

Firechester

A multi-media fire safety and education package for 11-14 year olds

Notes for Teachers

These notes are intended to aid teachers who wish to use Firechester as a teaching resource. They present the subject areas covered, the attainment levels and suggested tasks for students.

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English

Firechester is designed to help pupils develop their English skills at Key Stage 3 level of the National Curriculum. It sets pupils a range of tasks that require them to read a wide range of information and to write about many fire-related topics in both a factual and a fictional way. Their listening skills are also called on by the package as some instructions are spoken to them by characters in the package.

Pupils may simply be asked to work on one or a number of the tasks provided within the context of the package, but it is also possible to use Firechester as a springboard for a wider range of reading, writing, speaking and listening tasks within the national curriculum.

Reading

The specific reading skills developed by Firechester mostly fit within the Key Stage 3 requirement that pupils are introduced to a wide range of non-fiction texts that portray information, issues and events relating to contemporary life. The material also fulfils the requirement that pupils should be introduced to a wide range of media.

In particular, the key skills encouraged by Firechester are:

- to talk and write about what they have found out using the package - both in factual and fictional forms
- to select information from a number of sources within the package and also based on information drawn from activities encouraged at home and in the classroom;
- to compare and synthesise information drawn from different texts
- to make effective use of information in their own work.

All these activities are specifically encouraged by the tasks set in the package.

Writing

The writing skills encouraged by Firechester fulfil the Key Stage 3 requirement for an extensive range of forms including formal letters, chronological accounts, reports, newspaper articles, poems and stories. The package concentrates on encouraging pupils to write for imaginative purposes and to inform others (there is a strong component of writing about fire safety issues for other children)

Narrative skills are also strongly encouraged by many of the writing tasks that ask pupils to tell the story of some fire-related incident (from a variety of viewpoints).

Non-fiction writing is also an important feature of the tasks set by the package as pupils are asked to draw on the information provided in a range of formats and synthesise it into coherent reports. To perform these tasks successfully, pupils will have to take notes as they investigate the various information resources provided by the package.

Speaking and Listening

Listening skills are also encouraged as several of the task instructions are spoken by characters in the package (these instructions are also captioned so pupils can read what they hear). Appropriate regional accents are used by the characters. There is an interactive section on call-answering by Fire Brigade control staff that tackles such issues as the importance of clarity, structure and non-ambiguity within such a communication context.

The tasks are described in more detail in the table overleaf. However, it is worth noting that the tasks set by the package itself are not the only ones that could be based on this multimedia information resource, and teachers may wish to define their own activities using Firechester as a background source.

Firechester - Notes for Teachers - English

	Museum & Library	Control Centre	Fire Research Institute	Newsroom	Sparks Disco	No. 19
R E A D I N G	Wide range of information including a selection of factual summaries on fire-related topics that can be searched by keyword or browsed. Descriptions of historical fire-fighting equipment and its use in past times	Information on fire services and brigade centres in Cheshire N text and pictures. Accessed through a map	Factual descriptions of technical details relating to safety hazards and materials that can ignite or provide fuel for a fire	Writing task set by this area requires pupils to read fire-related information in the library.	A range of factual information about the 1981 Stardust Disco fire in Dublin. Information is provided in the form of text, pictures, annotated plans and a timeline describing the chronology of events.	Descriptions of fire hazards within the home.
W R I T I N G	A number of writing tasks are set in this part: 1. Design of Fire-fighting Through the Ages Exhibition requires pupil to read about equipment and then summarise main points in a 50-word caption for each item selected. Completion of this task requires note-taking skills. 2. Note-taking from video clips to describe course of a fire. Use this to help in writing a piece about how it might feel to be caught up in such an incident. 3. Pupils asked to read about the Fire of London and then write an imaginative account of what happened. 4. Pupils asked to read about fires in the Second World War and then write an account of how it must have felt to be involved.	A number of writing tasks are set in this part. Pupils are asked to: 1. Write a chronological account of a call-out to an incident based on details provided by call-exercise (note taking required during exercise) 2. Write an account of the incident from the viewpoint of the caller, describing what happened. 3. Write a story about a hoax caller showing how he or she learns the damage that hoax calls can do	Pupils are asked to write a pamphlet on chip pan fires, describing what happens and how they can be dealt with.	Pupils are asked to write two articles to fill the Firechester Flame (the local newspaper). Suggested topics include: ¥ a firework safety report incorporating facts and real-life experiences drawn from other class members or relatives by interview. ¥ a fire safety report that highlights the use of fire prevention/detection devices (information drawn from library) ¥ Interviews with classmates/relatives for stories about real-life fire incidents. Pupils are asked to lay out the articles in the newspaper format.	A number of writing tasks are set in this part. Pupils are asked to: 1. Write a front page report of the disaster for the Flame in two different styles for a tabloid and for a serious broadsheet newspaper. Pupils are asked to discuss the differences in class. 2. Write about the disaster from a survivor's point of view or from a fire-fighter's point of view. 3. Write a poem or a song about this tragedy. 4. Write a letter to the newspaper from the viewpoint of a bereaved parent.	Pupils are set a number of writing tasks in various rooms in the house: 1. About the effects that a chip pan fire might have on the home and family. 2. A pamphlet aimed at children describing the steps to take when faced with a chip pan fire in the home. 3. A pamphlet on fire safety hazards in garages, including a set of safety guidelines. 4. A pamphlet on electrical safety aimed at elderly people.
L I S T E N I N G	The museum curator speaks the instructions for creating the Fire-Fighting Through the Ages task	The instructions for the telephone call answering task are given verbally and the caller speaks his/her lines for the pupil to respond to in writing.			The doormen at the disco discuss the issue of fire safety and crowd control and invite pupil to look at information on Stardust disco fire. Pupils are asked to devise and record a series of radio news bulletins to describe the tragedy as it unfolds.	The characters talk about some of the fire hazards to be found in the home

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History

There are four tasks set by Firechester that are directly relevant to History at Key Stage 3. These tasks are designed, in particular, to encourage an understanding of three key elements in the National Curriculum definition of history:

- Chronology
- Historical enquiry
- Organisation and communication

Three of the four tasks are found in the Library & Museum section of Firechester and they are:

- 1** The development of an exhibition to demonstrate 'Firefighting Through the Ages'. Pupils are asked to study pictures and text describing a number of items used for firefighting in past times. They are asked to select five items that will best represent the theme of the exhibition. Pupils then have to write captions of 50 words or less summarising the significance of the item that has been selected. The items have to be arranged in chronological order for the exhibition - which is then displayed on screen. This task calls on pupils to investigate all the items, evaluate their significance in the context of fire-fighting and communicate these facts in summary form. (History from a technological and scientific perspective)
- 2** Pupils are asked to research the Great Fire of London, with particular reference to Pepys' account. (The making of the UK 1500 - 1750)
- 3** Pupils are asked to research the fires in the Blitz in the Second World War and write about these events from the perspectives of people there at the time. (The twentieth century world)

Both tasks 2 and 3 require pupils to independently investigate historical sources, synthesise information and present their conclusions in the form of narrative accounts.

The fourth task is to be found in the Disco and centres on a single historical incident which is described in some detail by the package:

- 4** Fire at Stardust Disco, Dublin 1981. Pupils are presented with a range of information about this tragic event (which resulted in the deaths of 47 people). Information formats include a timeline, which depicts the chronology of events as they unfolded, pictures of the building after the fire, text describing the events, and an annotated plan of the building. Pupils are asked to write a narrative account of events, and/or describe events from a number of different viewpoints, and to try to explain why events occurred as they did. This calls on pupils to investigate the incident, using the full range of information available, evaluate significant contributory factors, collect and record pertinent facts and present their conclusions and explanations.

Firechester: Notes for teachers

IT

Firechester will assist pupils in understanding the capabilities of multimedia systems. It demonstrates the capacity for sound, text, pictures (still photographs, video and animation) to be brought together in an interactive package that offers the user considerable scope for choice. It also illustrates such issues as the benefits of a consistent 'look and feel' across an interface.

With regards to Key Stage 3, Firechester:

- Gives pupils a chance to use IT equipment and software autonomously. Some pupils will be able to use the package without instruction or guidance, and although others (with perhaps less computer experience) may need some help in getting started, they should soon learn how to 'navigate' through the package as it is designed to be easy to use.
- Enables pupils to investigate problems by modelling them - the labs at the Fire Research Institute give pupils several opportunities to see the results of various actions that would be hazardous in 'real life'.
- Offers pupils the opportunity to consider the limitations of IT tools and the results they offer - clearly Firechester has its limitations and these can be explored by pupils as they use the package. It might be useful to specifically discuss these limitations and how the package might be extended in a class session.
- Demonstrates the integration of several forms of information to communicate its various messages.
- Offers pupils a chance to use keyword searching of its text files when they need to investigate a subject further in order to perform one of the tasks.
- Provides encouragement for pupils to cross-compare the information/presentations made by Firechester against real-life experiences (both their own and those of other people).

Firechester fulfils the Key Stage 3 attainment level target of enabling pupils to use IT to generate, amend, organise and present ideas; to save data in the notebook facility and in the form of a desktop-publishing utility; and to access stored information in the form of text and pictures. It allows pupils to manipulate IT-based models and simulations to help them understand the outcome of various scenarios/decisions relating to fire and fire hazards.

Relevant tasks

Clearly, simply using Firechester will help a pupil reach Key Stage 3 of the IT part of the National Curriculum, but some of the tasks contained in the package are particularly educational in this regard:

The Library offers access to stored data in the form of text and pictures and pupils are encouraged to search for information in a structured fashion by using keywords.

The Fire Research Institute illustrates the benefits of IT-based models:

- Super-heating oil to spontaneous ignition point (oil and fats lab)
- Spread of smoke through a house with doors open/closed and with different start points (smoke lab)
- How faulty electrical appliances can ignite fires (electrical lab)
- The way that solvents can act as fuel for a fire (petrochemical lab)
- Interactive graph modelling heat release of various items of furniture during combustion (materials lab)

Firechester: Notes for teachers

PSE

One of the primary aims of Firechester is to foster a safe and sensible attitude to fire and fire hazards. The package has been designed to educate pupils in a cross-curricular way about the dangers of fire, what actions are appropriate in certain situations and the need to be alert to potential fire hazards both in the home and elsewhere. Firechester strongly discourages 'playing with fire' and tries to drive home the point that hoax calls to the fire brigade can cost lives. In these ways the package fits in with the broad aims of the personal and social education section of the national curriculum.

In particular, Firechester fits with the need for PSE to be delivered in a way that meets varied educational needs, as the various tasks relating to fire safety and what to do in hazardous situations can be tackled by pupils at their own pace - and they can attempt tasks several times if need be. Some of the tasks set by the package are group projects (for example, working together to write 'how to deal with a chip pan fire' pamphlet) which give pupils the chance to experience co-operative working, to offer and respond to ideas, to argue a case and defend a decision, to present personal and group views and to share responsibility for the outcome of the group activity.

The package also examines some of the moral issues that relate to fires and fire safety. For example, it asks pupils to think about the effects of a hoax call to a fire station and encourages them to role-play the hoaxer, fire-fighter and victim of fire in a way that will help them to understand the real harm that hoaxing can cause. This activity should help pupils to reflect on a range of motives, actions, results of actions, effects of circumstances etc. These tasks also encourage pupils to use their imagination and to develop personal ideas and insights and to express them appropriately.

Firechester is designed to draw out the relevance of scientific facts about combustion, ignition and smoke spread to pupils' own lives. It also encourages them to behave sensibly in potentially hazardous environments (for example, when the chip pan fire has reached a dangerous level in stage 3 of the kitchen task, pupils are encouraged not to tackle it themselves but to call the Fire Brigade).

As personal and social education is itself a cross-curricular theme, and as Firechester is specifically designed to deliver a strong personal and social message about fire safety, all of the package can contribute to pupils' learning in this section of the National Curriculum, however, certain tasks set by Firechester are particularly relevant:

- The chip pan fire in the kitchen at No 19 asks pupils to take appropriate action in a range of circumstances and then to work with others to produce a pamphlet on dealing with chip pan fires to educate other people on the appropriate course of action.
- Pupils are asked to identify hazards in the home at No. 19 and then transfer this experience to their own homes. This fosters a sense of responsibility for spotting and dealing with fire hazards as well as an understanding of how widespread and varied they are.
- Pupils are asked to write a pamphlet about electrical fire hazards that is aimed at the elderly. This encourages them to consider fire safety from a different perspective and to understand the particular needs of a section of society - and their own responsibilities in this area.
- Pupils are asked to imagine the effects of hoax calls - both for the hoaxer and for others involved and this draws their attention to the consequences of such actions.
- Pupils are asked to role-play different characters involved in the Stardust disco fire - encouraging them to express imaginatively the sorts of reactions that people would have in such a traumatic situation.

Firechester: Notes for teachers

SCIENCE

Firechester fulfils several aspects of the National Curriculum at Key Stage 3 for science within the context of exploring the subject of fire and related topics. These include:

Systematic enquiry

- There are several tasks set by the package which require investigation and lead to an understanding of an underlying scientific principle, for example, pupils are asked to work out an effective method of putting out a chip pan fire - and explain why dowsing such a fire with water is so dangerous.
- Several tasks require pupils to look information up in the library files, deduce information from events modelled in the package and investigate aspects of their own environs. For example, the package shows what can happen if glue is left near an open flame in the garage, pupils are asked to look up information regarding solvents and why they are so flammable and to investigate their own homes for similar hazards.
- Several of the tasks require quantitative measures, for example, pupils are asked to study graphs that show the typical heat release of different types of burning furnishings.
- The package offers pupils the opportunity to make notes in an electronic notebook. It also demonstrates several ways of presenting scientific information graphically (in the form of graphs, diagrams and process models).

Application of science

Firechester encourages pupils to investigate the underlying principles of fire and related subjects. In particular it encourages an understanding of how science has helped to understand and prevent the dangers associated with uncontrolled fire.

Communication

The package uses SI units in its explanations of such topics as heat release and electrical circuits. It demonstrates a number of ways of presenting scientific information and test results and invites pupils to interact with some of these presentations before drawing their own conclusions.

Health & Safety

Firechester has been devised to educate pupils about fire safety, so the package is particularly strong in fulfilling the requirements laid down by the National Curriculum for this aspect of science at Key Stage 3. In particular:

- Pupils are shown examples of fire hazards in a variety of forms and settings and are encouraged to relate these examples to their own experience and identify hazards in their own environs.
- Pupils are encouraged to investigate information regarding the risks of fire.
- Pupils are asked in the course of the package to write a number of pamphlets communicating what they have learnt about hazards and fire prevention so as to increase other people's understanding of fire safety issues. They are also able to participate in a number of games that encourage appropriate action in the face of a fire.

Firechester addresses several of the requirements at Key Stage 3 under the headings of experimental and investigative science, materials and their properties and physical processes. Pupils are invited to run a number of computer modelled scenarios which enable them to experiment with fire from the safety of the desk-top. However the experiments do allow pupils to consider the key factors that need to

be taken into account - for example the fire triangle (air, fuel, heat) exercise explains how fire requires three factors

to be present before it can take hold - and that the relative values of these factors will affect the course of the fire. By changing one factor, a fire may be contained or even snuffed out - hence the importance of keeping doors closed and thus limiting the supply of oxygen to a house fire.

The Fire Research Institute's five laboratories are particularly relevant to the science curriculum:

1. Electrical Laboratory

The focus in this section is on safety with regard to electrical appliances:

- a. *Plug-wiring task* - the importance of safety when dealing with electrical appliances is the focus of this activity. Pupils learn the correct way to wire a plug.
- b. *Fuse selection task* -the purpose of this activity is to explain the need for the correct fuses in appliances to prevent their circuitry from becoming overloaded by a power surge and resulting in a fire. Pupils learn the appropriate fuses for various household appliances.
- c. *Lampshade selection task* - this activity demonstrates how lamps generate heat as well as light and that's why it's important to have a large enough shade so that air can circulate around the bulb cooling it and preventing the shade from catching fire.
- d. *Teddy bear/fan heater* - this demonstrates the dangers of fire if fuel (the teddy) is placed near a heat source. It also shows the dangers of toxic fumes from burning apparently harmless items.
- e. *Hairdryer* - this shows how current running through an appliance with a worn flex can be short-circuited causing arcing and danger to the user.

2. Smoke Laboratory

This section explains the movement of smoke and its dangers and then draws on this information to discuss how smoke alarms work and where they should be placed if they are to be effective:

- a. *Smoke alarms* - a model explains how smoke alarms work using ions.
- b. *Smoke movement* - a model demonstrates how smoke moves through a building and how closing doors can make a big difference to the speed with which smoke fills a house. Pupils are asked to draw plans of their own homes and indicate the best locations for smoke alarms. Pupils are also asked to survey the ownership of smoke alarms throughout the school and graph the results.
- c. *Fire and oxygen* - the role of oxygen in fire is demonstrated by a model and pupils are asked to explain why the absence of oxygen can stop a fire burning. Pupils are also asked to chart the principal constituents of air drawing on information provided in the library section. Finally pupils are asked to explain why various methods of extinguishing fires work with reference to the triangle of combustion.

3. Oils & Fats Laboratory

This section focuses on the effects of heat on oil. A model of an experiment to superheat oil can be activated by the pupil. It demonstrates the effects on oil of increasing temperature up to the point of spontaneous ignition. A video sequence shows the explosive effect of trying to use water to douse burning oil.

4. Materials Laboratory

This section discusses the properties of various types of materials and the way that they release heat at different rates when burning.

- a. *Heat release rates* - pupils can activate a graph to explore the various heat release rates of common household items. The idea is to compare both the speed of heat release of different objects and the total amount of heat released. The graph uses both kilowatts and joules to express the energy released in the burning process.
- b. *Burning room model* - a 3D model of a room that is set on fire demonstrates the three ways in which a fire can spread - by convection, conduction and radiation

c. *Burning room video* - pupils are asked to watch a video of a burning room and to describe in detail what happens, how the fire spreads and what its effect on the rest of the house might be. This enables them to apply the theoretical information gained in the first two tasks to a real life scenario.

5. Petrochemicals Laboratory

This section explains the distillation of crude oil, the widespread use of petrochemicals in manufactured items and their flammability. It also discusses solutions and the flammable properties of cellulose.

a. *Distillation model* - a model of the distillation process shows how different products can be distilled from crude oil as a result of heating it to different temperatures. The model also asks pupils to identify what uses are made of the different products.

b. *Solutions* - pupils are asked to identify common solutions of different items as a demonstration that they are surrounded by a large variety of solutions in everyday life.

Firechester Curriculum Map for Key Stage 3

Subject	English			Science				Mathematics				IT	History
	1	2	3	1	2	3	4	1	2	3	4	1	1
Attainment target													
Library													
Text Library		3										3	
Pictures Library												3	
Museum													
Firefighting through the Ages	3	3	3										3
Great Fire		3	3										3
Fire Badge												3	
WWII		3	3										3
Firechester Flame													
Creating newspaper		3	3									3	
Bonfire night	3	3	3										
Fire safety	3	3	3										
Interviews	3	3	3										
No. 19													
Lounge													
Fire triangle		3		3		3							
Kitchen													
Chip pan fire				3								3	
Hallway													
Hazards in cupboard						3							
Fire equipment				3								3	
Bedroom													
Identify hazards	3			3								3	
Hazard pamphlet			3										
Garage													
Identify hazards	3			3								3	
List of home hazards			3	3									
Hazard pamphlet		3	3										
FRI													
Electrical Lab													
Plug wiring				3			3					3	
Teddy/heater				3			3					3	
Fuse selection		3		3			3					3	
Lamp		3		3			3	3				3	

