The Science of Spying
Resources for students and teachers

Purpose
To introduce teachers to 'The Science of Spying' exhibition and its accompanying educational resources, which can be downloaded from:

www.scienceofspying.com

Laurence Campbell, Dylan Teague

Who will find these resources useful?

The subject of spying is a powerful theme that can excite students about a range of curriculum subjects within an engaging 'real world' context. These resources should be useful for:

- Teachers of students aged between 7-11 looking for cross-curricular stimulus in the areas of science, design, technology, literacy or drama.

- Teachers of science, design technology or computing, wishing to find new ways to engage students.

- Teachers of citizenship (or politics and sociology), at secondary level, looking for an engaging context through which to introduce complex ideas.

Each activity has been designed for simple application in the classroom, with step-by-step instructions, clear links to the curriculum and, where appropriate, suggestions for further extension activities and discussion. Many activities provide extra sheets for teachers to give or show to students. A summary of the layout of each resource can be found at the end of this document.

Should you visit the exhibition?

The majority of resources can be used without seeing the exhibition. However, a visit to 'The Science of Spying' will act as an excellent and engaging springboard for classroom learning, bolstering and enriching learning opportunities for students.

The exhibition itself is an immersive experience where visitors become part of story in which they are recruited and trained as spies. They have to make quick decisions and carry out a secret mission. A brief summary of the interactive spaces in the exhibition can be found in the accompanying 'Exhibition Summary' sheet.

The Science of... SPYING

How is the theme of spying relevant to learning?

Exploring the topic of spying can help develop many skills. Spies use their brains but are not always seen as 'academic', so students with diverse abilities can imagine becoming a spy.

Skills involved in spying include:

- Observing, listening and recording (e.g. using your senses or technology)

- Investigating and analysing (e.g. asking questions or making sense of evidence)

- Inventing, making & testing (e.g. creating new gadgets, disguises, information systems or techniques)

- Understanding and communicating with people (e.g. manipulating, concealing, listening or sending messages)

- Critical thinking (e.g. understanding all the issues and making informed decisions)

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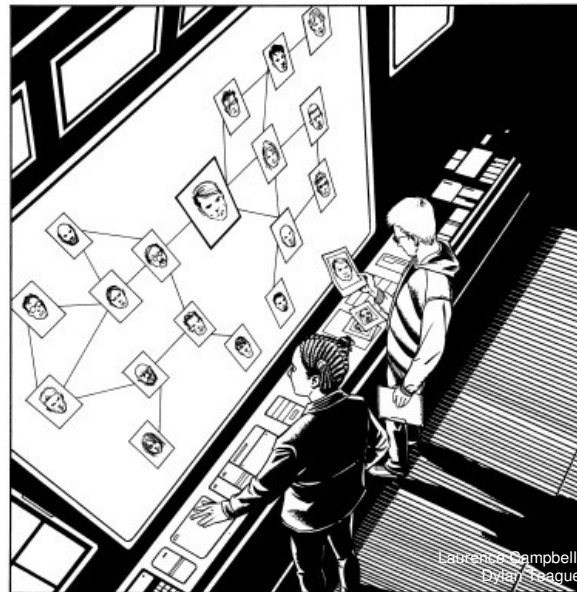
The skills needed for spying require a balance of working both **creatively** and **methodically.**

Identifying with spies can motivate students to be more:

- *Intuitive*
- *Inventive*
- *Curious*
- *Communicative*
- *Flexible*
- *Patient*
- *Systematic*
- *Disciplined*

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The science of... SPYING

How is the theme of spying relevant to learning in science?

The activity of spying has many parallels with the scientific method. Both involve observation, data collection, data analysis, building hypotheses, drawing conclusions and reporting findings. In addition:

- Spying technologies and techniques can be closely related to the study of science and mathematics - including imaging and communication technologies, materials, chemistry and nanotechnology as well as computer visualisation, data mining and encryption. In addition, the use of DNA and biometric information provides clear links to the study of biology.

- The human side of spying concerns perception, motivation and personal interactions – all key aspects of psychology.

- The application of new technologies reveals wider issues, such as the balance between security and personal privacy. It is increasingly important for learning in science to be applied to society. Spying is an ideal subject to bridge this divide.

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If you are teaching Design, Technology or Physics, you can use the subject of spying to introduce some of the following topics, especially for more advanced students:

- Miniaturisation in product design.
- Characteristics and applications of a range of modern materials, including 'smart' materials.

- Technologies used for surveillance and counter-surveillance, such as Intelligent CCTV.

- The electromagnetic spectrum - how different wavelengths have different uses in night vision, body imaging, bugs and CCTV.

- Radio Frequency Identification (RFID) and biometrics (including face and iris geometry and pattern recognition algorithms).

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Choosing the right activities for your students

Summary of learning resources

Section	Skills	Subject focus
Introduction	Planning information for teachers	All
What is spying?	Warm up activities	All
Visiting the exhibition	Spy training activities before and on the day	All
Watching	Observing and gathering information	Mainly Science, ICT
Investigating	Decoding and analysing information	Mainly Science, ICT
Spy tools	Inventing, designing & making	Mainly Design & Technology
Communicating	Empathy and language	Mainly Language, Drama and Personal, Social & Health Education
Spying in Society	Debating & critical thinking	Mainly Citizenship

For more detail on how the resources meet the needs of the English national curriculum, please see the 'Curriculum Links' matrix.

Layout of each resource

Title of activity
(Section and skills focus in brackets)

Purpose of activity

Age range (in years) and subject coverage indicators

Activity details including:

- Background
- Activity steps
- Suggested extensions (if applicable)
- Suggested discussion topics (if applicable)