

Case study: Derby STEAM – Farmvention Primary Project



Derby Opportunity Area

Funded through the Department for
Education Opportunity Area programme.

The Challenge

The Derby Opportunity Area commissioned a programme of STEAM grants to support the following objectives for young people in the city:

- Provide a positive image for children and young people of STEAM subjects.
- Improve academic outcomes in STEAM subjects, especially for disadvantaged children and young people.
- Improve the employability skills of children and young people.
- Strive for a better diversity in children and young people following STEAM subjects by tackling pre-existing stereotypes about careers in STEAM.
- Create STEAM partnerships between learning providers.
- Encourage engagement in additional curricular experiences in STEAM.
- Improve early years' provider, school, college, or learning provider based teaching and learning in STEAM.
- Create positive pathways in STEAM.
- Build a strong evidence base of effective STEAM practice which includes the voice of children and young people.
- Build partnerships between learning providers to ensure sustainability of partnership working.

Learn by Design submitted three proposals in response to this of which Farmvention was one

Our Solution

The **Farmvention** programme was designed and delivered by Learn by Design in collaboration with the National Farmers' Union (NFU). It is a funded programme to bring together 460 learners and 30 teachers from 5 primary schools across Derby with STEAM ambassadors and STEAM communicators to explore STEAM concepts.

We wanted to bring farming to life for learners, by introducing them to the STEAM subjects involved in it.

The work we delivered was designed to enhance main curriculum studies. This is important as all of the schools we worked with are in a position where improvements in learner attainment are paramount. The programme was designed to showcase and explore the fantastic STEAM careers that exist in Derbyshire and beyond, and build learners' confidence and ambitions to pursue these.

Most primary schools delivering career-related learning or STEAM projects deliver occasional sessions with little or no follow-up, and no link to local enterprise partnerships or employability strategies. We therefore, developed a three-stage model that could be replicated for different industry areas. The programme was not purely a STEAM intervention: gave the schools a delivery model that could be adapted to fit any other industry area.

It saw us bringing their STEM Barn and STEM Pod to the initial event day and utilising these alongside shows and workshops to excite the young people.



Stage 1

Farmvention – ‘There is STEAM in the farmyard’ day

A STEAM event day off-site at the Riverside Centre in Derby, consisting of five activities for the young people to rotate around. The carousel of activities included a visit to the NFU STEM Barn, an exploration of the ‘Forensic Farm’ to solve a mystery, a ‘science in food and farming’ show, a performing arts workshop to explore who on the farm uses STEAM in their jobs, and finally an ‘ag-bot’ (agricultural robot) workshop to develop their coding skills by asking them to program Botley, the screen-free coding robot, to herd some golf ball sheep into a barn.

Through these activities the learners explored scientific concepts, job roles, and how their STEAM subjects are used within these.

The day included a range of learning styles to excite and engage the young people, including interactive games, role play, and new technologies; all activities embedded Maths and English skills. All sessions were supported by employer ambassadors from the industry. They promoted active and experiential learning.

Stage 2

Farmvention:

This was an embedded curriculum project for the year 2 learners in each school spanning a five-week period. The project took them on a journey of STEAM discovery to develop new skills for the world of work in line with the Derby, Derbyshire, Nottingham and Nottinghamshire (D2N2) Employability Framework. Delivery was with half the year group in the morning and half in the afternoon.

Farmvention: When farming meets invention - <https://www.farmvention.com/>

The NFU's Farmvention competition has been designed by their education team, in conjunction with NFU science and policy advisers, to help teach primary school children where their food comes from through a range of engaging real-life problem-solving challenges. Entries are judged based on four criteria: how well entrants have solved the problem, their creativity and innovation, the environmental impact of their design, and the benefits their design will have for farmers and food producers.

Stage 3

STEMenterprise:

These were embedded curriculum projects for year 4 learners spanning an eight-week period. Farming-focused ‘STEM Enterprise’ projects take children through each stage of setting up a farm shop business: considering seasonality when deciding which crop to grow, growing their own ingredients, considering nutrition when designing their recipes, using market research to test their ideas out with potential consumers, working within a budget when buying additional ingredients, learning knife skills when making their products, calculating expected profit, designing responsible packaging, and much more.

The practical science and design and technology lessons that will be used are closely tailored to year group's requirements and there are opportunities for applying maths skills to engaging, real-life problems. The projects have been designed to be easy to use and deliver key content from the national curriculum, whilst embedding important messages about financial literacy and food provenance.

The programme was delivered by science and engineering communicators from **Learn by Design** who are trained to engage and inspire learners about STEAM subjects. They were supported by NFU and STEAM ambassadors.

The NFU have developed a suite of resources that are freely available to school. The lesson plans have been carefully constructed to relate to the different primary key stages.

Click here to access <https://education.nfonline.com/>

Whilst these resources were already freely available, no schools in the Derby area were using them so our project has introduced these and bought them to life within different school settings in the city to give teachers the confidence to use them in the future.



The Schools Involved

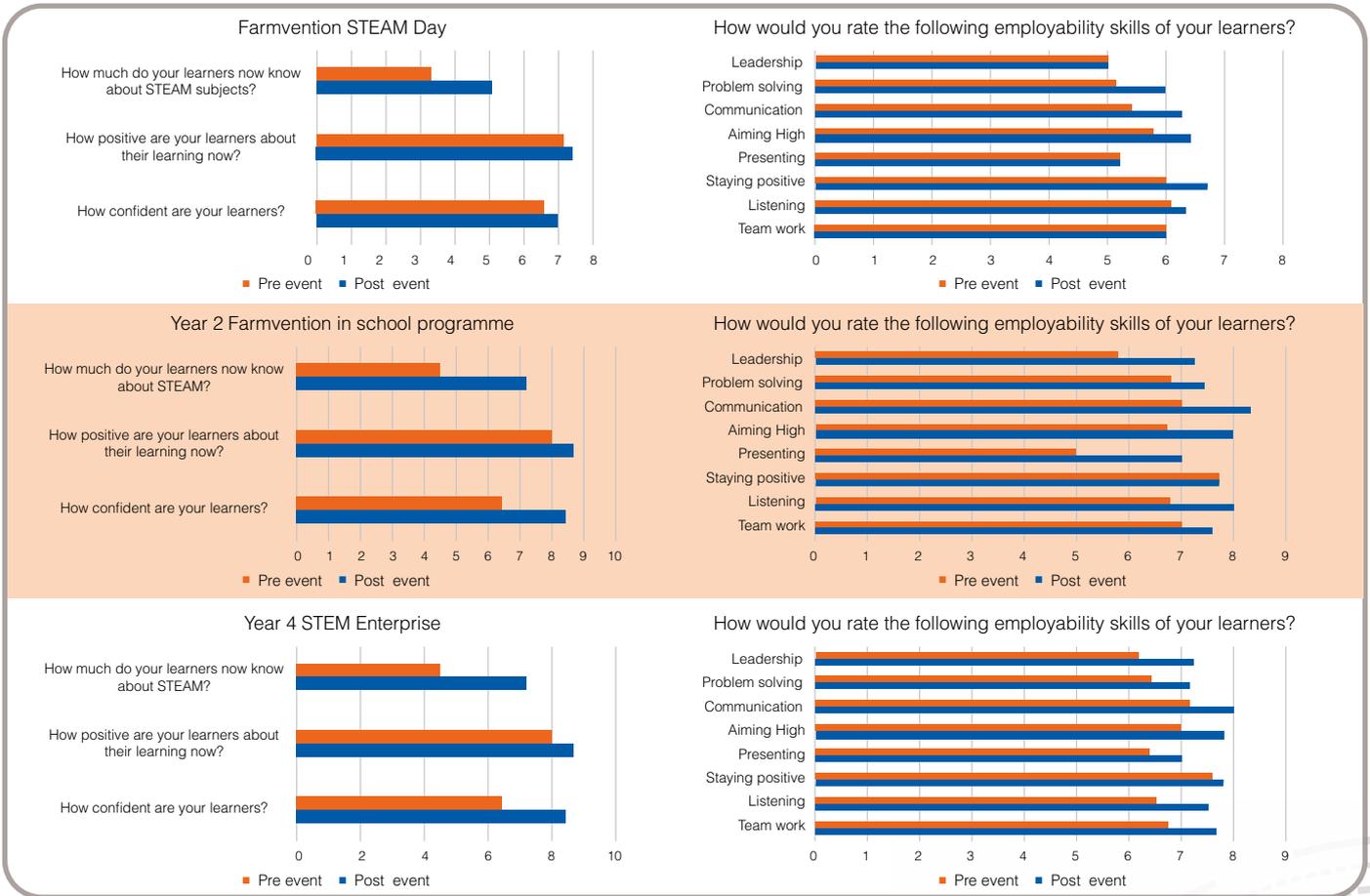
The schools selected for the project were a mix of schools in deprived areas, schools which have enhanced resources, and schools who have been under OFSTED scrutiny over the last two years. We selected these schools as a majority have a high level of social deprivation and will benefit from STEAM work to raise aspirations and attainment in science and in mathematics. All of the schools had average or below average results in mathematics and the programme brought focus onto mathematical skills and the application of these in STEAM contexts. The majority of the schools also had low attainment in reading and writing so we ensured these skills were also embedded within delivery to support school. Low attainment was most prevalent in children from disadvantaged backgrounds in the selected schools.

Event/programme	Boys	Girls	Total	Pupil Premium	Teachers
Farmvention day	30	19	49	21	5
Year 2 Farmvention in school sessions	299	236	535	217	26
Year 4 STEM Enterprise	343	331	674	280	57

The 5 schools involved were:

- Allenton Primary School
- Zaytouna Primary School
- Landau Forte Academy Moorhead
- Rosehill Infant and Nursery School
- Arboretum Primary School

Feedback



"The interactive and well-resourced sessions have added value to what we teach the children in school. Having external experts come in was a change of pace they enjoyed and responded to well"

Landau Forte Academy Moorhead

"Children were very engaged and enjoyed the experiment. They remembered lots of facts, thanks"

Arboretum Primary School

"They enjoyed the practical element of the lessons and this helped them to be more positive about their learning. They are more confident with scientific language now"

Allenton Primary School

Links to the D2N2 Employability Framework

Young people will develop their STEAM skills as well as developing the D2N2 employability skills of self-motivation, self-confidence, being aspirational, being informed, being aware, achieving, taking responsibility, being resilient and being entrepreneurial.

