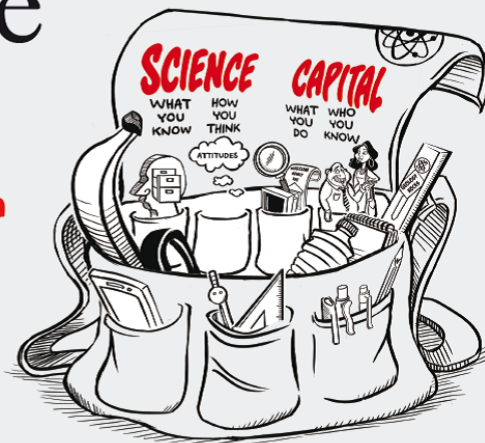


# Science capital made clear



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# RAiSE

Raising Aspirations in Science Education

## Moray Family Learning STEM Bags Pilot 2018

Dec 2018

### Case Study

Three schools – Portessie PS, Findochty PS and St Gerardine PS took part in a STEM Bags Pilot from May 2018 to December 2018. These schools were chosen as they had Family Learning on their School Improvement Plans and were keen to help develop the programme for Moray.

Through RAiSE funding each school was given 50 STEM Bags covering 5 different STEM Experiments and a selection of STEM Home Learning Books for the school library.

The total cost of the Pilot was £885 - £295 in each school (this includes the printed STEM Moray Bags) – see Appendix 2 for breakdown of costs.

Each bag had the kit required for the experiment; a rationale explaining the STEM Bags pilot; an experiment sheet for parents with instructions, background information and links to websites with more ideas and a jotter to record pupils learning.

### Rationale

Research evidence shows that the more science capital a young person has, the more likely s/he is to aspire to continue with science post-16 and to see themselves as having a science identity.

Our hope is that building science capital will have a positive effect on young people's lives – not just in terms of encouraging more young people to continue into science, technology, engineering and mathematics (STEM) jobs, but more importantly, we hope that building science capital is a tool for social justice, to help improve people's lives and life chances.

### Is it for me?

This case study will be of interest to all Primary and Early Years Centres looking for creative ways to engage parents in STEM learning

### What does it cost?

The total cost of the Pilot was £885 - £295 in each school (this includes the printed STEM Moray Bags)

### Where can I find out more?

Janey Irving; the RAiSE PSDO for Moray Council

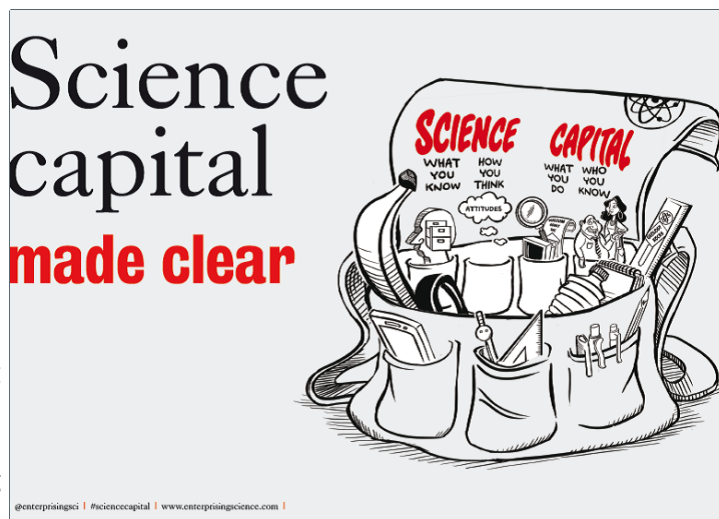
[janey.irving@moray.gov.uk](mailto:janey.irving@moray.gov.uk)

## Benefits

STEM bags will engage parents and children in fun STEM activities that encourage discussion about STEM learning and also help to improve the children's overall STEM enthusiasm and engagement and ultimately help to raise attainment and achievement and build Science Capital within families.

The available evidence confirms that parental involvement and engagement in children's learning supports improved attainment and achievement. Family learning encourages family members to learn together, fostering positive attitudes to lifelong learning. We want to improve and increase the ways in which parents, carers and families can engage with

teachers and partners to support their children and increase the voice of parents and carers in leading improvements within schools. (National Improvement Framework, 2017, Scot Gov)



## Impact

### Evaluation of Results from Focus Group Questions

#### Focus Group Questions: Pupils

Prior to the STEM Bags Pilot; pupils were generally positive about their STEM learning though this varied on the scale from 4-10 and depended on the particular Science context. Although some had thought about STEM as a job this did seem to depend on who they knew and in particular having a family member in a STEM career was a positive influence (as discussed by Archer et al in the Aspires Report).

When it came to the STEM Bags pupils were very enthusiastic describing their favourite experiment and all enjoyed the hands on practical element with one comment that it's "like being a scientist in training". The majority of pupils did the experiments with their mum though there was evidence that dad was sometimes involved if they had the bag over a weekend. Pupils with younger children particularly commented on enjoying leading them with the experiments. All pupils used the jotter to record findings; some adding pictures to show their learning.

All pupils said that the STEM Bags had impacted positivity on their feelings about STEM learning with the majority giving a high score of 10. It had not influenced their career choices; however so perhaps adding in links to careers would be helpful to help them explore this further.

**Focus Group Questions: Parents** – Please note – only two parents took part in the focus groups.

Parental experience varied - both had taken science at school with one in a STEM job now. Both parents said their children had shown some interest in STEM previously and in particular mentioned STEM Weeks in school. They had watched science programmes but not been to a Science Museum – closest one is in Aberdeen. Neither parent had discussed STEM as a career choice with their child but after this pilot had realised the importance of doing so.

When it came to the STEM Bags parents liked that all the materials were in the bag, that they came with instructions and that pupils were encouraged to record their experiments in a jotter. This gave them opportunity to discuss their learning including spelling, following instructions carefully and evaluating results.

Post pilot; one parent commented that their child was "more interested when they see it (Science) on TV/will comment and discuss more". Parents suggested leaving the STEM Bags home over a weekend to give longer for whole family to try out.

#### Focus Group Questions: Teachers

Prior to the STEM Bags Pilot; teachers noted that pupils were positive about STEM and in particular enjoy STEM

Week but also that STEM was becoming an important part of their curriculum. They had not discussed STEM as a career choice with pupils and did not know how many of them wanted to pursue a career in a STEM field. There were many different methods of parental engagement discussed including open afternoons/shared learning; packs and booklets for literacy/numeracy and reporting. There was also mention of making use of family talents in music and sport as well as family competitions.

When it came to the STEM Bags teachers also liked that all the materials were in the bag, that they came with instructions and that pupils were encouraged to record their experiments in a jotter. Pupils could speak about their STEM Bag experiments and were “happy to share their learning and were enthusiastic/motivated by STEM Bags”. Some issues emerged around protocols for lending the bags and it was clear that schools needed to give clear guidelines on loan time, returns and checking contents and suggestions about targeting specific pupils as a PEF intervention. In addition adding a strategy/letter about How to encourage your children with STEM Learning would be welcomed. Both schools said they would keep using the format as it worked well and suggested a teacher CLPL on Science Capital and the STEM Bags as a small part of this would also be welcomed.

## **Conclusion**

Overall findings from the Family Learning - STEM Bags Pilot showed that this made a positive impact on the pupils enthusiasm for practical/experiential STEM learning and provided an opportunity for parents and pupils to discuss their learning in a focused manner.

Key messages for trying this out:

- Having kit/instructions are helpful. Added links to other sites might be better on a school website (see Appendix 5)
- Keep it practical and give a jotter to record findings with ideas of how to go about this inside the jotter
- Have a cover letter to help parents understand the importance of STEM and how to discuss it with their children prior to the STEM Bags being handed out and in addition to the Rationale in the Bag
- Teacher CLPL on Science Capital Teaching Approaches would be helpful
- Have a clear protocol for lending and give weekend time to encourage whole family to take part
- Maintaining the kit requires time and needs to be part of pupil classroom jobs

*This case study has been prepared by Janey Irving. The views contained in this document are those of the author and do not necessarily represent those of the RAiSE Project, Education Scotland, and/or The Wood Foundation.*