



1.1 Planet Science Whodunit ... the story

The scenes, incidents and characters (other than the celebrities) portrayed in this story are entirely fictitious and are not to be taken as representing fact or any person.

On 11th May, BUSTED performed a VIP-only gig in Birmingham's Centenary Square. During interviews after their performance, their favourite guitar disappeared from a locked room in the backstage area. A note reading 'I'VE GOT IT!' was found where the guitar had been along with three other clues. When investigators studied the note, they immediately realised the crime must have been committed by someone on the VIP guest list – the note was written on the back of an invitation that only the VIPs had received! That reduced the number of suspects down to five: S Club, Ms Dynamite, Blazin' Squad, footballer James Beattie, and world class BMX rider Zach Shaw. A backstage access swipe card issued to BUSTED was also found inside the room, but they had been doing interviews and could not possibly have 'staged' this crime themselves.

All the evidence required to solve the mystery has been collected and is contained in the Planet Science Whodunit Evidence Kit. You will have to do some serious forensic science to crack the case, so make sure you work cooperatively as a team to carefully and systematically eliminate the suspects using the evidence. Along the way you will discover fascinating facts about everyday materials and use some of the same scientific methods used to solve real crimes!



1.2 Objectives & Curriculum links

Solving the Planet Science Whodunit is as educational as it is fun. The experience is intended to be as enjoyable for the teacher as it is for pupils, and to provide opportunities to have fun while working and learning *together*.

The implementation guide suggested in this book is designed to encourage positive attitudes to cooperative learning, minimise planning and preparation time for teachers, and build suspense as your class gets closer to identifying the celebrity culprit. No special equipment or resources are required to complete the activity, ensuring that all classes have an equal chance of success.

The Planet Science Whodunit is the ideal basis for a unit of work. The excitement generated by investigating high profile celebrities can be exploited to make exciting links to virtually every subject in the curriculum, particularly Citizenship and English. You could ask students to collect posters and press clippings about the celebrities to decorate your classroom before you begin the activity ('mug shots' to photocopy and display are provided in this book). Suggestions and some lesson ideas for extension activities are provided in section 4 of this book.

You will find strong links to the National Curriculum for science (and other subjects where appropriate) in this book. These links are presented simply as a guide to assist in your planning, not as an exhaustive list.

Further information about links to the curriculum can be found at:

www.planet-science.com/whodunit (Teacher's section)

www.nc.uk.net (National Curriculum Online)

www.qca.org.uk (Qualifications and Curriculum Authority)

Scientific Enquiry Objectives

The activities presented in this book require pupils to work scientifically. They will use their science skills and draw conclusions based on their results. With your active participation, the activities and the discussion starters presented, this project aims to raise enthusiasm for science and engender positive scientific attitudes, such as withholding judgement until all evidence has been considered.

Pupils will:	NC Sc1 Reference	
	KS2	KS3
Test their ideas using observations and measurements	1) b	1) b
Use their knowledge to turn ideas into investigations	2) b, c	2) a, e
Control variables	2) d	2) d
Use equipment and take action to control risks to themselves and others	2) e	2) f
Make systematic observations and measurements (links to KS2 ICT (2 b) Ma3 (4 a, b) and KS3 ICT)	2) f	2) g, h
Record and present results in an appropriate manner (links to ICT)	2) h	2) i, j
Make inferences and draw conclusions (links to KS2 Ma2, Ma3)	2) l, j, k, l	2) k, l, m,
Compare their results with those of others	2 m	2) o, p

Science key words: Asking questions; Drawing conclusions; Inferring; Making deductions; Identifying patterns/anomalies; Recognising limitations of evidence/data/assumptions; Developing evaluation criteria; Judging the value of information and ideas; Scientific communication; Assess risks and take action.

Knowledge Skills and Understanding Objectives

Pupils will:	NC Reference	
	KS2	KS3
CLUE 1: Security swipe card Decode the magnetic strip to establish the time the crime was committed Use a map to make distance measurements Calculate which suspects had time to commit the crime and reach their alibi <i>(KS2 teacher to perform)</i>	Sc4 2) a Gg 1) b, e, 2) c, 3) b, c –	Sc4 1) d Gg 1) c, f, 2) c, 3) a Sc4 2 a
CLUE 2: Shoe scrapings Perform a simple chemical test for the presence of sodium bicarbonate in each suspect's sample	Sc3 2) f	Sc3 2) e
CLUE 3: Ink samples Perform ink chromatography to establish which pen could have written the note	Sc3 3) e *	Sc3 1) b, g, h
CLUE 4: Fibre specimen Make careful observations and comparisons to determine the source of the crime scene fibre	Sc3 1) a	Sc3 1) *

* Variation on NC

1.3 Citizenship objectives

The Planet Science Whodunit provides opportunities for young people to develop team work and cooperation skills, in the classroom and beyond. Pupils should be encouraged to take part in constructive debate, role organisation and operational structures of working in a team. There are also numerous opportunities for thinking, discussing and sharing information about moral, cultural and social issues raised, including justifying personal opinions about such issues.

A brief review of the Citizenship curriculum may help you extend on the suggestions made below.

Begin with a group discussion

Pupils will need to consider the importance of maintaining a clean working environment for quality assurance purposes during the activities. Contamination or loss of the evidence can ruin investigations and lead to incorrect conclusions. If time permits, they could agree on codes of conduct (which they will easily identify with your guidance) in a class discussion prior to conducting the activities.

Group work and cooperative learning

The Citizenship curriculum encourages group work and cooperative learning. The model presented in this book is designed to:

- provide opportunities for pupils to work in structured groups with their peers,
- give each pupil an active and important role in the group work activities,
- ensure each pupil sees and understands the activities and results,
- minimise classroom traffic and noise during the investigations,
- maximise teacher availability to groups during investigations.

Pupils will learn how to negotiate and listen to the views of others, respect the variety of views and make decisions. The experience of group work can be extended to include pupils working with a variety of age groups, especially older pupils supporting younger ones.

Discussions and positive debates

After each activity, each group should present their results to the class. With your guidance, these discussions are likely to be exciting, lively and fruitful. It may be worth reminding pupils beforehand to listen to each other, make sure everyone has an opportunity to speak, respect each other's opinions and be supportive when someone else explains their point.

1.4 A note about your classroom

Only you know the circumstances of all your pupils and your classroom's dynamics. It is strongly recommended that you consider the appropriateness of all the materials in this book before planning lessons or presenting them to your class. While some pupils will relish the gritty side of some of the stories and information, others may be sensitive due to current or recent events in their personal lives. Please be sensitive in your approach.

It is worth discussing that while the Planet Science Whodunit is a tongue-in-cheek fictitious crime story, real crime has serious consequences for its victims and society at large. The fact that our society needs forensic science at all is worth some deeper consideration by your pupils.



1.5 Safety notes

General advice

Most primary schools expect their staff to follow the guidance in 'Be Safe!' (3rd Edition, ASE 2001). Secondary schools should consult the appropriate CLEAPSS publications. Planet Science has taken advice from the CLEAPSS School Science Service to ensure the materials and associated activities in the Evidence Kit comply with those guidelines. All the materials in the evidence kit are non-hazardous. A description of each item can be found on the Evidence Kit Checklist (page i).

Teachers are reminded, however, that they must cooperate with their employer on health and safety matters and should always consult risk assessments before any hazardous activity is undertaken.

Planet Science has attempted to identify hazards, provide suitable warnings and suggest appropriate precautions in line with those widely adopted in primary and secondary science. Nevertheless, teachers must always consider whether an activity is suitable for their pupils and their situation. Sensible behaviour and adequate supervision is vital.

Practical advice on supervision can be found in 'Be Safe!' (3rd Edition ASE 2001, page 7).

Clue 1: Shoe scraping specimens

The shoe scraping specimens contain sand, and possibly sodium bicarbonate (baking soda) and iron oxide, all of which are non-hazardous. They may cause mechanical irritation to the eye, which should be treated with thorough rinsing using clean water. Wash hands with soapy water after use.

Further advice on the safe use of chemicals can be found in 'Be Safe!' (3rd Edition ASE 2001, pp 19-21) or 'The safe use of household and other chemicals' (CLEAPSS L5P).

Clue 2: Swipe card and black magnetic powder

The black magnetic powder is a non-hazardous mixture of iron and iron oxide. It may cause mechanical irritation to the eye, which should be treated with thorough rinsing using clean water. A small amount of the powder is supplied in the kit and should be used sparingly. Wash hands with soapy water after use. Teachers wishing to obtain a Material Safety Data Sheet for black magnetic powder may contact the Planet Science Whodunit helpdesk on free phone 0808 800 4000 (open 1–7 pm, Mon–Sat).

Clue 3: Ink chromatography and surgical spirit

A small quantity of surgical spirit is used as the solvent in this activity. Surgical spirit is a highly flammable liquid commonly applied to the skin for medical purposes. The following safety precautions and procedures are recommended for this activity:

- Ensure there are no naked flames in the room.
- The teacher or supervisor should add the solvent (approx. 15 millilitres) and wait with the group for 3 to 5 minutes for the results to become visible.
- Pupils then remove the paper strip to dry and study. The teacher or supervisor removes the remaining solvent and moves on to the next group.

Clue 4: Fabric samples

Pupils should be reminded to handle tweezers, scissors and magnifying glasses safely and sensibly.