KS2 Lesson Plan
Tale of a Tunnel

NB This lesson would make an ideal complement to a boat ride with your group along the Regent's Canal to the Islington Tunnel, which can be arranged through the Museum.

Introduction

This lesson tells the story of the construction of the Islington Tunnel on the Regent's Canal, from 1812 onwards. It describes some of the difficulties encountered, both physical and financial. It gives children an opportunity to calculate what some of the building costs were, and why the construction ran into financial difficulties.

Learning objectives.

- To learn the history of Islington Tunnel.
- To learn more about the local history of the area.
- To learn how the tunnel was built.
- To practice their mathematical problem solving skills

National Curriculum & QCA Schemes of Work

KS2 History : Local history study 7) A study investigating how an aspect in the local area has changed over a long period of time, or how the locality was affected by a significant national or local event or development or by the work of a significant individual.

KS2 Mathematics Ma2 Number & Algebra Solving numerical problems 4) Pupils should be taught to: (a) choose, use and combine any of the four number operations to solve word problems involving numbers in 'real life'…(b) choose and use an appropriate way to calculate and explain their methods and reasoning Breadth of study 1) During the key stage, pupils should be taught the Knowledge, skills and understanding through: (b) approximating and estimating more systematically in their work in mathematics …(h)using mathematics in their work in other subjects.

Differentiation

- All children will learn that the Islington Tunnel was built by hand, with difficulty. Most children will understand what some of the major difficulties were.
- Some children will understand why it took so long to complete the Tunnel

Resources

- 5 or 6 copies of the Islington Tunnel board game (preferably reproduced at A3 size, and laminated)
- 5 or 6 dice
- Enough counters for every child to have one.
- 5 or 6 copies of the Islington Tunnel Number Quiz
- Calculators
- Scrap paper
- Pencils

Key vocabulary

- estimate
- total
- yard

Lesson Plan

1) Split the children into 5 or 6 equally sized groups. It would be useful if the groups were of mixed mathematical ability, so that the more able can help the less able with the problem solving activities. Ensure that they are sitting at different tables, and have calculator, paper & pencils to hand.

2) Give out copies of the Quiz sheet and explain that these are all questions about the Islington Tunnel. All the figures are real and historically documented. Explain that you would like the children to work these out as a team, all helping each other and making suggestions. It might be an idea to model how to work out the first question, getting the children to explain what processes are needed to work out the correct answer. Say that they can use paper and pencil and calculators to help them with the large numbers if necessary. The quiz could be used in a competitive way, with praise for the fastest correct answers, if appropriate. If not, working out the answers could be done as a whole class activity, using a flip chart or board.

3) Keep the children in small groups to play the board game. Once again, all the events described on the board are real. Ensure that each child has a counter, and each group a dice. The game is similar to snakes & ladders, in that players progress from 1 100, by throwing a dice, and moving that number of squares. They either move ahead or fall back by landing on a square with a comment on it. The first to reach 100 is the winner.

Start Building the tunnel begins in 1812	2	3	4	5 Local people afraid of a collapse. Go back 2	6	7	8 Maida Hill tunnel extended. More money needed. Go Back 3	9	10
20	19 Maida Hill tunnel completed! Go forward 5	18	17	16	15 Islington Tunnel started 1814 Go forward 3	14	13	12 Good progress made in 1815 Go forward 4	11
21	22 Water starts to flood in Go back 3	23	24	25	26	27 Company runs out of money Go back 8	28	29 Chancellor won't lend money Go back 5	30
40	39	38	37 Tunnel works shut down Go back to start	36	35	34 In 1817, company gets £200,000 Go forward 5	33	32 Tunnel approved by Thos Telford Go forward 2	31
41	42 4 million bricks used in tunnel Go forward 3	43	44 300 poor local men employed Go forward 3	45	46 Local men sacked Go back 4	47	48 Chapel Street collapses Go back 4	49	50
60	59 Boats travel too slowly Go back 2	58	57	56 Tunnel too narrow. Boats stuck Go back 4	55	54	53	52 Tunnel finished 1819 Go forward 5	51
61	62	63 Ropes installed to pull boats Go forward 3	64	65	66 Ropes much too slow Go back 2	67	68	69 Engine put in to pull boats Go forward 4	70
80	79 Pulling chain breaks Go back 3	78	77	76	75 Man drowned whilst legging Go back 2	74	73 Signal system installed Go forward 2	72	71
81	82	83	84	85	86	87	88 3 diesel tugs arrive in 1921 Go forward 3	89	90
Finish!	99	98	97	96 New tugs arrive 1952 Go to end!	95	94	93	92 Tug crew drown Go back 4	91

The Islington Tunnel Number Quiz

1. The engineers estimated that the Tunnel would be 880 yards long. The engineers thought that it would cost £40 per yard to build. What was their total estimate of the cost before they started?

2. The builders began work at the start of September 1814. By the start of 1815, they had built 140 yards of the main tunnel. How many yards had they built each month?

3. If they had been able to continue at this rate, how many months would it have taken them to finish the whole tunnel?

4. Each yard of the tunnel needed 4,200 bricks. Bricks cost £2.65 per thousand. How much would the bricks for one yard of tunnel cost altogether?

5. When they finished, the engineers found that the Tunnel was 960 yards long. Was their first estimate too big, or too small? What was the difference between the first estimate and the real length?

6. When they finished, they found that the Tunnel had cost £49,028 to build. Was their first estimate of the cost too big or too small. What was the difference between the first estimate and the real cost?

(1 yard = 91.44 centimeters)