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Making the most of a census

Sue Temple and Debbie Graham

Introduction

This article looks at how children can utilise and manipulate mathematical data to make sense of a historic past. The focus is on helping children see the numbers as a resource for understanding the experiences of those that lived in this place.

Aim:

Understand historical concepts such as continuity and change, cause and consequence, similarity, difference and significance, and use them to make connections, draw contrasts, analyse trends, frame historically-valid questions. The children create their own structured accounts, including written narratives and analyses.

This historical aim from the National Curriculum can feel quite daunting as this requires a lot of work. This example shows how one class of Year 5/6 children approached this through a focus on the local workhouse.

Programme of study:

A study of an aspect of history or a site dating from a period beyond 1066 that is significant in the locality.

In Cumberland (now Cumbria), as the cotton industry and farming became more mechanised, many workers lost their jobs. We wanted the children to understand how this would have affected the local area.



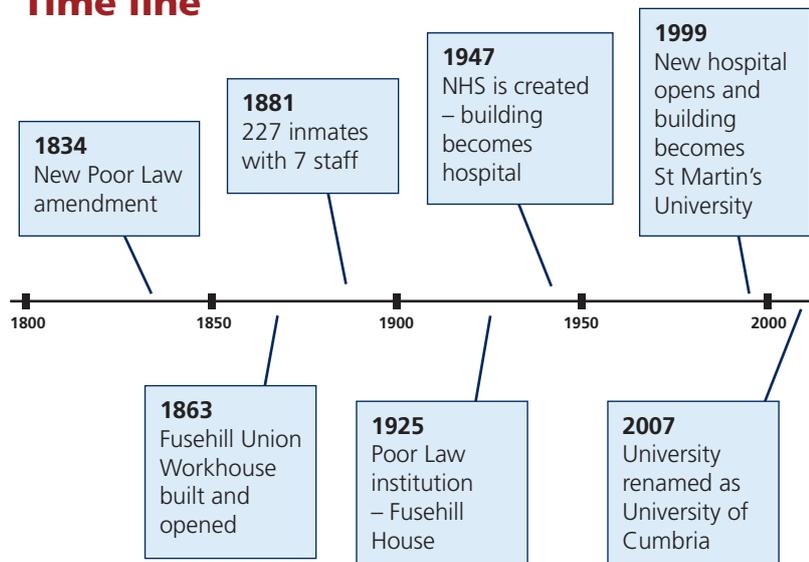
The enquiry:

The children at Fellview Primary School in Cumbria were looking at the industrial revolution and how the poor were treated during the Victorian era. As part of this project we worked with the class examining the Fusehill Workhouse and some of the primary sources associated with this site. We were able to source some photographs, the original plans for the building, and the census. The census gives details of the 227 inmates in 1881, and so this is a lot of information to take in. You can see the ages, marital status, previous occupation and place of birth. All this information helps to build up an understanding of society at this point in Carlisle, but the large amount of information can mean it is not that easy to appreciate, for example, how many of the inmates had worked in the cotton industry. We decided to use the information to create tables and graphs so that the children would then be able to see the context much more clearly.

Background to the workhouse

We started the input with an overall introduction to the workhouse, why and how it came to be built. We compared the oldest photograph we could find (dated c. 1902) with a modern photograph of the site now – it is now the headquarters of the University of Cumbria. The children picked out the similarities and differences. The pupils then examined three maps of the site, dated 1865, 1901 and 1925. They found schools, churches, leisure and industry related sites on each map to enable them to appreciate how the area had become more built up as the city of Carlisle grew around it. We could see lots of evidence of the

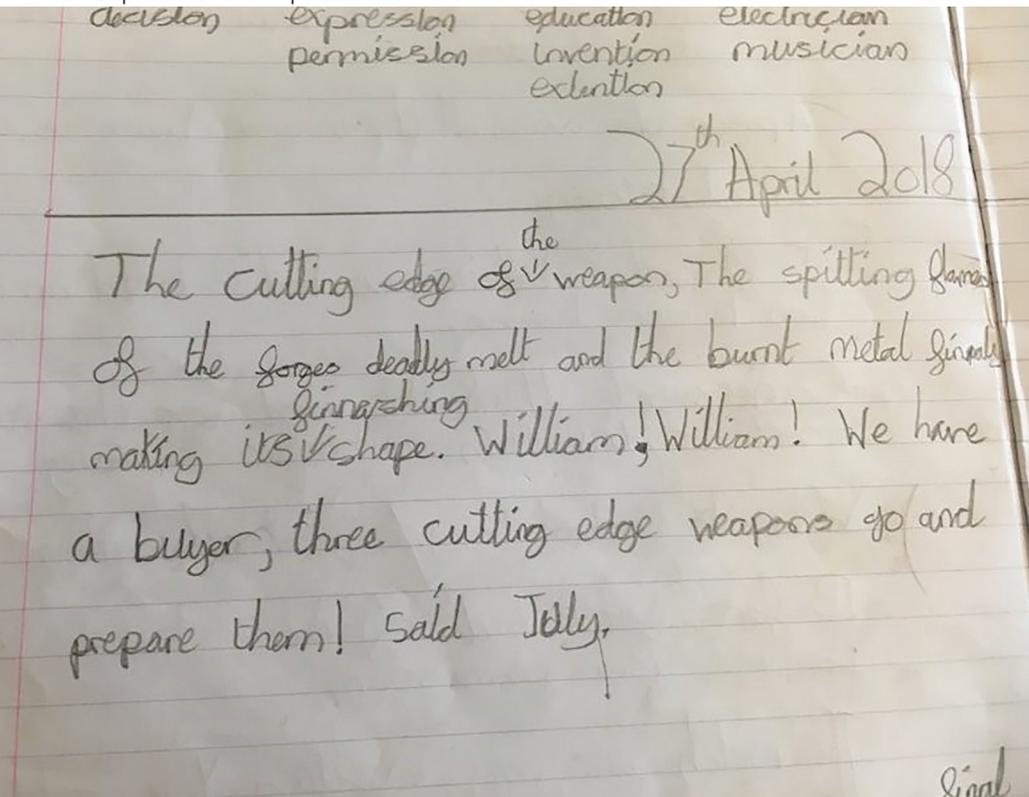
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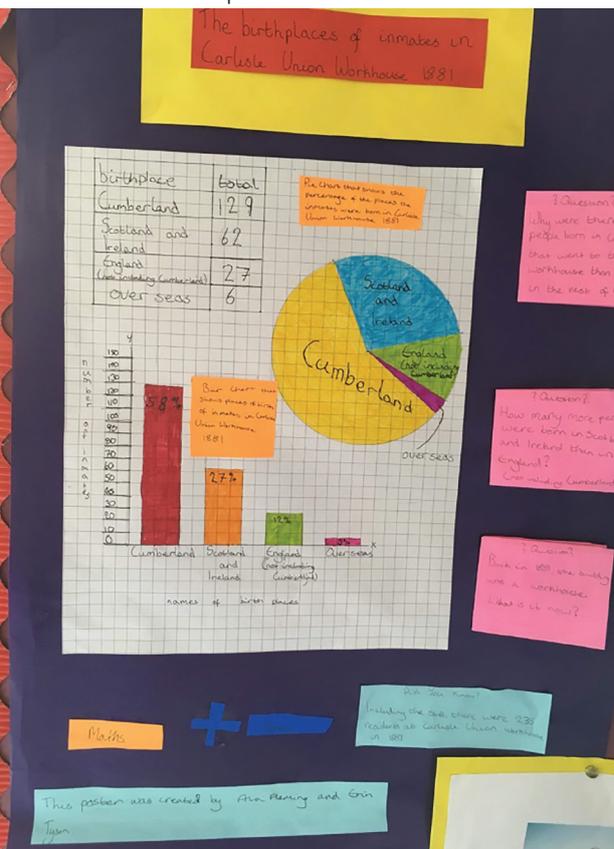
railways growing, which was one of the main catalysts for this growth.

We looked at a typical timetable for a day in the workhouse and discussed the jobs – domestic labour for the women; cleaning, cooking and laundry and breaking rocks and picking oakham for the less able-bodied men. Oakham picking involves unpicking the strands making up thick ropes taken from sea-going vessels, the narrower strands were packed between boards on the ships to try to make them waterproof. The rope would be stiff with seawater, so this was not a pleasant task at all! The principle was to ensure that no work was undertaken which took a job away from

Example of a child's presentation of the data



Second child's presentation of the data



a person not in the workhouse, so the jobs tended to be repetitive and hard work.

The painting 'Applicants for Admission to a Casual Ward' by Luke Fildes, painted in 1874, was then examined. Fildes based the people in this painting on real people whom he used as models: a widowed mother, a young family with an ill mother, a soldier, an orphan and a 'toff' who had perhaps gambled away his fare home. Attitudes towards the poor were beginning to change and Fildes was trying to show that the stories behind people entering into the workhouse were not necessarily those of lazy good-for-nothing beggars. Often these people had fallen on hard times through no fault of their own.

Mathematics – problem solving

Using the census information to create graphs requires real problem-solving skills. This approach is not without its difficulties. These children were a mixed class of Year 5 and 6 so they had devised pie charts and bar graphs previously. However, the numbers did not

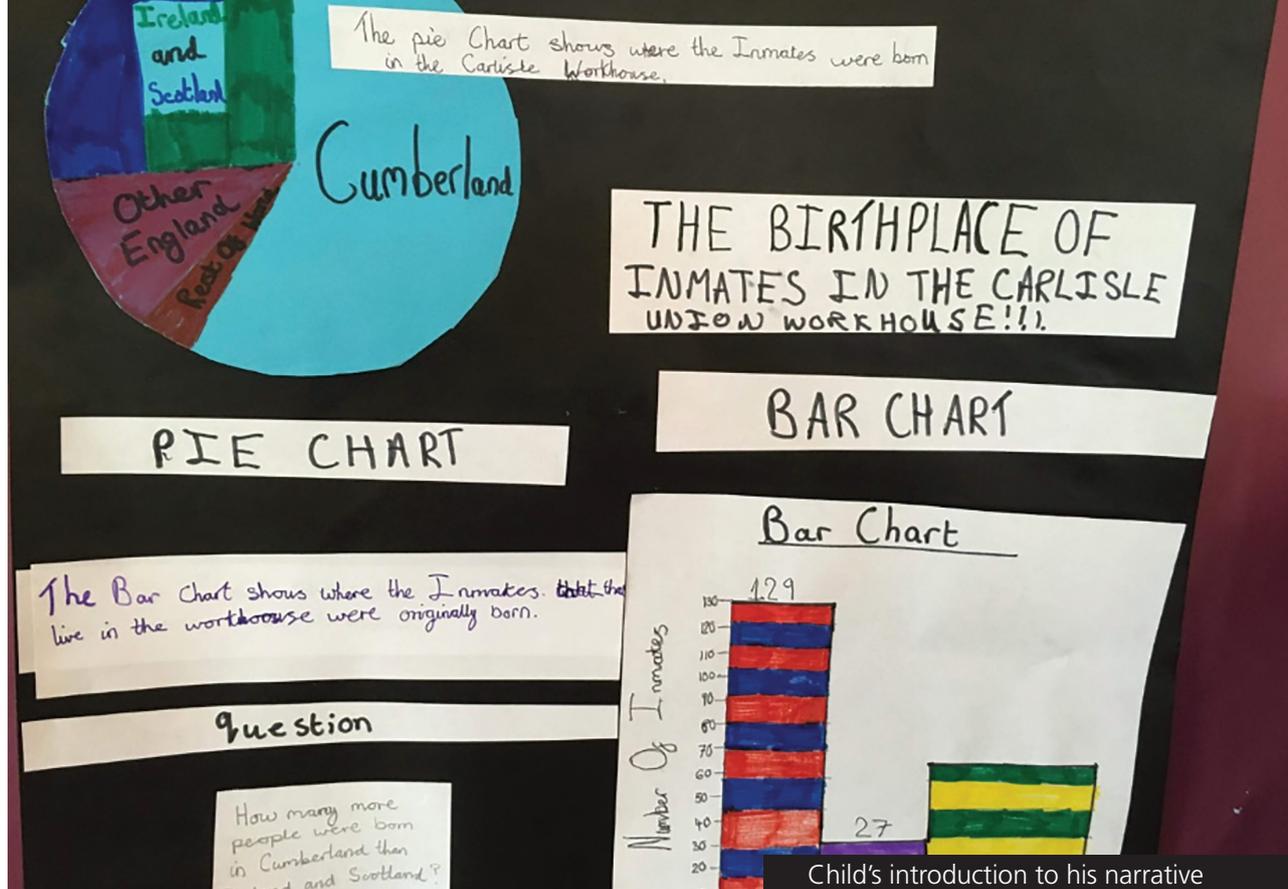
fit into easy groupings, and therefore they had to work much harder at thinking about which scales to use. They also had to think carefully about how these would be presented; the pupils had to consider the labels used and choice of colours. Initially we asked the children to work in pairs, concentrating on producing a tally chart of one aspect of the census. We focused on:

Ages of the inmates – these ranged from three months to 89 years. Despite there being a workhouse for children in the city, 13 children are living there. This raised all kinds of interesting theories as to why – lots of good interpretation going on!

Occupations – these were mainly cotton and farming related but there were several the children had to research – Hawker, Carder, Millwright and Cutler to name a few!

Places of birth – as people did not move around as much, these were mainly from the local area. However, there were several Irish places (linked to the cotton industry probably), and some that again the children had to research – Van Diemens Land (Tasmania). One of the staff nurses had been born in Barbados, West Indies. This led to interesting discussions about how she might have come to be in Carlisle – this is probably related to the Whitehaven port which was the third most important port in England during the slave trade period.

Once they had a tally chart of the information the children had to decide on the categories they would use. To create the bar graphs the children grouped data into age groups: 0–15, 16–30, 31–45, 46–60, 61–75 and 75+. This provided an opportunity to discuss how and why data needs to be grouped in this way in order to record it on a graph and how we need to find the size of each interval.



The children, who focused on where the inmates came from, took the numbers and then converted them into a fraction and next a percentage which they could use to construct a bar graph.

Once the pupils had drawn bar graphs, they used the data to construct pie charts. This involved a range of mathematical skills. As this was 'real' data the children had to cope with anomalies, for example one inmate had been born 'at sea'. First, they added up all the data to get a total for that aspect of the census. Next the children had to work out the total frequency for each category. Then they divided this second number by the total overall to give them a number which they multiplied by 360 to give them the size of the angle they needed for each segment of the pie chart. Once this was done, the children used a compass to draw the circle and a protractor to measure each section of their pie chart.

This activity gave children real purpose for measuring and drawing angles and combined a whole range of mathematical knowledge to solve a real-life problem. The children rose to the challenge and were excited about the mathematical skills they had used.

Each child then presented their bar chart and/or pie chart (differentiated) along with their tally.

Links to literacy

While exploring the resources, the children became particularly interested in the painting 'Applicants for Admission to a Casual Ward' by Luke Fildes; we decided to explore the image in our English lessons. The children worked in groups to freeze-frame the picture – each pupil in the group took on the role of a character in the painting and thought and acted as that character. Next, they thought about questions they would like to pose to these personalities, for example 'Why are you here?' 'Have you got a family?' 'You look wealthy, what happened?' After sharing their questions, the children took on the role of the characters in a hot seat situation. Once they had explored the characters through discussion and role play, the children then felt confident to write a diary entry as a character in the painting.

To further support the topic, our class reader was *A Street Child* by Berlie Doherty, set in Victorian Britain. The plot revolves around

the few facts known about Jim Jarvis, the London urchin who is said to have inspired Thomas Barnardo to establish his homes for destitute boys. As the children had become immersed in the characters from 'Applicants for Admission to a Casual Ward', it was decided to write a section of the story in *A Street Child* to include a character of their choice. The research the children had carried out in the census lessons meant that they were able to bring the characters to life and use historical vocabulary in the creative writing. This allowed them to write with a greater depth.

We found that this approach has not only helped the children to develop their historical skills, but the maths problem solving activity made the children think much more about the reasons behind the statistics and therefore gave them a greater appreciation for the society at the time.

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