

STEM in St. Margaret's

In St. Margaret's we aim to:

- build capacity in staff and parents by modelling effective practice and promoting family learning
- enhance engagement through STEM learning experiences and support efforts in raising attainment
- embed STEM into our planning and delivery of IDL
- motivate children with a wide range of learning needs and abilities by providing a variety of stimulating STEM opportunities
- enable children to explore a wide range of skills through STEM learning and develop their capabilities in identifying skills they have used and how they could transfer them elsewhere
- ensure children gain knowledge of STEM career opportunities and the importance of STEM in our rapidly-changing world

We want our children to:

- manage and take risks
- work together to solve problems and persevere when things don't go as planned first time
- develop the ability to compromise when working with others and listening to opposing views
- build confidence and contribute to group discussions, expressing their own views
- identify skills they have developed and understand where else they may be useful
- reflect on and evaluate their learning experiences and justify their views for change to take place
- be motivated, enthused and engaged in their learning
- build knowledge of the importance of STEM and make the most of these learning opportunities which will benefit them in later life
- identify that STEM is all around us

Expectations for STEM in St Margaret's

Following the launch of our STEM hubs (Feb 2020), our lead teacher (Laura McCafferty) will plan the experiences and challenges within the hubs until Easter.

Following the Easter break, staff will be expected to plan together across a level. Additional time will be allocated from the WTA.

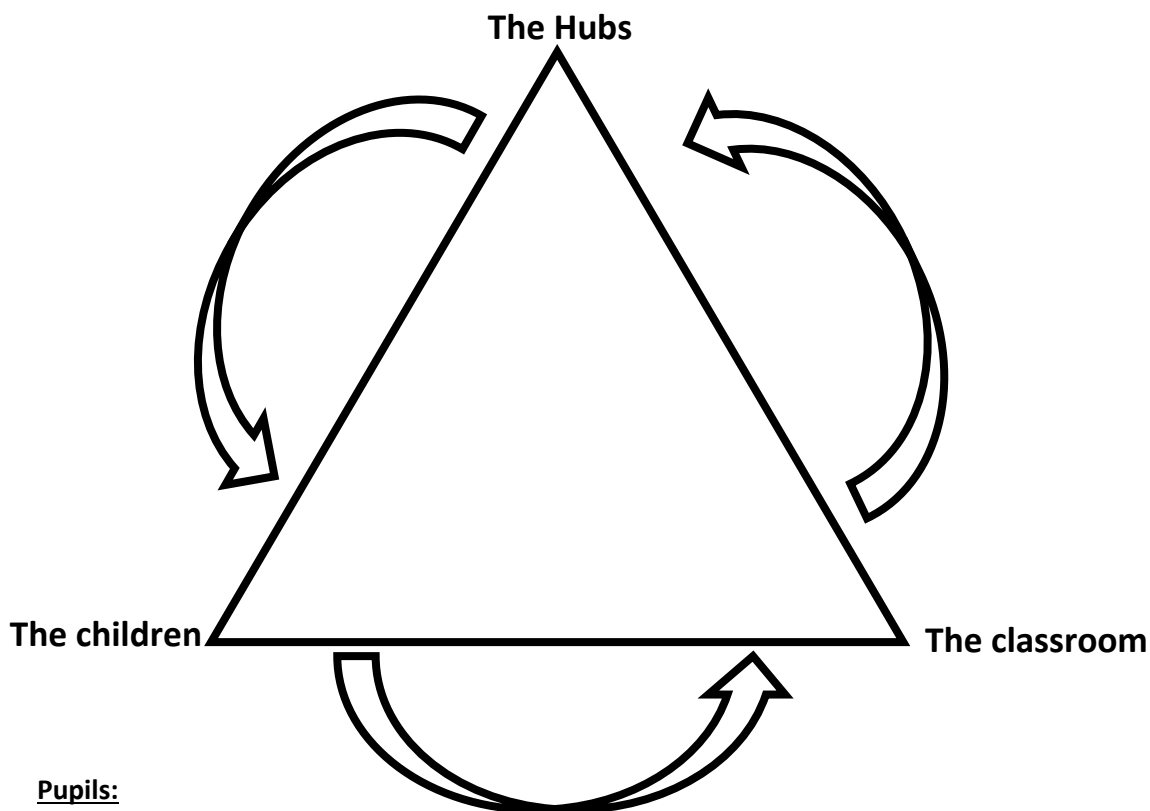
Using Hubs – The pilot:

- A timetable is set. It is at the teacher's discretion for who goes when, with whom.
- Parent volunteers and staff members will supervise the children when they are in the hubs. The expectations of their role have been shared and discussed. They all PVG checked. Their role is to question, encourage questioning, supervise and note engagement (using the Leuven scale) and support the children in recording their learning. Initially these volunteers/staff will have this modelled to them by Laura.
- Each week the children will visit the hub at least once.

They will record their own learning: key skills developed, vocabulary used or learned, annotated diagrams of learning, questions they now have.

It is this learning that they will bring back to the class to share.

- The class teacher's role is to facilitate STEM discussion time at least once weekly, noting key learning, questions and potential for next steps in learning e.g. lots of discussion around gravity or choice of materials for building...
- It is recognised that this is different as the children are very much leading the learning and the direction that this may take is unknown (how exciting!).
- Staff may tie the learning from the hubs to learning in the classroom.
- It is expected that staff will use the learning in STEM as a stimulus for developing literacy, numeracy and HWB e.g. writing up a report, delivering a presentation on..., laying out findings in a graph etc.



Pupils:

1. Pupils must fully engage in learning when at the hub or they forfeit their next visit.
2. Pupils' quality of work must be of a high, agreed standard.
3. Pupils must adhere to the Charters that exist for each hub.

Our lead teacher will set up a pupil focus group to ensure pupil voice in getting the best out of their experiences.

As this is a pilot please keep a SWOT (strengths, weaknesses, opportunities, threats) analysis of your thoughts so we can adjust our planning accordingly.

Appendix 1

What is STEM?

There is no single definition for STEM. STEM can be conceived as a set of inter-related disciplines and required skills. STEM related education and training seeks not only to develop expertise and capability in each individual field, but also to develop the ability to work across disciplines and generate new knowledge, ideas and products through inter-disciplinary learning. The different components of STEM are defined as follows in the STEM strategy:

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 and approaches 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 also 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.

Broad general education (3-15 years)

STEM education can be used as a highly motivating and relevant context for learning within the broad general education phase of Curriculum for Excellence. It can be used to support all four contexts for learning:

- ☐ Curriculum areas
- ☐ Ethos and life of the school
- ☐ Interdisciplinary learning

☐ Opportunities for personal achievement

STEM contexts can also support learning across all eight curriculum areas, and in particular within sciences, technologies and mathematics.

Areas which are the responsibility of all, especially numeracy, but also literacy and health and wellbeing, can also be supported through STEM contexts and approaches.

Cross-cutting themes such as learning for sustainability, digital skills and creativity support STEM. Outdoor learning provides learners with opportunities to learn about the impact and contribution STEM makes to their lives, their communities and society.

Education Scotland. (2017) *Transforming Lives through Learning*