

Case study:

Derby STEAM – Destination Rail – 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, one of which was our Destination Rail Primary project.

Our Solution

The provision was:

The 'Destination Rail' programme was developed in consultation with Derby, Derbyshire, Nottingham and Nottinghamshire (D2N2), Local Enterprise Partnership and the Midlands Rail Forum.

Railways and trains are captivating for children. The programme will allow us to build on the excitement and knowledge children have about the topic.

Stage 1

'Destination Rail: Departure Day – All Aboard'

A whole school STEAM event day. The school became a railway station with a carousel of activities for the pupils to explore job roles that enable a station to function. These ranged from signalling, customer service, catering, policing, engineering, driving, and logistics. All activities were designed to demonstrate how STEAM skills are involved in each of these roles. It included a range of learning styles to excite and engage the pupils including interactive games, role play and exploring new technologies; all activities embedded Maths and English skills. Activities were supported by employer ambassadors from the rail industry. The activities were designed so they could be replicated by schools in future.

Stage 2

'Destination Rail: The Journey – On Board and On Schedule'

This was an embedded curriculum project for two year groups – years 4 and 5 – spanning a six-week period. The projects took the pupils on a journey of STEAM discovery to develop new skills for the world of work in line with the D2N2 Employability Framework. Each class was on a train journey for the six weeks. During this time they faced a weekly STEAM challenge that highlighted a career opportunity linked to the rail industry. This allowed them to develop the D2N2 employability skills of self-motivation, self-confidence, being aspirational, being informed, being aware, achievement, responsibility, resilience, and entrepreneurial skills. The activities also linked to the Key Stage 2 curriculum and helped to develop the children's portfolio learning and enquiry learning skills.

Stage 3

'Destination Rail: The Arrival and What Destination Next'

This was due to be a final whole-school day to celebrate each class reaching their destination. It was to be constructed to enable the children to share their STEAM experiences with each others and their parents. During the day they were going to work with rail ambassadors to explore routes into careers in rail. Due to the COVID-19 outbreak we were unable to deliver these days but instead we developed a suite of materials that could be used by the schools to send out to parents for home learning. These are hosted on our Learn by Design website.

The programme involved all children within a school at different stages. Every child was encouraged to be ambitious, irrespective of their background or circumstances. We encouraged positive social mixing during Stage 1 by mixing year groups together and getting children to work with people they may not have met before.

The Schools Involved

The schools in the project had a high proportion of disadvantaged and vulnerable children on their year 5 roll. Learner attainment was at or below average in mathematics and reading, with only one school above average in writing skills.

Most of the schools had and a higher-than average number of learners accessing free school meals and a higher-than-average number of pupils with special educational needs. The activity was run with all children within the school, but this group was especially integrated and supported within the activities.

Event	Boys	Girls	Total	Pupil Premium	Teachers
Departure day	666	621	1287	306	63
The journey	247	229	476	138	18

The 4 schools involved were:

- Cherry Tree Hill Primary School
- St Joseph's Catholic Voluntary Academy
- St Alban's Catholic Primary School
- Church of England Aided Junior School

Feedback

Learner feedback:

Feedback from the learners was gathered on the first day.

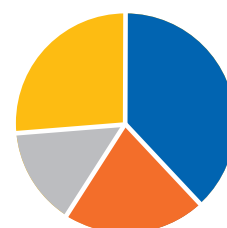
We have been unable to gather the impact data from the final day due to COVID-19.

Do you know what STEAM stands for?



■ Yes ■ No ■ Maybe

How much do you know about the many careers there are in rail?



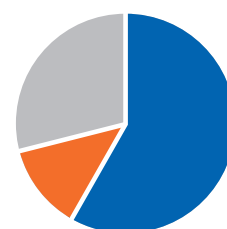
■ Nothing ■ A little ■ Don't know ■ A lot

Would you consider a career in Rail?



■ Yes ■ No ■ Maybe

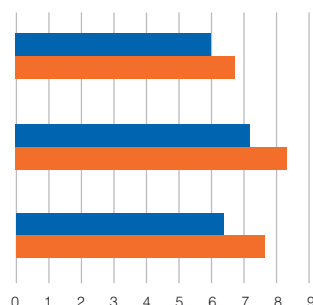
Have the activities made you feel more positive about yourself and your skills?



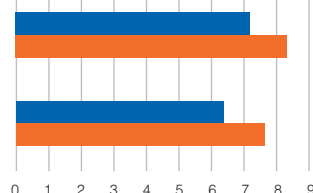
■ Yes ■ No ■ Maybe

Teacher feedback:

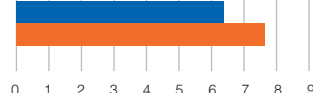
How much do your learners now know about STEAM?



How positive are your learners about their learning now?

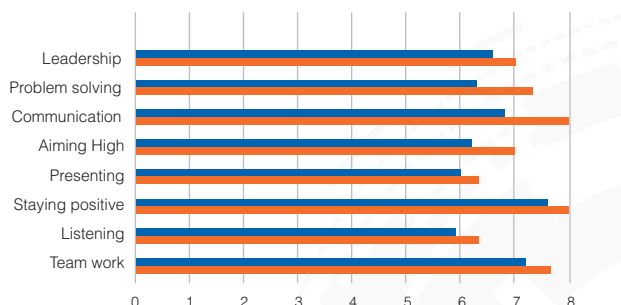


How confident are your learners?



■ Pre workshops ■ Post workshops

Impact on Employability skills



■ Pre workshops ■ Post workshops



Quotes

"Excellent content, very relevant. Very engaging facilitator, good rapport with students delivered in a way that students easily understood. Very easy to book and efficient service."

"Excellent workshop the balance of information, videos, activity and practical is perfect..."

"Amazing! Thank you so much for delivering this workshop – Stephen was an inspirational role model for our students!"

"Absolutely brilliant and we are definitely making another booking for January and March. The presenters have been engaging and the sessions well organised and useful for the students."


"A really engaging morning with a good mix of theory and practical application. Great promotion of communication / teamwork skills, also. Thank you!!"

"The children remained engaged with a well-pitched mix of discussion and activity."

"Students who are often short of attention span were very engaged. Well-presented and pitched at just the right level for the age group. Informative and entertaining."

"Really engaging session and the children loved it. Most of the children were able to access the session independently and it unlocked their creativity."

"Great to see pupils who struggle with classroom interaction shine and take part in the hands on practical activities. Ambassador was helpful."



Links to the D2N2 Employability framework

Young people developed 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.

