Remembering Titanic

Lessons from a cross-curricular professional development project with science and history teachers

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Learning across the curriculum

Many of the issues facing the world today are complex in nature and require knowledge and skills that cut across school subjects (Beane, 1995). The recent coronavirus pandemic is a good example: questions about the biology and epidemiology of viral infections are intertwined with social, ethical, political and economic considerations in evaluating information and making informed decisions (Ke *et al*, 2021). The ability to analyse real-world issues and phenomena from different disciplinary perspectives, and to appreciate their interconnectedness, has become an essential element of democratic citizenship.

Remembering Titanic was a collaborative project between researchers at the University of Southampton, the SeaCity Museum and seven teachers from state-funded secondary schools in Southampton and Fareham. One of the key project priorities was to facilitate cross-curricular learning between different school subjects, namely science and history. As part of the project, we designed and delivered three half-day CPD sessions, where the teachers learned about the *Titanic* disaster and developed an interdisciplinary curriculum unit. Here, I describe the key ideas that underpinned the CPD and the lessons learned from the project.

Intersections and connections between science and history

Science and history, both as academic disciplines and as school subjects, are often considered to be very different subjects, and science teachers tend to have little knowledge of what their pupils are learning in history. However, the two subjects have a number of interesting similarities and connections. A quick comparison of the Key Stage 3 (ages 11-14) science and history curricula indicates that both subjects aim to help students to understand the world (natural and human), acquire argumentation and explanation skills, develop evidence-based critical thinking, stimulate curiosity, and relate subject knowledge to human life.

Figure 1 opposite shows teachers' initial ideas for integration based on a comparison of science and history curricula.

Despite the different objects of study (the natural world and the social world), there are some clear similarities in the aims of the two school subjects. The similarities are even more obvious in the context of 'historical' natural sciences, such as geology, palaeontology and astronomy. In these fields, it is rarely possible to test hypotheses by carrying out controlled experiments due to the temporal and spatial scales of

National Curriculum in England: Science Purpose of Study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

National Curriculum in England: History Purpose of Study

A high-quality history education will help pupils gain a coherent knowledge and understanding of Britain's past and that of the wider world. It should inspire pupils' curiosity to know more about the past. Teaching should equip pupils to ask perceptive questions, think critically, weigh evidence, sift arguments, and develop perspective and judgement. History helps pupils to understand the complexity of people's lives, the process of change, the diversity of societies and relationships between different groups, as well as their own identity and the challenges of their time.

Table 1. Outline of the unit of work.

	Lesson title	Lesson aims
1	Why was *Titanic* significant to Southampton?	Make inferences from individual experiences about why *Titanic* was significant to Southampton and reach a well-explained judgement.
2	Why was the sinking of *Titanic* a disaster?	Explore and understand the popular misconception that *Titanic* was unsinkable. Justify why the sinking of *Titanic* could be deemed a disaster.
3	Who was to blame for the sinking of *Titanic*?	Explore and evaluate varying aspects of culpability related to the *Titanic* disaster.
4	How far did *Titanic* have an impact on the world?	Make inferences from historical sources about the local and national impact of the *Titanic* disaster. Analyse the impact on sailing and shipping by identifying changes over time.
5-6	Watertight bulkheads	Investigate the effectiveness of bulkheads and understand how the bulkheads on *Titanic* failed (using a practical activity with a plastic bottle ship).
7-8	Keeping afloat	Investigate different 'anti-sinking' ideas and evaluate their effectiveness.

the phenomena under investigation. Instead, much like a historian, the scientist asks questions about the past, and collects and analyses evidence to construct an explanation of what happened in the past. In addition, it has become increasingly popular for historians to use the methods of the natural sciences to conduct quantitative analyses of historical data (often called 'digital history'). These examples suggest that there may be scope for linking science and history as ways of analysing the world around us and for developing students' cross-curricular enquiry skills.

Titanic as a case study

Recognising the potential benefits of cross-curricular learning, the project developed a cross-curricular unit for teaching about the *Titanic* disaster to pupils in Southampton and the surrounding area. The curriculum unit consists of six lessons covering different aspects of the *Titanic* disaster (Table 1). The first part contextualises the disaster in relation to varying themes in the Key Stage 3 History learning objectives, such as historical significance, disaster and tragedy, blame and accountability, and the impact of the disaster. In the second part, two double science lessons address the 'working scientifically' learning objectives, which relate to a range of aspects of scientific enquiry. Pupils will be able to see a historically significant event through multiple lenses, and engage in a scientific and historical investigation using various empirical records and data and generating new evidence through hands-on practical activities.

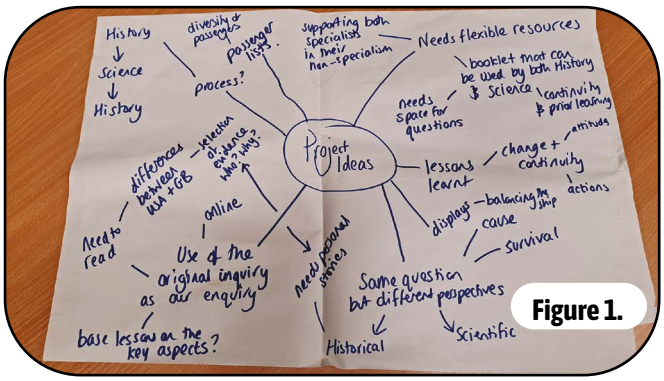

Figure 1.

Values of cross-subject collaboration

Over the course of the eight-month project, the project teachers found it useful to learn about what pupils are taught in other school subjects, and how science and history work together to support scientific and analytical thinking about a maritime accident while considering the wider socio-political context of their own town, from which 724 *Titanic* crew members came. They also felt that the approaches used in the project would be useful in planning cross-curricular learning between science and other humanities and social studies subjects, and could be extended to historical and contemporary contexts other than *Titanic* to support meaningful learning in secondary schools.

Acknowledgements

Remembering Titanic was supported by the University of Southampton through the Higher Education Innovation Fund.

References

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