teacher guide

Bushfire science 6: Fire case studies

Components

	NAME	DESCRIPTION	AUDIENCE
	Fire case studies teacher guide	This guide suggests ways to use an interactive story, *Fire stories*, in the classroom. It looks at fire in three regions of Western Australia: Kimberley, Western Desert and South West.	teachers
Start	*Fire stories* interactive story	These interactive stories discuss: • features of each region, • effects of fire on their environments and their communities, and • influences affecting development of fire regimes for each region, and their implementation.	students

Purpose

To provide students with a wider understanding of how fire affects both communities living in particular regions and flora and fauna in their unique environments.

Outcomes

Students:

- understand that products of combustion reactions affect the environment (including humans);
- recognise fire has different effects on different ecosystems, and on different communities;
- realise that Aboriginal fire practices are an example of a land management strategy;
- understand that different fire regimes are developed to suit different ecosystems; and
- appreciate people influence different environments in different ways.

Activity summary

ACTIVITY	POSSIBLE STRATEGY
You may choose to view the interactive stories as a class or in small groups. Individual students may also explore them. Allocate to students (or they may choose) one region to explore; or ask them to progress through all three regions.	individual students, groups or whole class
A range of responses for students to complete are included in **Teacher notes**, below.	individual students, pairs, or whole class

Teacher notes

The stories provide information through a range of media including: text, images, videos, diagrams and graphs. Students may work through them at their own rate.

You may choose to guide their viewing by giving them general points to look for or questions for which to find answers. Examples include:

- Note some of the flora and fauna found in the Western Desert and South West, and flora in the Kimberley.
- Jot down features of each region's landscape.
- Consider how the weather in each region affects its environment, and therefore its fire patterns.
- What is patch, or mosaic, burning?
- Note effects humans have on each environment.
- Record (for each region) points which must be considered when developing a fire regime.
- What techniques do scientists use to understand the history of fire in the South West?
- What program has been implemented to manage fire in the Kimberley?
- How did the Blue Streak Rocket Project eventually affect fire patterns in the Western Desert?

After viewing, ideas for responses by students include:

- Choose two regions and write a report comparing their ecosystems, and the effects of fire on them.
- Write an article for a scientific magazine, describing traditional Aboriginal fire practices in the Western Desert, how they affect the ecosystem, and why they are now included in all regions' fire regimes.

  Another focus for their article may be to discuss an Aboriginal ranger program being implemented in the Kimberley.

  A further topic for their article may be about the Margaret River fire, including how it started, effects on communities, and what has been learned about the part communities should play in prevention of fire, and limiting fire damage.
- Organise groups and allocate each a different region (you may need to give more than one group the same region). Ask them to discuss and list unintentional consequences resulting from human activity within the ecosystem in their region. Groups report their findings to the class and identify similarities and differences between regions.
- Focus on videos in the stories:

  The Kimberley story has one video:

  - Kimberley science and conservation strategy (Dept Parks and Wildlife – DPaW)

  The Western Desert story has three videos:

  - Fire in the Western Desert (DPaW),
  - Fire hunting in Australia (Stanford University), and
  - Martu people fire story (Martu people and Fremantle Arts Centre).

  The South West story has seven videos:

  - Walpole fire mosaic 1 (DPaW),
  - Walpole fire mosaic 2 (DPaW),
  - Walpole fire mosaic 3 (DPaW),
  - Walpole fire mosaic 4 (DPaW),
  - Planning a fire regime with Dr Neil Burrows (UWA),
  - Bushfire alert with Dr Neil Burrows (UWA), and
  - Dave's fire story (UWA).

  Allocate one video per pair, group or individual student, and ask them to record in two columns, headed 'fire facts' and 'environment facts', all facts (not opinions or possibilities) shown/reported in the video. Facts may be found in text and images in the videos, or inferred from information presented.

  To check these facts, ask students to exchange their lists with another pair, group or individual student, who viewed a different video. Students then watch the video viewed by those with whom they exchanged lists, and tick off facts as they find them, adding others that may have been missed. Return lists.
- Following the 'focus on videos' activity and based on facts identified in the videos, students may write a report presenting facts identified, inferring from these potential effects on the environment and on communities in the region.

  Other report topics may include:

  - Compare effects of fire on each region's ecosystem (or on one region).
  - After a fire, what changes in the biodiversity of one region were observed?
  - What were unintentional consequences of human activity, in one of the regions? This topic builds on the group discussion above.
  - Describe fire practices of the Martu people and how they affect the ecosystem.
  - Research and report on current studies into effects of bushfire smoke on humans.
- Students (working individually) select a graph in one of the videos and write a description/ explanation of information the graph provides.

  Next, they should carefully check both graph and description to see they've included all information provided in the graph, in their descriptions.

  Then ask students to analyse the information and write a paragraph stating which form of communicating these facts is clearer for them (not for students in general). Ask them to explain why they feel this way.

  Results of this activity are sometimes surprising as they provide insights into ways particular students learn.

Technical requirements

The teacher guide and worksheet require Adobe Reader (version 5 or later), which is a free download from www.adobe.com. The worksheet is also provided in Microsoft Word format.

The learning object requires a modern browser (eg Internet Explorer 10 or later, Google Chrome, Safari, Opera or Firefox). It can be placed on a web or file-server and run either locally or remotely in a web browser

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SPICE resources and copyright

All SPICE resources are available from the Centre for Learning Technology at The University of Western Australia ("UWA"). Selected SPICE resources are available through the websites of Australian State and Territory Education Authorities.

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Associated SPICE resources

Bushfire science 6: Fire case studies may be used in conjunction with related SPICE resources to teach aspects of biodiversity and oxidation.

DESCRIPTION	LEARNING PURPOSE
Bushfires (overview)	
Bushfires 1: Fiery failures A lighthearted look at four environmental catastrophes through history brings out common connections with fire and combustion.	**Engage**
Bushfires 2: Exploring ecosystems Students use sampling techniques to investigate a local ecosystem, and an interactive learning object to explore biodiversity in contrasting Western Australian ecosystems.	**Explore**
Bushfires 3: Oxidation Students investigate combustion and other oxidation reactions.	**Explore**
Bushfires 4: Fire in Western Australia Students use an interactive learning object to examine effects of fire on three Western Australian ecosystems.	**Explain**
Bushfires 5: Oxidation and combustion Students use an interactive learning object to visualise oxidation reactions at a molecular level.	**Explain**
Bushfires 6: Fire stories Students read three interactive stories about human use of fire and its consequences in different parts of Western Australia.	**Elaborate**