CROWD CONTROL

Movement around your school/college – what are the problems and hazards? Produce a scale drawing of the problem area, e.g. a corridor. What other data/information can you add? How could the problems be solved? Are there any negative things to consider with your solution?

Objectives: To think about how maths and human behaviour and geography can be used to help solve an urban problem.

Outcomes: Produce a solution to a crowd control problem in the school/college building.

Suggested use: Class activity or project

Age group: 11–18

Time length: 60 minutes plus

Skills developed: Problem solving, critical thinking, creativity, numeracy, communication, teamwork

Resources: Tape measures

Subject links: Maths: number, geometry, statistics | Geography: urban issues and challenges

Gatsby Benchmarks: 4 – Linking curriculum learning to careers

🔍 STEM Focus

Link to *STEM Careers* (2nd Edition) ➜ **Chapter 1**
Careers context: applying subject knowledge in the workplace, interdisciplinary aspects of many STEM careers

Curriculum follow up ➜ Maths: geometry exam question | Geography: exam question about urban planning

STEM CAREERS

Adapting to other STEM subjects ➡ Technology: using CAD to further demonstrate the problem and solution

Websites
- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/192606/understanding_crowd_behaviour-supporting-evidence.pdf
- https://www.hse.gov.uk/pubns/indg142.htm
- https://designengineerconstruct.com/about-dec/

🏃 HERO IN STEM

Name: Professor Hannah Fry

Biography (from *STEM Careers* (2nd Edition), see page 7): In her own words from her website, Hannah Fry is a 'Mathematician, science presenter and all-round badass.' (https://hannahfry.co.uk/)

Dr Fry is a professor in the Mathematics of Cities at University College London. Collaborating with geographers, physicists, computer scientists and architects, she studies patterns of human behaviour within towns and cities. This research is useful to a variety of organisations including urban planners, supermarkets and the police, which deal with issues such as transport and crowd behaviour. The interdisciplinary teams are working together, using data science and modelling to help create safer and better towns and cities.

Hannah is also a successful science communicator, writing best-selling books about mathematics and technology, and making radio and TV programmes, such as *The Curious Cases of Rutherford and Fry* on BBC Radio 4 and *The Secret Genius of Modern Life* on BBC Two.

For further guidance and more resources read *STEM Careers* by Liz Painter.