

Case Study: Our Past Your Future, Eastlea Primary School, Cramlington, Northumberland

Background to Our Past, Your Future

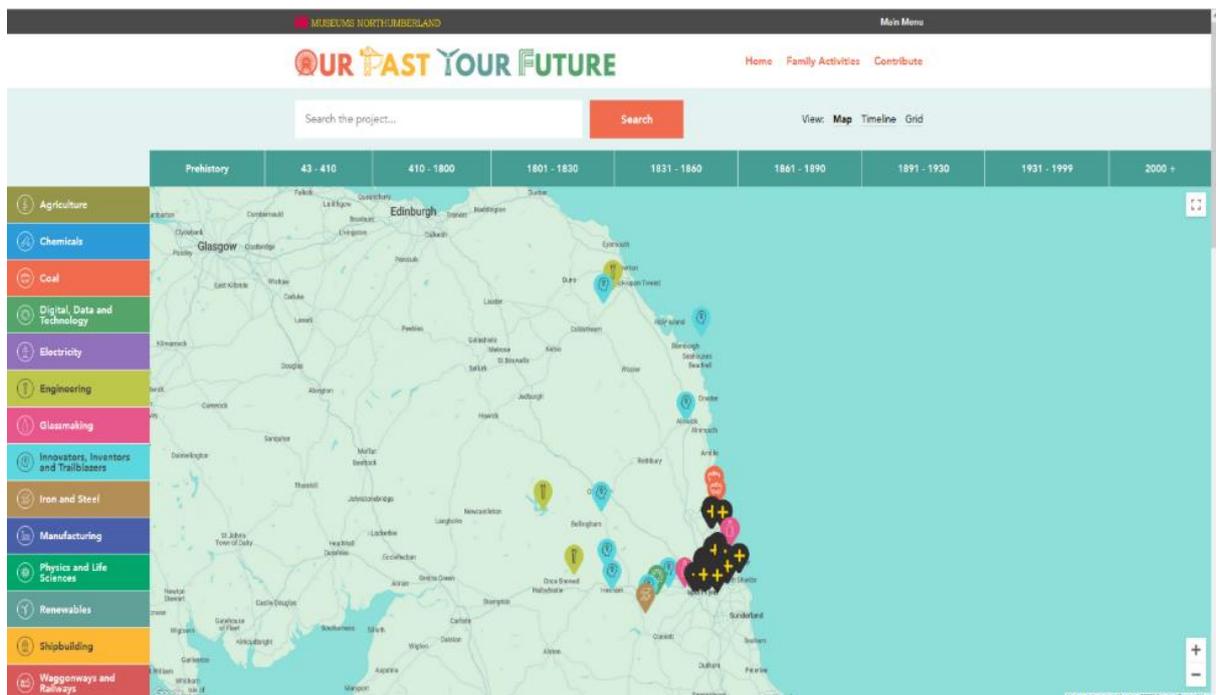
Our Past, Your Future was a three-year partnership project (2020/21 – 2022/23) run by Museums Northumberland, with Heritage Schools and NUSTEM as partners. This was to ensure that the heritage aspect of the project was as strong as the STEM aspect. NUSTEM¹ is based at Northumbria University and works with Primary and Secondary schools to encourage pupils' interest in STEM (Science, Technology, Engineering, Maths) subjects and consider STEM careers. Our Past, Your Future (OPYF) involved 15 Primary schools in Newcastle, North Tyneside and Northumberland and aimed to:

- Change attitudes and break down stereotypical ideas around STEM by working with young people and their key influencers including their teachers and families
- Create an increased awareness amongst the pupils of their local STEM heritage and instil a sense of pride in their local area
- Broaden the pupils' awareness of the vast range of STEM careers available in Newcastle, North Tyneside and Northumberland

The project was funded by the North of Tyne Combined Authority (NTCA). Heritage Schools provided a significant in-kind contribution by delivering CPD sessions for teachers in how to use historic sources, and the Local Heritage Education Manager (LHEM) carried out research into people and places in the North of Tyne associated with STEM developments. Heritage Schools also provided a bespoke set of historic maps and aerial photographs for each participating school, covering the area around each school.

The Heritage Schools Local Heritage Education Manager (LHEM) and the TCA Digital Heritage Outreach Officer delivered two online CPD sessions to each participating school, and researched people and places in the North of Tyne associated with STEM developments. The Outreach Officer created an interactive map <https://museumsnorthumberland.org.uk/project/our-past-your-future/> showing where these people and places are located. The participating schools can upload additional information about the people and places to the map. OPYF schools which upload information to the map receive the Heritage Schools Award. A teachers' toolkit (downloadable from the website above) has been created with examples of project work which the schools have done and some Heritage Schools resources, and it includes a case study of Eastlea Primary School's work.

¹ <https://nustem.uk/>



Screenshot of Our Past, Your Future interactive map

A teacher from one of the participating schools, quoted in the toolkit, said:

"It is vital that children understand the heritage of the area in which they live, they need to have an understanding of what their area was like in the past and how that has led to the way it is now. It is inspiring to find out about past achievements of people like themselves who lived in the area" - Teacher

Another participating school said that the CPD training had encouraged them to completely change their curriculum so that local history was threaded through all subjects. Making local connections enables pupils to relate to topics more easily and makes them easier to understand. Following this, the school had an OFSTED inspection with a deep dive into History, and the inspectors commended the new localised curriculum.

Woodhorn Museum (at the former Woodhorn Colliery) provided STEM workshops for schools at the museum and for families at the schools, and loan boxes. They will run a week-long event during the 2023 summer holidays which pupils can apply to attend. The Eastlea teachers commented that this is attracting pupils who would not attend a sports-based summer camp; the majority of summer holiday activities available in Cramlington are sports-based.



Aerodynamics family workshop at Eastlea Primary School

NUSTEM provided online training for the teachers about unconscious bias in STEM – challenging stereotypes about what sort of people might or might not work in STEM. NUSTEM also provided resources including “STEM Person of the Week” which highlighted present-day local people who work in a range of science and engineering roles, and looked at the qualities which people need to do those jobs (for example: creative, curious, observant) rather than just the academic qualifications they would require.

The LHEM and the Outreach Officer carried out research to create a set of five historic “STEM Heritage Person of the Week” examples of people who had worked in Newcastle, North Tyneside and Northumberland, such as Marie Lebour, marine biologist.



Marie was a marine biologist famous for her work studying the life cycles of different marine animals. She needed to be **patient** when waiting for organisms to go through their life cycles and **open-minded** about what she might find. Marie was **creative** and made detailed drawings of the organisms she was studying to include in her research and books.

Creative
Open minded
Patient

STEM PERSON OF THE WEEK

Marie Lebour
Marine Biologist

OUR PAST YOUR FUTURE

Background to Eastlea Primary School

Eastlea has 224 pupils from Nursery to Year 6, of whom 43% are eligible for Pupil Premium and around 30% have special educational needs or disabilities. Most pupils are White British; with 7 pupils for whom English is an additional language. Some pupils' families have lived in Cramlington for many years, and some are recent arrivals. Cramlington was a mining town, which later developed into a New Town with new industry and housing estates in the 1960s.

Eastlea's involvement with Our Past, Your Future

Eastlea joined OPYF in 2019, and took part in two online CPD sessions for the teachers, delivered by the LHEM and the Outreach Officer. The first session covered how to localise each area of the curriculum from EYFS to Key Stage 2 by using local heritage. The second session covered how to use historic maps and aerial photos, based on the school's immediate locality.

The whole school has done the STEM Person of the Week and STEM Heritage Person of the Week programmes each year, and will continue to do so. They investigate each person in assembly, and then in class the pupils consider how they themselves can reflect the qualities which each STEM person (heritage or present-day) needs to do their job.

All the classes have done a family workshop in school, run by Woodhorn Museum staff, covering different topics such as aerodynamics (Year 5) and robots (Reception). Most of the parents came to the workshops, and they enjoyed doing the activities with their children.

In 2022/23, the Year 4 class used the OPYF interactive map for their Geography project (see below); as this was very successful, the class teacher plans to do a whole-term project next year on the Tyne bridges and the area surrounding them, covering English, Geography, History and Design & Technology. The study will look at how the area has changed over time, using historic maps and photographs provided by Heritage Schools, focusing on curriculum skills.

Woodhorn Charitable Trust provided funding in 2023 for Eastlea pupils in Years 1 to 4 to go on STEM-related visits, such as to the Castle at Newcastle. Years 5 and 6 had already been on visits before this funding became available. The teachers explained that it is very difficult for the school to fund visits because of small budgets and increased costs, particularly for transport. Families are usually asked to provide contributions but the school is aware that in the current financial climate this is not easy.

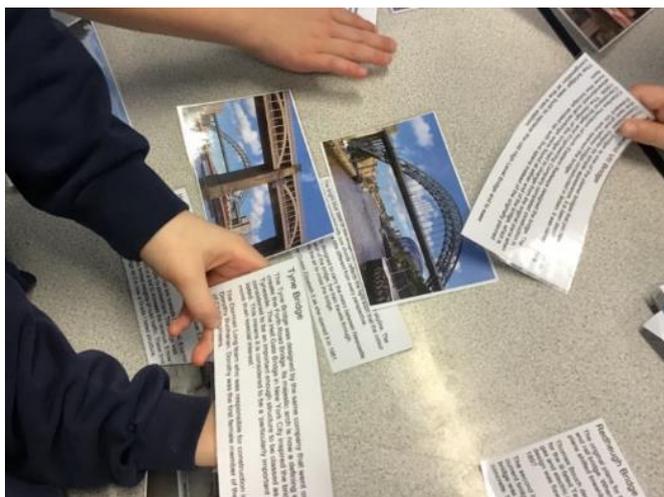
The school is in the process of localising its curriculum, based on the CPD session which the LHEM had provided.

Using the Our Past, Your Future interactive map

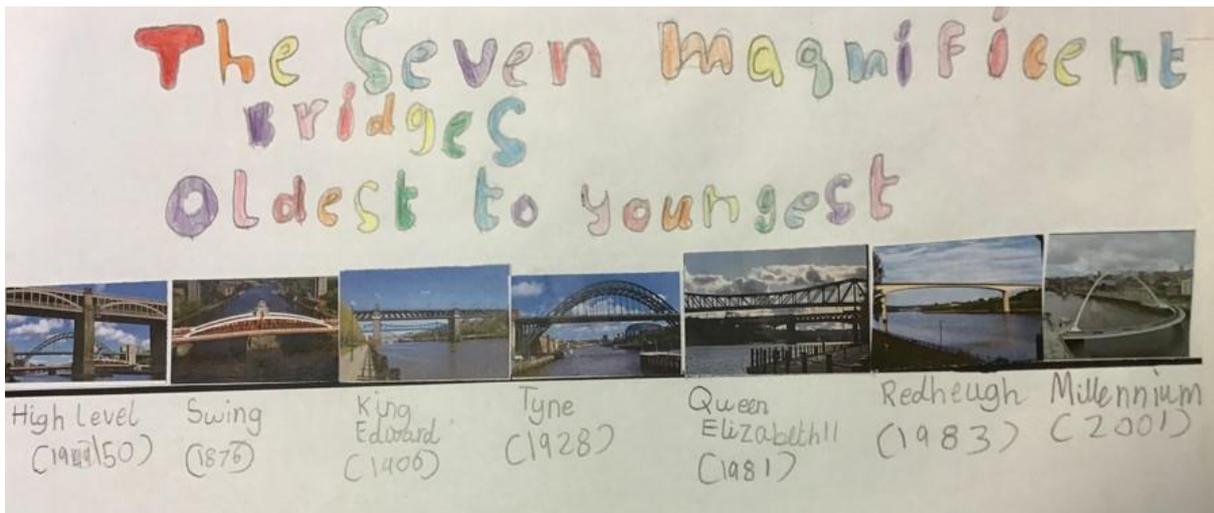
In 2022/23, the Year 4 class used the OPYF interactive map for their Geography project. They studied the bridges over the River Tyne in Newcastle and found out about Dorothy Buchanan, an engineer who worked on the design of the Tyne Bridge, and who was the first woman to become a member of the Institution of Civil Engineers. The class had previously read a book about American engineer Emily Roebling, who had been involved in the design of the Brooklyn Bridge, and were amazed to discover that a woman engineer had designed the steelwork for the Tyne Bridge which is local to them. The Year 4 teacher said that this had a real "Wow!" factor for them, and really engaged their interest.

The pupils carried out individual and group work about the Tyne bridges, and to develop their engineering skills, the pupils worked in teams as engineering companies and made model bridges out of cardboard and other materials, which had to carry a certain weight.

The pupils used photographs of the Tyne bridges and descriptions of them, to put the bridges in chronological order. They used a map to locate the bridges in the correct place. Next year, when this project is being taught, subject to funding, the plan is to arrange a visit to Newcastle for the Year 4 class to see the bridges so that all the children can have this first-hand experience.



Pupils worked in groups to match photos of the bridges with fact cards, and place them in the correct places on the map



Before we built our bridges, we wanted to look at other bridges. We decided to look at some of the bridges that cross the River Tyne. We found out about another female engineer.

Dorothy Buchanan
 Born: 8th October 1899
 Died: 13th June 1985

She was born in Scotland

Worked at
 Donalds Fox and
 Palmer's

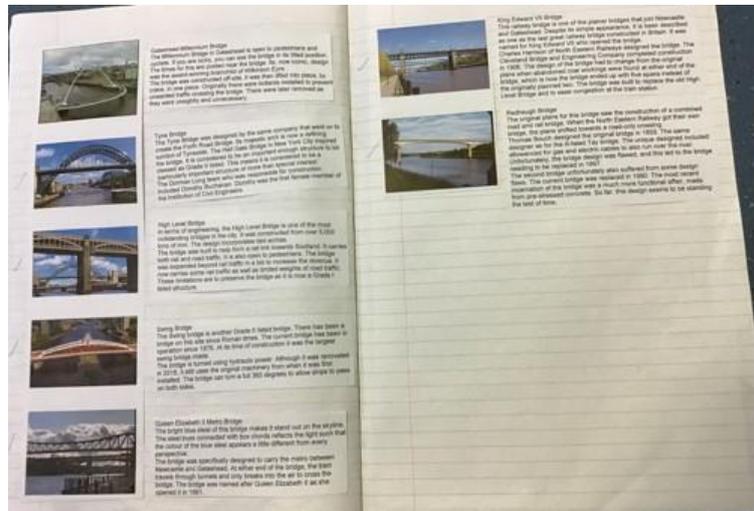
Transferred to
 Dorman, Long,
 worked as part
 of the design
 team for the
 Sydney Harbour
 Bridge

To complete her
 training she
 moved to Llandudno
 to work on the
 Belfast water
 supply scheme

She returned
 to Dorman, Long
 to work on
 the design
 for the
 Tyne bridges

Educated:
 Longholm
 Academy,
 the University
 of Edinburgh,
 where she
 got a degree
 in civil
 engineering.

Moved to
 London after her
 graduation

Individual work: writing about Dorothy Buchanan; descriptions of the Tyne bridges

Impacts on pupils

The Head Teacher and Year 4 teacher both said that OPYF had increased the pupils' attainment, aspirations and understanding of the possibilities of STEM as a career.

"It gave them ideas and experiences they wouldn't have had otherwise, and which they could take into their learning in the classroom. It's widened their horizons of what an engineer can be" - Teacher

Focusing on bridges in their local area, seeing photographs of them, finding out about Dorothy Buchanan, learning about the STEM People of the Week (present-day and heritage people) and exploring the interactive map for people and places gave them new knowledge and understanding.

“A lot of them haven’t been outside Cramlington before so they need to have their horizons widened and any experiences they have improves their writing and vocabulary” - Teacher

The project has increased the pupils’ understanding of local history. They had found the story of Emily Roebling intriguing, but as she was in America, it was beyond anything they would experience and so learning about Dorothy Buchanan had much more of an impact on them.

At the start of their project, none of the class knew what an engineer is but now, several months after they did their OPYF project, five of the nineteen Year 4 pupils said that they would consider becoming an engineer in the future. One of the pupils commented that he had had no idea about how many different types of engineer there could be, before they took part in Our Past, Your Future.

The Year 4 teacher commented that the class is still affected by the disruptions caused by school closures due to covid in 2020 and pupils having to stay off school if someone else in their class had covid in 2021. Pupils find it difficult to think independently, but the work they have done on this project has helped to improve this.

Impacts on teachers and the school as a whole

All the teachers took part in the two CPD sessions, and now they make local connections in the curriculum wherever possible. For example, pupils studying World War 2 visit Blyth Battery², and when Year 4 study the Romans, the teacher will look for any Roman connections to Cramlington. Using local examples enables pupils to relate to them more easily and makes it more meaningful for them.

Teachers can use the interactive OPYF map in their lessons, and the format of a photograph and short text about each person or place makes the map easy for pupils to use to do their own research.

The Year 4 teacher is planning a whole-term project for next year based on the Tyne bridges, using maps and aerial photographs provided by Historic England, looking at how the area has changed over time, covering History, Geography, English and Design & Technology.

² <https://www.blythbattery.org.uk/>, the remnants of a World War 1 coastal artillery battery that was upgraded and re-fitted for use in World War 2.

Impacts on families

The families enjoyed taking part in the family workshops at school. There are already good links between the school and the families, and the workshops strengthened them further.



Reception's family workshop about robots

One Year 4 pupil asked his parents to take him to see the bridges when they were in Newcastle. His mother told the teacher afterwards that they had never thought of going down to the Quayside, and they had had a marvellous day and really enjoyed it.

Impacts on Heritage Schools

As OPYF was funded by North of Tyne Combined Authority, it enabled Heritage Schools to work with a different set of schools and with a combined STEM and heritage focus. The LHEM commented in this project, STEM and heritage received equal weight.

Working in partnership, where one of the other organisations is the lead partner, means that less of the LHEM's time is taken up with project administration, so the LHEM could spend more time carrying out research for the project and working with other schools.

The heritage research for the interactive map and the STEM Heritage Person of the Week was carried out by the LHEM and the Outreach Officer and they delivered the CPD sessions together which also meant that the teachers benefitted from the expertise of two different specialists. The CPD took place during the covid pandemic so all the sessions were held online which also reduces time and costs for travelling.

The LHEM will use the OPYF interactive map in future training which she delivers.

Summary

This partnership project with Woodhorn Museum and NUSTEM has been a successful way for Heritage Schools to engage with another group of schools, which it might not have worked with otherwise. It has been an effective way to demonstrate the link between heritage and STEM subjects, and the OPYF resources will remain freely available on the website so that other schools can use them too.

When the schools which participated in the project upload their work to the interactive map, they will receive their Heritage Schools Award, thus increasing the number of schools which will use heritage more in their curriculum.

For Eastlea Primary School, OPYF has sparked the staff's and the pupils' interest in the local history of Newcastle, North Tyneside and Northumberland. The teachers are using the Heritage Schools CPD training to localise the school's curriculum, and OPYF has inspired the Year 4 teacher to make the Tyne Bridges project into a whole-term, cross-curricular project. The school will continue to use the STEM Person of the Week programme each year to encourage pupils to think about the qualities which scientists and engineers need, and how they can develop them themselves.