future' – See PDF for details

Please send all entries to Robyn / Erin by Fri 27th May – YSLs will choose winners to be entered

Class Workshops from parents / STEM Ambassadors

Workshops in class – presenters may need use of IWB or may bring resources for pupils to have a go with e.g. paramedic kit / robot. Please have your pupils ready to listen/take part/ask relevant questions. If your visitor is heading straight to another class after your session, please can you direct them.

We have many external visitors booked for class visits for Careers' Week 2022. They will be discussing many different careers in STEM including:

Intelligent Systems
Pharmaceuticals
Cancer Biology
Pathologist
Strategy Director role
Paramedic
Epidemiologist
Interiors and Fabrics Designer
Birth Educator



Our sharepoint holds digital information about careers in STEM for classes to access.

We also use the EXCEL STEM directory from Education Scotland to source partners to complement work in school.

For Scotland's learners, with Scotland's educators



STEM curriculum and learner pathways

STEM IDL Themes

Each year a theme is selected for a **STEM focus in one of the terms.**

Examples:

P1 – Toys

P2 – Practical Materials

P3 – Magnets, Toys and Forces

P4 – Electricity

P5 – Forces

P6 – Substances

P7 – STEM Pupil Enquiry Project – Plastic Pollution/ Homes of the Future/ etc.

STEM Challenge cards are provided for all levels (see First Level overview in notes)

In addition to our STEM themed terms we seek out other STEM related opportunities across the curriculum.



P2 designing houses from straw, paper and lego.

P4 designing aqueducts



P5 coding with microbits





STEM curriculum and learner pathways

STEM Challenges – teamwork, creativity, problem solving

P1 STEM Kapla Challenges



Who can build the tallest tower with 10 Kapla bricks?

PIC-COLLAGE

P6 Tall Towers Challenge



Mosshead Primary @MossheadPS · Mar 10

P6 were so competitive in their tall towers STEM challenge! #MossheadSTEM #MossheadSTEMNation #STEMnation #Mossheadp6





STEM curriculum and learner pathways

STEM Challenges – teamwork, creativity, problem solving



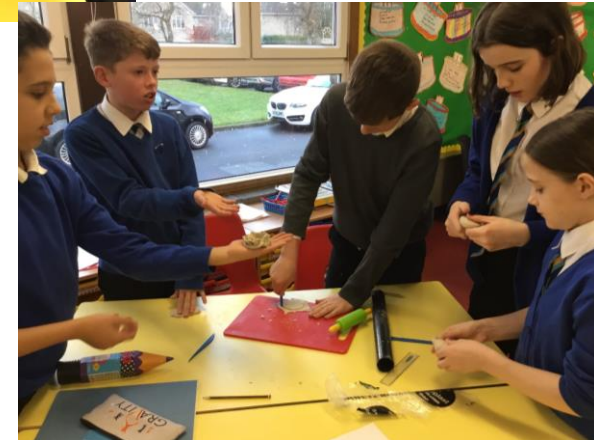
Team work and creativity skills to problem solve in Maths



The Dyson Challenge!



Using STEM skills to design and build boats that float!





STEM curriculum and learner pathways

STEMaStory packs are available for all levels. These link books with Es and Os, Themes and DYW links. Each STEM book has a pack of resources to complement it. An example of the Early Level planning is shown on the below along with an example of a STEMaStory pack from First Level. Some Second level examples are shown in the notes below.

STEMaStory

Early Level

| Book | Experiences and Outcomes | Topic | Developing Young Workforce CES / Career Links |
|--|---|---|---|
| I am Bat | SCN 0-01a, SCN 1-01a, SCN 0-06a, SCN 1-06a, SCN 1-14a, SCN 0-12a, SCN 1-12a TCH 0-04a, TCH 1-04a MNU 1-20b, MTH 1-21a | Night / Day | <i>I can communicate with people about different jobs they do in the community.</i> Foot Scientist / Nutritionist / Conservationist |
| One Button Benny | SCN 0-04a, SCN 0-07a, SCN 1-07a, SCN 2-07a TCH 1-09a, TCH 0-10a, TCH 0-11a, TCH 1-10a, TCH 1-11a | Materials | <i>I can discuss some of the rewards that a job brings.</i> Biomedical Engineer / Social Marketer |
| Eric Makes a Splash | SCN 0-07a, SCN 1-07a, SCN 0-15A, SCN 1-15A TCH 0-04a, TCH 1-01a, TCH 1-04b, TCH 1-06a | Materials | <i>I can discuss some of the rewards that a job brings.</i> Material Scientist / Coast Guard |
| Sophie Johnson : Unicorn Expert | SCN 0-15a TCH 0-10a | 3D shape | <i>I believe I can do any job.</i> Prop Maker / Material Scientists / Engineers |
| The Prince and the Witch and the Thief and the Bears | SCN 0-07a, SCN 1-07a HWB 1-20a | Forces | <i>I can discuss some of the rewards that a job brings.</i> Careers Advisor / Storyboard Artist |
| My First Book of Birds | TCH 0-04a, TCH 0-10a MNU 0-20a | Handling data | <i>I can communicate with people about different jobs they do in the community.</i> Countryside Ranger / Conservationist |
| This is a Dog | SCN 0-11a, SCN 0-20a HWB 0-50a | Identifying animals | <i>I believe I can do any job.</i> Veterinary Nurse / Dog Handler |
| Brenda is a Sheep | TCH 0-13a MTH 0-13 MNU 0-20a LIT 0-09a | Pattern | <i>I can role play different jobs.</i> Data Scientist / Pattern Cutter |
| Inch and Grub | SCN 0-15a TCH 0-09a | Building structures Electricity / energy | <i>I can role play different jobs.</i> <i>I can develop ideas and take part in projects to make things.</i> Carpenter / Structural Engineer |

Resources:
 Notebook & pencil
 Plastic spoon
 Elastic bands
 Blindfold
 P.E. cones
 Find A. Mole grid

Experiences & Outcomes:
 SCN 1-12b
 TCH 1-12a
 MTH 1-18a

Developing the Young Workforce:
 CES: *I can set goals and work towards achieving them.*

Civil Engineer: Civil engineers design and manage a wide range of construction projects including roads, railways, airports, buildings of all types and power stations ranging from nuclear to wind power generation.
Geologist: Geologists study the origin, composition and structure of the earth. This could be to locate and help extract materials, to identify geological hazards or to assess ground conditions for development projects.

Activity:
Catapult a'Mole
Design and create a catapult using a spoon and elastic band to help get A. Mole to the Moon.
Mole Maze
Create a maze using the cones. Blindfold a partner and give directions to get through the maze. Discuss how the blindfolded partner felt.
Find A. Mole
Place the mole and the holes on the grid without showing others. Then give grid references to guess where your partners mole is on the grid. Whoever finds the other's mole first, wins.



STEM curriculum and learner pathways

Developing interest in STEM through Literacy using debate - we have 14 different kits to appeal to a range of interests.

Science Debate Kit: Self-driving cars

Keep these kits coming please!

For in-depth online resources on this debate go to: cars.imascientist.org.uk

Debate Kit: Self-driving cars
Should our town centre be for self-driving cars only?

A structured practice debate on a controversial topic. The different 'rounds' of the debate help students think through the issues and reconsider their opinions. The structure also shows them how to build a discussion and back up their opinions with facts.

You can use all eight characters, or fewer, as you wish.

Characters
 Yes
 • Dave Miller – Jack entrepreneur
 • Fiona Campbell – City planner
 • Bethany Fisher – Sign impaired person
 • Alan Tappan – Communist

Facilitation tips
 • Ensure pupils know there is no right or wrong answer.
 • Be observant of ones who want to speak and are not getting a chance
 • Encourage students to give a reason for their opinions.
 For groups who may need extra support you can put the following prompt 'I think we shouldn't make the town centre for self-driving cars if I think is the most important point to think about.'

Learning notes

Learning objectives:
 • To practice discussing and expressing an opinion

Other learning outcomes:
 • Consider social, ethical and factual issues in an integrated way
 • Think about different points of view
 • Learn to back up their opinions with facts

Curriculum points covered:
 • Develop
 • Reflect
 • Evaluate
 • Consider

*Particularly like the format plus the accuracy

Science Debate Kit: Drugs in Sport

To order more kits <http://debate.imascientist.org.uk>

Debate Kit: Drugs in sport
Should ALL drugs be banned in sport?

A structured practice debate on a controversial topic. The different 'rounds' of the debate help students think through the issues and reconsider their opinions. The structure also shows them how to build a discussion and back up their opinions with facts.

Characters
 For banning
 • Helen Ayres – Sports historian
 • Roger Farnsworth – Medical apartment
 • Ray Curtis – Dad
 • Aina Devi – Sister

Against banning
 • Christine Malcher – Archer with asthma
 • George Cherkov – Sports journalist
 • Mike Hall – Olympic sports coach
 • Ross Searley – Sports broadcaster

There is no right or wrong answer. Be observant of ones who are not getting a chance. Encourage students to give a reason.

Designed for KS4
 Can be used with ages 11-16

Timing notes

Learning objectives:
 • Practice discussing and expressing an opinion

Other learning outcomes:
 • Consider social, ethical and factual issues in an integrated way
 • Think about different points of view
 • Learn to back up their opinions with facts

Curriculum points covered:
 • Develop
 • Evaluate
 • Consider

Science Debate Kit: Stem Cells

To order more kits <http://imascientist.org.uk/debate>

Debate Kit: Stem Cells
Should the UK government fund embryonic stem cell research?

The different 'rounds' of the debate help students think through the issues and reconsider their opinions. The structure also shows them how to build a discussion and back up their opinions with facts.

You can use all eight characters, or fewer, as you wish.

Characters
 For funding
 • Steve Silver – Wheelchair user
 • Maxine Clark – Embryonic stem cell scientist
 • Derek Alder – GP
 • Prof. Gail Telford – Historian of science

Against funding
 • Dr Rosie Swales – GP
 • Rahul Singh Gupta – Human rights campaigner
 • Aisling Chandler – Former IVF patient
 • Owen Martin – Children's charity worker

Facilitation tips
 Ensure pupils know there is no right or wrong answer. Be observant of ones who want to speak and are not getting a chance. Encourage students to give a reason for their opinions.
 For groups who may need extra support you can put the following prompt sentences upon the board:
 'I think the government shouldn't fund embryonic stem cell research because.....'
 'I think is the most important point to think about.'

Designed for KS4
 Has been used with ages 11-16

Learning notes

Learning objective:
 • To practice discussing and expressing an opinion

Other learning outcomes:
 • Consider social, ethical and factual issues in an integrated way
 • Think about different points of view
 • Learn to back up their opinions with facts

Curriculum points covered:
 • Develop
 • Evaluate
 • Consider

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Pupil Voice from 'Mars Mission' debate

This was fun because we've been learning all about Climate Change and COP26 and we were able to use what we knew about that to make a decision about Mars. The teacher says there are more debates like this and I can't wait to try the ones about climate change and medicines (vaccinations). E – P7 pupil

It was really interesting hearing everyone's side of the debate. It was good to hear both sides – like we have to save our planet but we could also discover a new species on Mars if we went. S - P7 pupil

The debating was hard because all of the character profiles had amazing reasons for their opinion. I wanted my character to be the one with the opinion everyone agreed with, but at the end even I thought we shouldn't go to Mars because of how bad it is for the environment. C – P7 pupil

I think this was a fun thing to do and that more people should learn about debating and about space travel. It definitely changed my mind about whether they should go to Mars. E – P7 pupil

I think I learned to listen to both sides of an argument more. When I started I agreed with my character, but by the end I changed my mind because the other arguments made more sense for the whole planet. I really liked this activity. L – P7 pupil



Equity and equality in STEM

Equality through Participation

STEM extra-curricular club participants:

P7 - 5 boys/ 17 girls

P6 - 8 boys/ 8 girls

P5 - 6 boys/ 10 girls

P4 19 boys/ 18 girls

P2 Technology Club participants

Boys – 5

Girls – 7

This is a recurring theme with a gender balance across all STEM related clubs and activities.





Equity and equality in STEM

Equality at Pupil Events

We ensure we have representation of different genders/ races when organising leaders/ presenters for STEM events. All pupils attend these events.



Our YSL/ STEM Ambassadors also represent to the diversity of the school population.



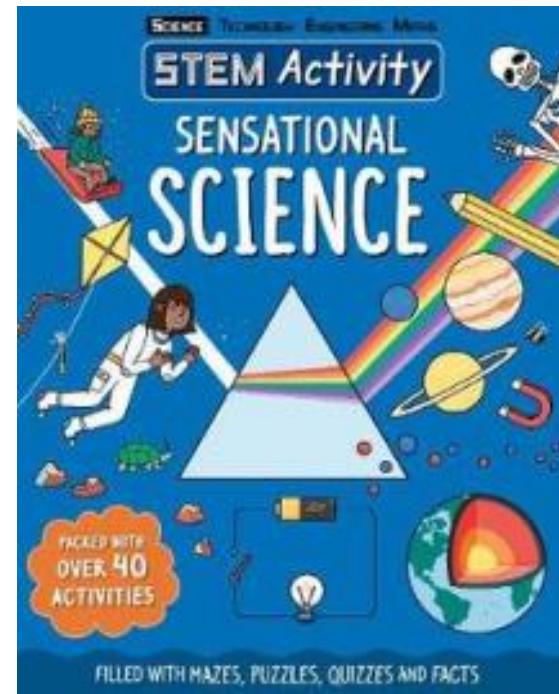
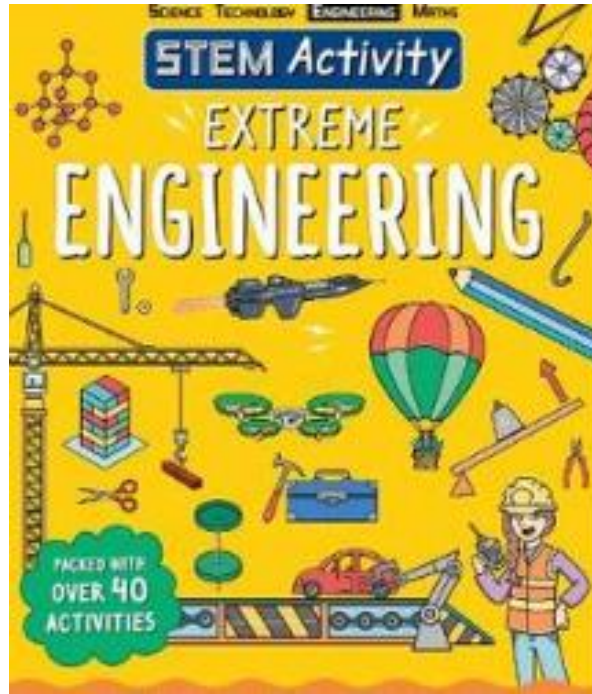
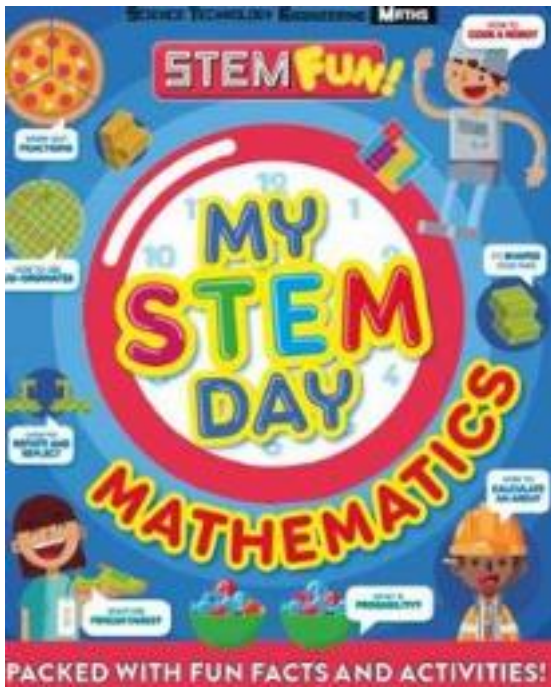
For Scotland's learners, with Scotland's educators



Equity and equality in STEM

Resources to promote equality

Purchase of new STEM books/ resources to promote equality in STEM subjects by ensuring representation of female and male characters and of different races/cultures throughout the books and by using fun activities to engage all in STEM subjects. A few of our new titles illustrated below.

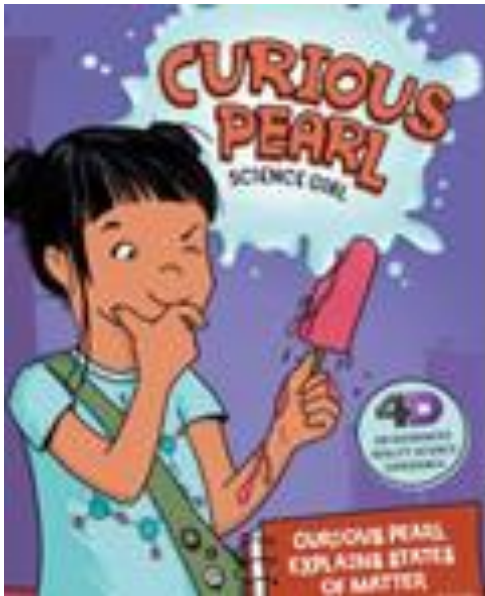




Equity and equality in STEM

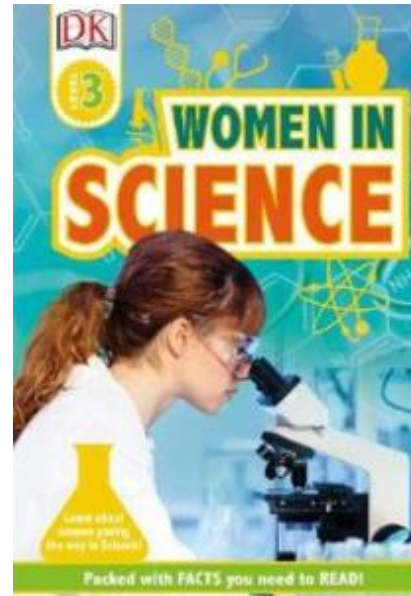
Positive Discrimination

Promoting females in STEM subjects by looking at the role women have played, why they might not be as famous as many male scientists from the past and by using positive discrimination to encourage females to engage with STEM.



Pearl is a strong female character who wants to introduce everyone to the important STEM topics.

- Curious Pearl explains states of matter*
- Curious Pearl identifies the reason for seasons*
- Curious Pearl observes migration*
- Curious Pearl investigates light*
- Curious Pearl kicks off forces and motion*
- Curious Pearl dives into weather*
- Curious Pearl tinkers with simple machines*
- Curious Pearl masters sound*



Books like these shine a spotlight on the inspiring women whose incredible scientific ideas changed the world by covering women's scientific contributions, pioneers in the field, women in technology, engineers, and mathematical geniuses.



Equity and equality in STEM

Staff CLPL

Staff took part in an improving gender balance and equalities session in relation to STEM with Fiona Shaw from Education Scotland.

Improving Gender Balance and Equalities (@EdScotIGBE) tweeted at 4:48 pm on Thu, Feb 27, 2020:

We spent some time auditing resources through a gender lens @MossheadPS last night. Thanks again for having me in- really enjoyed hearing your insights about gender and STEM and where you would like to go next! #IGBE #ChallengingGenderStereotypes



Sharing practice IMPROVING GENDER BALANCE & EQUALITIES

STEM IMPROVEMENT - PRIMARY

What was the outcome / what was noticed?

- Surprised how many STEM books with female characters still represented boys/girls and men/women stereotypically - decided to use as a discussion point with children.
- Children are very aware of gender bias.
- Discussion with children made them likely to report what they've seen / read and it made the teachers think more about everyday stereotyping too.
- Greater awareness of gendered language eg policeman.
- An equal split in uptake of pupil leadership roles eg digital/STEM leaders.

What will happen next?

- Continue to focus on this through school improvement plan
- Explicit DYW planners linking the world of work in day to day learning
- Use of My World of Work including exploration of gender balance by sector and pay
- STEM a Story incorporated into all stage planners
- Diversity celebrated through events such as Show Racism the Red Card
- Engagement in the Young STEM Leader programme with 2 staff members certified tutor assessors and 32 Young STEM leaders out of 42 Primary 7's
- Monitoring gender balance within YSL programme - even mix of boys and girls (75% P7 girls and 77% P7 boys are STEM leaders)
- Whole school participation in Science Week, Maths Week Scotland and Careers Week
- New STEM/gender books including the Collins Big Cat series Dani Binns and Tara Binns
- Developing links with local partners eg McLaughlin Harvey Construction & Architects Holmes Miller - Whole school design competition, mini COP26 Homes for the Future
- Participation in Digital Pedagogy project with Local Authority and Education Scotland

Further details and resources
Draw a... test information

[@EdScotIGBE](https://twitter.com/EdScotIGBE)
www.bit.ly/NIHIGB

Education Scotland
Foghlam Alba

The work Mosshead undertook relating to gender balance is shared on the Education Scotland website.



Equity and equality in STEM



STEM Nation Award

This certifies that

Mosshead Primary

has achieved all five elements of the STEM Nation Award.

Education Scotland is extremely grateful for your help in shaping Scotland's future as a STEM nation. We hope that you continue to develop and promote excellence, equity, inspiration and connection in STEM.

Gayle Gorman
Chief Executive, Education Scotland



For Scotland's learners, with Scotland's educators