

Cycling by numbers



Context

Most people in the UK have access to a bicycle, but only 2% of journeys are made by bike.

Learning Objectives

- To raise students awareness of sustainable ways of travelling and the effect of their travel choices.
- To encourage investigation considering different modes of travel
- To enable pupils to understand the numerical data related to becoming and staying healthy
- Use mathematics to prove results. Pupils develop their problem-solving, decision-making and reasoning skills through working on a range of tasks.

Statistics and probability

- understand and use statistical problem solving process/handling data cycle
- specifying the problem and planning (representing)
- collecting data (representing and analysing)
- processing and presenting the data (analysing)
- interpreting and discussing the results (interpreting and evaluating).

Suggested Activities

Research cycling behaviour and trends.

To provide opportunities for pupils to solve open-ended problems and research cycling behaviour and trends. Pupils are given the opportunity to express their ideas using strategies they are familiar and secure with. Through exploring real data pupils are able to investigate real-life issues and problems.

Collect data, devise surveys and questionnaires. Display results in an interesting way.

Possible starting points:

- Find out how many people in your class/year/school own a bicycle.
- Devise a survey to find out how often they use their cycle and for what type of journeys.
- Investigate if there are any gender differences in your findings on cycling
- Find out how many pupils own a bike and cycle regularly.
- Find out why some pupils do not cycle more regularly.
- Find out what can be done to encourage more pupils to cycle.
- Do a survey to find suggestions to make cycling more attractive to your age group
- You may like to include your findings in a leaflet or poster to encourage young people to cycle more.

Cycling by age and gender

Data from DFT National Travel Survey 2008 published February 2009

www.dft.gov.uk/transtat.

All respondents aged over 5 were asked whether they owned or had access to a bicycle.

- Overall, 42 per cent of individuals aged 5 and over said they owned a bicycle and a further one per cent said they had use of a bicycle in 2008.

- Children were much more likely to own a bicycle than adults. In 2008, 87 per cent of those aged 5 to 10 and 76 per cent of those aged 11 to 16 owned a bicycle.

After the age of 16 bicycle ownership fell sharply; less than half of people aged 17 and over had access to a bicycle. However, ownership increases in the 30-39 and 40-49 age groups, with almost half having access to a bicycle.

- In terms of bicycle usage, men make more trips than women in every age group. On average in 2008 men aged 5 and over made 3 times as many bicycle trips as women.

- Males aged 11-16 made the most trips on average (47 per person per year). This fell to 28 trips per person per year for 17-20 year olds, and remained around this level up to age 40-49.

How do we develop PLTS?

The mathematics programmes of study provide a rich and exciting range of opportunities to develop PLTS as an integral part of subject teaching and learning. Explicit and implicit opportunities are present in the key concepts, key processes, range and content, and curriculum opportunities.

Independent enquirers

Learners can develop as independent enquirers when they are provided with opportunities in mathematics to:

- identify for themselves mathematical aspects of a situation, problem or issue, research answers and find solutions
- pose their own questions, plan what to do, appreciate the number of different techniques that could be used to analyse the situation, and select the most appropriate methods, tools and models to use
- explore and decide how to represent, analyse, interpret, evaluate and process information to work logically towards results, and reach their own supported conclusions
- develop their independence in selecting the mathematics to use when working on problems in familiar and unfamiliar contexts.

Creative thinkers

Learners can develop as creative thinkers when they are provided with opportunities in mathematics to:

- create their own solutions to unfamiliar problems by combining understanding, experiences, imagination and reasoning to construct new knowledge
- adopt a questioning approach and develop their own lines of inquiry and convincing arguments to support decisions and conclusions
- draw creatively on their knowledge and understanding to model situations
- challenge assumptions and generate new ideas and ways to solve problems.

Team workers

Learners can develop as team workers when they are provided with opportunities in mathematics to:

- experience the benefits of working collaboratively to solve mathematical problems in a range of contexts, both in and out of the classroom
- recognise their own strengths and those of others to allocate roles and tasks and take responsibility for their own contribution to achieve effective outcomes, for example when planning an investigation or presentation
- extend their work with others using modern communications systems to draw on a wide range of information sources, for example contributing to a class blog
- provide and respond to constructive feedback, taking account of different views and developing the confidence to resolve issues and achieve their identified goals.

Self-managers

Learners can develop as self-managers when they are provided with opportunities, in mathematics, to:

- take responsibility for organising their own time and resources both in and out of the classroom to complete extended tasks, for example planning how to tackle a problem
- demonstrate perseverance and initiative by trying out their own ideas with confidence and creativity when addressing challenging tasks, for example applying skills or concepts to new or unfamiliar contexts
- respond to an increasing range and complexity of key processes by changing priorities and managing risks to complete tasks.

Effective participators

Learners can develop as effective participators when they are provided with opportunities in mathematics to:

- engage personally with issues and problems that demonstrate the relevance and importance of mathematics to their lives
- experiment with data, mathematical ideas and models to identify and examine issues or problems and develop their critical understanding
- take an active part in discussions using interpretation and evaluation to develop convincing arguments
- negotiate and balance diverse views, including their own, making independent decisions and reaching workable solutions.

Reflective learners

Learners can develop as reflective learners when they are provided with opportunities in mathematics to:

- recognise how adapting and refining their ideas as work progresses can improve outcomes
- monitor and improve their own performance, inviting and reflecting on feedback from others and learning from their mistakes
- explore and select different ways of communicating their understanding of mathematics to a range of audiences
- take responsibility for their own learning and actively engage with opportunities to identify successes and areas for development.