



Learning strands that relate to the Adopt A Stream Programme

Nature of Science

In their water studies students will carry out science investigations using a variety of approaches: classifying and identifying, pattern-seeking, exploring, fair-testing and making things. Students will also have the opportunity to develop their knowledge of the vocabulary, numeric and symbolic systems and conventions of science and use this knowledge to communicate their own and others' ideas.

Achievement objectives:

Levels 1 and 2

Students will be:

Understanding about science

- Appreciate that scientists ask questions about our world that lead to investigations and that open-mindedness is important because there may be more than one explanation

Investigating in science

- Extend their experiences and personal explanations of the natural world through exploration, play, asking questions and discussing simple models

Communicating in science

- Build their language and develop their understandings of the many ways the natural world can be represented

Participating and contributing

- Explore and act on issues and questions that link their science learning to their daily living

Levels 3 and 4

Understanding about science

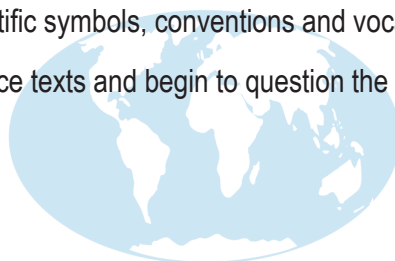
- Appreciate that science is a way of explaining the world and that science knowledge changes over time
- Identify ways in which scientists work together and provide evidence to support their ideas

Investigating in science

- Build on prior experiences, working together to share and examine their own and others' knowledge
- Ask questions, find evidence, explore simple models and carry out appropriate investigations to develop simple explanations

Communicating in science

- Begin to use a range of scientific symbols, conventions and vocabulary
- Engage with a range of science texts and begin to question the purposes for which these texts are constructed





Learning strands that relate to the Adopt A Stream Programme *continued*

Participating and contributing

- Use their growing science knowledge when considering issues of concern to them
- Explore various aspects of an issue and make decisions about possible actions.

Living World

In their study of the Living World, students will use their developing scientific knowledge, skills and attitudes to:

Investigate their local ecosystem and appreciate the diversity of living things and to understand the interdependence of living organisms, including humans and their relationship with their physical environment.

Achievement objectives:

Levels 1 and 2

Students will study:

Life processes

- Recognise that all living things have certain requirements so they can stay alive

Ecology

- Recognise that living things are suited to their particular habitat

Evolution

- Recognise that there are lots of different living things in the world and that they can be grouped in different ways
- Explain how we know that some living things from the past are now extinct

Levels 3 and 4

Life processes

- Recognise that there are life processes common to all living things and that these occur in different ways

Ecology

- Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced

Evolution

- Begin to group plants, animals and other living things into science-based classifications
- Explore how the groups of living things we have in the world have changed over long periods of time and appreciate that some living things in New Zealand are quite different from living things in other areas of the world.





Learning strands that relate to the Adopt A Stream Programme *continued*

Material World

In their study of the Material World, students will use their developing scientific knowledge, skills and attitudes to:

Make informed decisions about the interrelationship of chemical substances and processes, with technology, people and the environment.

Achievement objectives:

Levels 1 and 2

Students will study:

Properties and changes of matter

- Observe, describe and compare physical and chemical properties of common materials and changes that occur when materials are mixed, heated or cooled

Chemistry and society

- Find out about the uses of common materials and relate these to their observed properties

Level 3

Students will study:

Properties and changes of matter

- Group materials in different ways, based on the observations and measurements of the characteristic chemical and physical properties of a range of different materials
- Compare chemical and physical changes

Chemistry and society

- Relate the observed, characteristic chemical and physical properties of a range of different materials to technological uses and natural processes

Level 4

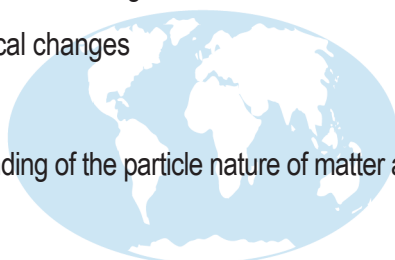
Students will study:

Properties and changes of matter

- Group materials in different ways, based on the observations and measurements of the characteristic chemical and physical properties of a range of different materials
- Compare chemical and physical changes

The structure of matter

- Begin to develop an understanding of the particle nature of matter and use this to explain observed changes





Learning strands that relate to the Adopt A Stream Programme *continued*

Chemistry and society

- Relate the observed, characteristic chemical and physical properties of a range of different materials to technological uses and natural processes.

Planet Earth and beyond

In their study of the Planet Earth, students will use their developing scientific knowledge, skills and attitudes to:

Investigate how people's decisions and activities change planet Earth's physical environment and develop a responsibility for the guardianship of planet Earth and its resources.

Achievement objectives:

Levels 1 and 2

Students will study:

Earth systems

- Explore and describe natural features and resources

Interacting systems

- Describe how natural features are changed and resources affected by natural events and human actions

Level 3

Students will study:

Earth systems

- Appreciate that water, air, rocks, soil and life forms make up our planet and recognise that these are also Earth's resources

Interacting systems

- Investigate the water cycle and its effect on climate, landforms and life

Level 4

Students will study:

Earth systems

- Develop an understanding that water, air, rocks, soil and life forms make up our planet and recognise that these are also Earth's resources

Interacting systems

- Investigate the water cycle and its effect on climate, landforms and life.





Essential skills		The Historical Research Lab	The Catchment Area and Health Risk Lab	The Water Life Lab	The Oxy-Bac Lab	The pH Lab	The Nitrate Lab	The Turbid Lab	The Analysis and Action Lab
Communication	Communicate by a variety of forms as appropriate	❖	❖	❖	❖	❖	❖	❖	❖
	Convey and receive information/instruction/ideas	❖	❖	❖	❖	❖	❖	❖	❖
	Develop the skills of discrimination and critical analysis	❖	❖	❖	❖	❖	❖	❖	❖
	Argue a case clearly, logically and convincingly		❖						❖
	Become confident in using new information and communication technologies	❖	❖	❖	❖	❖	❖	❖	❖
Numeracy	Use measuring instruments competently				❖	❖	❖	❖	❖
	Recognise, understand, analyse and respond to information which is presented in mathematical ways				❖	❖	❖	❖	
	Estimate proficiently and with confidence				❖	❖	❖		
Information Skills	Organise information to support logic and reasoning	❖	❖	❖	❖	❖	❖	❖	❖
	Identify, locate, gather, store, retrieve and process information from a range of sources	❖	❖	❖	❖	❖	❖	❖	❖
	Organise, analyse, synthesise, evaluate and use information	❖	❖	❖	❖	❖	❖	❖	❖
	Present information clearly, logically, concisely and accurately	❖	❖	❖	❖	❖	❖	❖	❖
	Identify, describe and interpret different points of view and distinguish fact from opinion	❖	❖						❖
	Use a range of information-retrieval and information-processing technologies confidently and competently	❖	❖	❖					
Problem Solving	Think critically, creatively, reflectively and logically	❖	❖	❖	❖	❖	❖	❖	❖
	Exercise imagination, initiative and flexibility	❖							❖
	Identify, describe and redefine a problem	❖	❖	❖	❖	❖	❖	❖	❖
	Analyse problems from a variety of perspectives	❖	❖	❖	❖	❖	❖	❖	❖
	Make connections and establish relationships	❖	❖	❖	❖	❖	❖	❖	❖
	Inquire, generate, explore and develop ideas	❖	❖	❖	❖	❖	❖	❖	❖
	Try out innovative and original ideas								❖
	Design and make			❖	❖	❖	❖	❖	
	Test ideas, solutions and make decisions on the basis of supporting evidence	❖	❖	❖	❖	❖	❖	❖	❖



Essential skills		The Historical Research Lab	The Catchment Area and Health Risk Lab	The Water Life Lab	The OXY-BAC Lab	The pH Lab	The Nitrate Lab	The Turbid Lab	The Analysis and Action Lab
Self-Management and Competitive Skills	Manage time effectively	❖	❖	❖	❖	❖	❖	❖	❖
	Show initiative, commitment, perseverance, courage and enterprise	❖	❖	❖	❖	❖	❖	❖	❖
	Adapt to new ideas, technologies and situations		❖	❖	❖	❖	❖	❖	❖
	Develop constructive approaches to challenge and change, stress and conflict, competition and success and failure								❖
	Achieve self-discipline and take responsibility for their own actions and decisions	❖	❖	❖	❖	❖	❖	❖	❖
	Develop self-esteem and personal integrity	❖	❖	❖	❖	❖	❖	❖	❖
	Take increasing responsibility for their own health and safety, including the development of skill for protecting the body from harm and abuse			❖	❖	❖	❖	❖	
Work and Study Skills	Work effectively, both independently and in groups	❖	❖	❖	❖	❖	❖	❖	❖
	Develop sound working habits	❖	❖	❖	❖	❖	❖	❖	❖
	Take increasing responsibility for their own learning and work	❖	❖	❖	❖	❖	❖	❖	❖
Social and Co-operative	Evaluate, process and find solutions	❖	❖	❖	❖	❖	❖	❖	❖
	Develop good relationships with others	❖	❖	❖	❖	❖	❖	❖	❖
	Take responsibility as a group member for jointly decided actions and decisions	❖	❖	❖	❖	❖	❖	❖	❖
	Develop a sense of responsibility for the well-being of others and the environment	❖	❖	❖	❖	❖	❖	❖	❖
	Participate effectively as responsible citizens in a democratic society	❖	❖	❖	❖	❖	❖	❖	❖
	Develop the ability to negotiate and reach consensus	❖	❖	❖	❖	❖	❖	❖	❖

This is a summary of some of the Essential Skills from 'The New Zealand Curriculum Framework' which are most relevant to the Adopt A Stream Programme. Refer to the other curriculum documents for the specific skills which meet the needs of your students.



Key competencies

The Adopt A Stream Programme is a useful tool to engage pupils in all of the key competencies. The field trip and Labs enable the students to operate in small groups then to collate the information into a meaningful outcome as a whole class.

Thinking

Students use their thinking skills to come to a decision about the quality of the water after considering all of the individuals field trip results.

Using language symbols and texts

Students can use each of the A1 Lab posters to record their observations using the scientific language appropriate for their particular study area. These findings need to be recorded in such a way as to be readily communicable to others in the class.

Managing self

During the field trip, the students have a number of activities and observations to work through and record. It is important that they manage themselves and their time appropriately to complete all the tasks. They also need to be responsible for their own behaviour in and around a waterway so as not to be a danger to themselves or others.

Relating to others

During the field trip and consideration of the information obtained from the tests, it is important that the students are able to work co-operatively, to organise the tests between the members of their group fairly and to listen to each other's points of view.

Participating and contributing

The field trip activities, group observations and whole-class discussion of results give the students the opportunity to become actively involved in the tasks. This also allows them to take turns and share responsibilities. Extension activities after the initial testing, such as stream clean-ups and planting schemes, can also allow them to actively contribute in a community context.

