

# Improving pedagogy in STEM

## North Lanarkshire Pedagogy Team



This case study is for practitioners and Senior Leadership Teams in the primary sector.

### Rationale

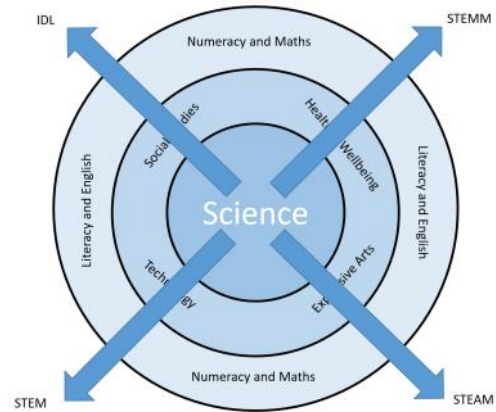
In 2018/19 North Lanarkshire Council launched the STEM National Improvement Framework Group that set out four key priorities to improve STEM education locally by:

- Developing a universal curriculum resource to support learning and teaching in STEM;
- Improving staff capacity through high quality professional learning;
- Building effective partnerships;
- Addressing issues of equity and equality.

To support the attainment of these key priorities North Lanarkshire joined the RAiSE Programme in 2019/20 and appointed two Primary Science Development Officers (PSDOs) to work within the North Lanarkshire Pedagogy Team which raises attainment and develops teacher capacity by promoting highly effective practice in learning, teaching and assessment.

In October 2019, 170 teachers from 58 primary schools took part in the RAiSE Survey. In their responses, teachers reported that they required support in the following areas:

- 58% in building their own confidence, skills, knowledge and enthusiasm in STEM.
- 60% in developing effective progression in STEM.
- 61% in monitoring, assessing and reporting on learners' progress in STEM.



### Where can I find out more?

**Marie-Claire Hendry**

**North Lanarkshire Pedagogy Lead**

**Email: [hendryma@northlan.gov.uk](mailto:hendryma@northlan.gov.uk)**

**Colin Dorman**

**Primary Science Development Officer**

**Email: [dormanc@northlan.gov.uk](mailto:dormanc@northlan.gov.uk)**

**Twitter: [@PedagogyTeamNLC](https://twitter.com/PedagogyTeamNLC)**



## The programme

The survey highlighted that teachers were considering the practicalities of teaching STEM alongside wider pedagogical approaches.

The PSDOs developed activities and resources to support the science curriculum, ensuring equitable access to quality-assured opportunities which addressed curriculum drivers.

A professional learning programme was created focusing on:

- **Health and Safety in Primary Science**  
The considerations of health and safety can impact the confidence of practitioners. Understanding the impactful, safe opportunities for innovation was important.
- **Scientific Enquiry Skills**  
Through scientific enquiry, teachers were shown how to reframe current practice to ensure learning and skills progression across all primary stages, using similar resources and pedagogical approaches. This session also demonstrated clear connections between the scientific enquiry skills and the core curricular areas of literacy, numeracy and health and well-being.

### Science Skills = Outcomes

I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the results in an appropriate way. **MSU 2-20b**



I am learning to assess and manage risk, to protect myself and others, and to reduce the potential for harm when possible. **HWB 2-10a**

To show my understanding across different areas of learning, I can identify and consider the purpose and main ideas of a text and use supporting detail. **LIT 2-30a**

- **Planning, Progression and Assessment**

Developed and delivered with the Pedagogy Team, teachers were supported in their planning to develop a greater knowledge of the relationships between the experiences and outcomes, benchmarks and skills.

Opportunities for assessment of the core curricular areas through STEM were explored, alongside the place of STEM within the moderation cycle, including creating effective learning intentions, success criteria and opportunities for feedback.

This robust programme of professional learning aimed to improve learning experiences for pupils, address wider pedagogical approaches and ensure that STEM is framed as integral part of the curriculum and not as an additional entity.

*Developing teacher capacity and improving outcomes for pupils has been made possible by the partnerships within North Lanarkshire and with the RAiSE network. The professional learning offer has been enhanced by opportunities including the SSERC Primary Cluster Program Mentors, The Royal Society of Chemistry, and Young STEM Leaders Programme.*

### Progression: Sorting, Identifying and Classifying



## Impact

North Lanarkshire has 119 primary schools. **60% of these schools** have engaged thus far, with more than **500 practitioners** from across the sector undertaking professional learning. Bespoke sessions have also been delivered for individual schools and probationary teachers.

**The curriculum resources have been accessed more than 4000 times.**

Feedback from participants:

*“This excellent course has made me think about our school’s practice and approach to assessment, it has shown me that science can be assessed alongside literacy and numeracy”*

***“The resources that have been shared are great, the cross-curricular links and the examples of IDL planning were very helpful. I liked the examples of how to build learning intentions and success criteria in STEM.”***

*“I now feel more confident in delivering science with these great lessons explained today I will be now able to deliver more meaningful science lessons and offer a wider range of STEM activities to children”*

***“The course provided details of excellent resources that available within both NLC and through Education Scotland. Having access to this will help plan more effective lessons which can relate more closely with other curricular areas.”***

*“Glad we have a dedicated group of professionals who have a passion for improving the delivery of STEM.”*

