

Pearson Science 7 Victoria: Sample teaching program

This sample teaching program maps the Victorian Curriculum 2.0 outcomes and content to *Pearson Science 7 Victoria*, *Pearson Digital Hub: Science 7* (Victoria) and the accompanying student companion, as well as all student and teacher resources. Although this sample program suggests a teaching order, it is expected that teachers will modify it to suit their local environment and student cohort.

Pearson Science 7–10 delivers content in bite-sized, manageable chunks to enable clear learning progression and ease of assessment. Learning goals are established at the start, with each lesson addressing one learning intention and 1–3 success criteria.

Teacher planning and preparation: Full-year teacher planning and preparation resources can be accessed and downloaded from Pearson Digital Hub under ‘Teacher Resources’ at the start of each topic. These resources include this teaching program; practical work teaching notes, risk assessments, technician’s checklists and recipes; and answers to all student worksheets.

Fully worked solutions for all student book activities can be accessed from the *Pearson Science 7 Victoria eBook* in teacher view and answers to student companion activities are available on the Pearson Places Resource Page (accessed via free Pearson Places account).

Teaching guidance: Topic- and lesson-based teacher support is provided in the Teacher view of Pearson Digital Hub.

Topic-based guidance includes background information, expected student prior knowledge, key ideas from the curriculum, appropriate links to other Pearson Science topics and the common misconceptions and remediations related to the topic.

Lesson/activity guidance includes overviews and specific teaching notes for each activity, risk assessments where needed and solutions for any student online assessments.

Some of the curriculum codes in the Victorian Curriculum content descriptions vary from those found in the Victorian Curriculum Version 2.0. This is because each topic is allocated to a particular year level, so this sample teaching program uses Pearson-adapted codes that apply to single year levels as opposed to the Victorian Curriculum Version 2.0 codes, which cover two year levels (e.g. VC2S8I02 is a code used for both years 7 and 8 in the Victorian Curriculum Version 2.0; in this sample teaching program it is VC2S7I02 for Year 7 and VC2S8I02 for Year 8).

Year 7 Suggested timing: approximately 38 teaching weeks

7 weeks:	1 Forces and simple machines	5 weeks:	5 Classification and biodiversity
5 weeks:	2 Systems in space: The Earth, Sun and Moon	5 weeks:	6 Matter and energy in ecosystems
6 weeks:	3 Particle theory and the properties of substances	4 weeks:	7 Earth’s resources
6 weeks:	4 Mixtures and methods of separation		

Science inquiry toolkit

The science inquiry toolkit includes instructions and examples to support students with their mastery of scientific inquiry. The sections in the toolkit target specific skills and are referenced at potential point of need throughout the Student Book topics, most commonly in practical investigations and inquiry activities.

The content of the *Pearson Science 7 Victoria* toolkit is shown here.

1 Questioning and predicting 1.1 Investigable questions 1.2 Dependent, independent and controlled variables 1.3 Hypotheses and predictions 2 Planning and conducting 2.1 Writing a method for an experiment 2.2 Ethical behaviour and safety in science 2.3 Sites on Country/Place 2.4 Using units in science 2.5 Taking measurements in science 2.6 Mistakes and errors	3 Processing, modelling and analysing 3.1 Types of scientific data 3.2 Calculating the mean (average) of a set of data values 3.3 Designing a results table 3.4 Using line graphs and column graphs 3.5 Patterns and trends in data 4 Evaluating 4.1 Evaluating investigations 4.2 Referencing secondary data 4.3 Selecting and using secondary data	5 Communicating 5.1 Scientific writing 5.2 Scientific diagrams 5.3 Drawing scientific equipment 5.4 Graphic organisers 5.5 Writing a practical investigation report
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TOPIC 5: CLASSIFICATION AND BIODIVERSITY

This topic explores how the biodiversity of life on our planet can be classified by using scientific tools, observations and questions based on the characteristics of organisms.

SCIENCE UNDERSTANDING

Content description:

there are similarities and differences within and between groups of organisms living on Earth; the development and use of classification tools, including dichotomous keys, help order and organise human understanding of the diversity of life (VC2S8U01)

Achievement standard:

Students explain how biological diversity is ordered and organised.

Source: Victorian Curriculum and Assessment Authority (VCAA)

First Nations Australians' knowledge has contributed an understanding of biodiversity
(First Nations Australians' classification systems)

Classification systems change as a result of new scientific evidence
(Inquiry activity: Changing classification systems)

Environmental preservation and ethical behaviour need to be considered when undertaking scientific fieldwork
(Fieldwork as a part of science inquiry)

Scientific observation and dichotomous keys can be used to classify organisms
(Inquiry activity: Using the Linnaean classification system and a dichotomous key in fieldwork)

Keys can be created to classify animals such as chordates and can be improved based on evidence from their use
(Practical investigation: Creating and using keys for Linnaean classification)

The Linnaean system is an agreed way to classify and name organisms
(Linnaean classification system)

The Linnean system can be used to classify plants, including Australian native species
(Levels of classification in the plant kingdom)

The Linnaean system can be used to classify animals, including Australian native species
(Levels of classification in the animal kingdom)

Dichotomous keys are tools that can be used to classify and identify organisms
(Introduction to keys for identification)

Dichotomous keys can be developed using a sequence of questions
(Practical investigation: Creating dichotomous keys)

Classification can be used to order biodiversity on Earth
(Introduction to classification)

Similar features of organisms and objects can be used to classify them into groups
(Practical investigation: Investigating similarities and differences in objects and living things)

Topic 5: Classification and biodiversity

(* = downloadable)

<i>Pearson Science 7 Victoria student book</i>	Victorian Curriculum content descriptions	Learning intentions (LI) and success criteria (SC)	<i>Pearson Digital Hub: Science 7 Victoria student resources</i>	<i>Pearson Digital Hub: Science 7 Victoria teacher resources</i>	<i>Pearson Science 7 Student Companion</i>
Prior knowledge (page TBC)	Content description for topic: there are similarities and differences within and between groups of organisms living on Earth; the development and use of classification tools, including dichotomous keys, help order and organise human understanding of the diversity of life (VC2S8U01)		Spark activity: Living things are not always animals Check your prior knowledge	Topic introduction: Classification and biodiversity teaching notes Prior knowledge solutions	
5.1 Introduction to classification (page TBC)		LI: To understand why organisms are classified SC 1: I can describe the role of classification of biodiversity on Earth. SC 2: I can describe at least two reasons for classifying the diversity of life on Earth. SC 3: I can suggest how classification systems are affected by cultural perspectives and world views.	Spark activity: Let's classify! *Worksheet: Classification Check your understanding Lesson review	Introduction to classification teaching notes and fully worked solutions Classification worksheet fully worked solutions	5.1 Introduction to classification (page 146)
5.2 Practical	Science inquiry:	LI: To be able to group objects	*Practical	Practical	5.2 Practical

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investigation: Recognising similarities and differences in objects and living things (page TBC)	developing questions, predictions and hypotheses (VC2S7I01) appropriate representations for data and information (VC2S7I04) analysis of data and information (VC2S7I05) analysis of methods, conclusions and claims (VC2S7I06)	and living things based on similarities and differences SC 1: I can identify differences and similarities in organisms from real objects, images or descriptions. SC 2: I can place organisms with similar features into groups. SC 3: I can evaluate methods used to sort organisms.	investigation: Recognising similarities and differences in objects and living things	investigation: Recognising similarities and differences in objects and living things teaching notes, risk assessment, fully worked solutions, and technician's checklist and recipes	investigation: Recognising similarities and differences in objects and living things (page 149)
5.3 Introduction to keys for identification (page TBC)	Science inquiry: planning and conducting investigations (VC2S7I02) appropriate representations for data and information (VC2S7I04) communication of ideas, findings and arguments (VC2S7I08)	LI: To understand the purpose of a dichotomous key SC 1: I can use a branching dichotomous key to identify objects or organisms SC 2: I can use a table dichotomous key to identify objects or organisms. SC 3: I can evaluate the strength of dichotomous keys and suggest ways to make them more effective	Spark activity: Creating a key SkillBuilder: Dichotomous questions Worked example: Dichotomous questions *Worksheet: Identifying dogs Check your understanding Lesson review	Introduction to keys for identification teaching notes and fully worked solutions Identifying dogs worksheet fully worked solutions	5.3 Introduction to keys for identification (page 151)
5.4 Practical	Science inquiry:	LI: To be able to create a	*Practical	Practical	5.4 Practical

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investigation: Creating dichotomous keys (page TBC)	developing questions, predictions and hypotheses (VC2S7I01) appropriate representations for data and information (VC2S7I04) analysis of data and information (VC2S7I05) analysis of methods, conclusions and claims (VC2S7I06)	dichotomous key to identify living and non-living objects SC 1: I can write suitable questions for use in a dichotomous key. SC 2: I can create and use a branching dichotomous key. SC 3: I can create and use a table dichotomous key.	investigation: Creating dichotomous keys SkillBuilders: Dichotomous questions Developing table keys Developing branching keys Worked example: Dichotomous questions	investigation: Creating dichotomous keys teaching notes and fully worked solutions	investigation: Creating dichotomous keys (page 155)
5.5 Linnaean classification system (page TBC)		LI: To understand the Linnaean hierarchical classification system and its related naming conventions SC 1: I can list the levels in the Linnaean hierarchical classification system in order. SC 2: I can classify an organism's kingdom, phylum and class using the Linnaean hierarchical classification system. SC 3: I can identify the genus	Spark activity: Observing SkillBuilder: Scientific names Worked example: Scientific names Check your understanding Lesson review	Linnaean classification system teaching notes and fully worked solutions	5.5 Linnaean classification system (page 158)

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		name and species name in an organism's scientific name.			
5.6 Levels of classification in the animal kingdom (page TBC)		LI: To describe how the Linnaean system can be used to classify biodiversity in the animal kingdom SC 1: I can describe the characteristics of nine major animal phyla and give examples of each. SC 2: I can describe the characteristics of the classes of chordates and state an example of each. SC 3: I can describe the classification levels of a range of Australian native animal species.	Spark activity: Investigating proof of animal presence *Worksheet: Arthropods *Worksheet: Similarities and differences within a phylum Check your understanding Lesson review	Levels of classification in the animal kingdom fully worked solutions, teaching notes, and technician's checklist and recipes Similarities and differences within a phylum worksheet fully worked solutions Spark activity risk assessment	5.6 Levels of classification in the animal kingdom (page 162)
5.7 Levels of classification in the plant kingdom (page TBC)		LI: To understand how the Linnaean system can be used to classify biodiversity in the plant kingdom SC 1: I can describe the characteristics of some plant divisions and give examples of	Spark activity: What part of plants do you eat? Check your understanding Lesson review	Levels of classification in the plant kingdom teaching notes and fully worked solutions Spark activity risk assessment	5.7 Levels of classification in the plant kingdom (page 165)

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		each. SC 2: I can describe the characteristics of flowering plants and state an example. SC 3: I can describe the classification levels of a range of Australian native plant species.			
5.8 Practical investigation: Creating and using keys for Linnaean classification (page TBC)	Science inquiry: developing questions, predictions and hypotheses (VC2S7I01) appropriate representations for data and information (VC2S7I04) analysis of data and information (VC2S7I05) analysis of methods, conclusions and claims (VC2S7I06)	LI: To use and create keys to classify organisms using the Linnaean system SC 1: I can identify features of animals that will enable them to be classified into a class of chordate. SC 2: I can create a dichotomous key that will enable the classification of familiar and unfamiliar animals into classes of chordates. SC 3: I can evaluate the strength of a dichotomous key used for classification and suggest improvements.	*Practical investigation: Creating and using keys for Linnaean classification SkillBuilder: Developing branching flowchart dichotomous keys Developing table dichotomous keys Dichotomous questions Worked example: Dichotomous questions	Practical investigation: Creating and using keys for Linnaean classification teaching notes, risk assessment and fully worked solutions	5.8 Practical investigation: Creating and using keys for Linnaean classification (page 168)
5.9 Fieldwork as a	Science inquiry:	LI: To understand how	Spark activity:	Fieldwork as a part	

Topic 5: Classification and biodiversity

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part of science inquiry (page TBC)	planning and conducting investigations (VC2S7I02) selection and use of equipment (VC2S7I03) appropriate representations for data and information (VC2S7I04) construction of evidence-based arguments and consider ethics and cultural protocols (VC2S7I07)	scientists use field work to collect data SC 1: I can describe methods that scientists use to observe and identify organisms in the field. SC 2: I can explain how scientists ensure that they impose minimal impact on organisms and the environment during field work SC 3: I can analyse ethical and cultural considerations in conducting field work.	What is in the garden or park? Check your understanding Lesson review	of science inquiry teaching notes and fully worked solutions	
5.10 Practical investigation: Using the Linnaean classification system and a dichotomous key in fieldwork (page TBC)	Science inquiry: planning and conducting investigations (VC2S7I02) selection and use of equipment (VC2S7I03) appropriate representations for data and information (VC2S7I04) analysis of data and information (VC2S7I05)	LI: To be able to classify and/or identify organisms in the local environment SC 1: I can select and plan for methods to observe organisms in the environment. SC 2: I can use a dichotomous key based on organisms observed in the field. SC 3: I can use data from observations in the field to	*Practical investigation: Using the Linnaean classification system and a dichotomous key in fieldwork	Practical investigation: Using the Linnaean classification system and a dichotomous key in fieldwork teaching notes, risk assessment and fully worked solutions	5.9 Practical investigation: Using the Linnaean classification system and a dichotomous key in fieldwork (page 172)

Topic 5: Classification and biodiversity

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		determine kingdom, division and class using the Linnaean classification system.			
5.11 First Nations Australians' classification systems (page TBC)		LI: To understand similarities and differences between First Nations Australians' systems of classification and Linnaean classification SC 1: I can describe how a group of First Nations Australians' classify plants or animals in their environment SC 2: I can compare First Nations Australians' systems of classification and the Linnaean classification system SC 3: I can describe how First Nations Australians' knowledge have contributed to development of knowledge of biodiversity.	Spark activity: Classification at school Check your understanding Lesson review	First Nations Australians' classification systems teaching notes and fully worked solutions	
5.12 Inquiry activity: Changing classification systems (page TBC)		LI: To explore how classification systems change as scientists discover new information or interpret evidence in new ways	*Inquiry activity: Changing classification systems	Inquiry activity: Changing classification systems teaching notes and fully	5.10 Inquiry activity: Changing classification systems (page 175)

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		SC 1: I can describe types and/or sources of evidence that affect systems of classification. SC 2: I can explain how classification systems have changed as a result of new scientific evidence. SC 3: I can predict how classification systems may change in the future as a result of new technologies and/or scientific evidence.		worked solutions	
Topic review (page TBC)			Topic review: Classification and biodiversity assessment questions	Topic review: Classification and biodiversity assessment solutions	Topic review