

B O A R D O F S T U D I E S
NEW SOUTH WALES

Stage 6
Science Life Skills Course

Syllabus

Amended 2007

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Board of Studies NSW
GPO Box 5300
Sydney 2001
Australia

Tel: (02) 9367 8111
Fax: (02) 9367 8484
Internet: www.boardofstudies.nsw.edu.au

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1 The Higher School Certificate Program of Study

The purpose of the Higher School Certificate program of study is to:

- provide a curriculum structure which encourages students to complete secondary education
- foster the intellectual, social and moral development of students, in particular developing their:
 - knowledge, skills, understanding and attitudes in the fields of study they choose
 - capacity to manage their own learning
 - desire to continue learning in formal or informal settings after school
 - capacity to work together with others
 - respect for the cultural diversity of Australian society
- provide a flexible structure within which students can prepare for:
 - further education and training
 - employment
 - full and active participation as citizens
- provide formal assessment and certification of students' achievements
- provide a context within which schools also have the opportunity to foster students' physical and spiritual development.

2 Stage 6 Life Skills Courses: Guidelines for Schools

Preamble

The Government's White Paper for the Higher School Certificate, *Securing Their Future*, included a commitment to extend the curriculum and reporting arrangements that were established for the School Certificate to HSC students with special education needs. This was in recognition of the principle that the post-compulsory years of schooling should cater for all students who choose to participate.

To meet this commitment, the Board of Studies has developed Life Skills courses for Stage 6 in each broad area of learning. The courses are:

- English Life Skills
- Mathematics Life Skills
- Personal Development, Health and Physical Education Life Skills
- Citizenship and Society Life Skills
- Science Life Skills
- Creative Arts Life Skills
- Technological and Applied Studies Life Skills
- Work and the Community Life Skills.

These courses have Board Developed status and can be used along with other Board Developed courses to meet requirements for the award of the Higher School Certificate. Each Life Skills course comprises a 2 Unit Preliminary course and a 2 Unit HSC course. There will not be an external examination for Life Skills courses.

These guidelines have been designed to help schools make decisions about whether a pattern of study in Stage 6 that includes or comprises Life Skills courses is appropriate to the educational needs of individual students. Schools will use these guidelines and courses to assist in developing a pattern of study that is consistent with the individual transition-planning process for the student.

Rationale for Stage 6 Life Skills Courses

The Stage 6 Life Skills courses extend the curriculum and reporting arrangements that were established for the School Certificate for students with intellectual disabilities. There are eight Stage 6 Life Skills courses.

The Stage 6 Life Skills courses stress the application of knowledge and understanding, skills, values and attitudes to a range of environments that will be accessed by students with special education needs.

HSC rules and requirements

As detailed in the Board of Studies *Assessment Certification and Examination (ACE) Manual*, the eligibility requirements for the Higher School Certificate are the same for all candidates. Students must:

- have gained the School Certificate or other qualification that the Board of Studies considers satisfactory
- have attended a government school, an accredited non-government school, an institute of TAFE or a school outside NSW recognised by the Board
- have satisfactorily completed courses that comprise the pattern of study for the Higher School Certificate and
- have undertaken and made a serious attempt at the required forms of assessment for each course.

Pattern of study

To be eligible for the Higher School Certificate, all students, including those studying Stage 6 Life Skills courses, must undertake a Preliminary course pattern that includes at least 12 units of study and an HSC course pattern that includes at least 10 units of study. Both patterns must include:

- at least six units from Board Developed courses
- at least two units of a Board Developed course in English
- at least three courses of two units value and
- at least four subjects.

For the Preliminary course pattern, students may study Senior Science or no more than six units of any combination of Biology, Chemistry, Earth and Environmental Science, Physics.

For the HSC course pattern no more than six units of any combination of Biology, Chemistry, Earth and Environmental Science, Physics and Senior Science courses may be studied.

Students with special education needs can meet the requirements of the HSC using a combination of:

- Board Developed courses and/or
- Board Endorsed courses (including Content Endorsed courses) and/or
- Board Developed Life Skills courses and/or
- Industry Curriculum Framework course options.

This flexibility allows schools to develop individualised programs of study that challenge students according to their individual needs.

Eligibility to enrol in Stage 6 Life Skills Courses

Schools do not need to seek the Board's permission to enrol students in Stage 6 Life Skills courses. These decisions will be made by the school.

When making decisions about enrolling students in Stage 6 Life Skills courses, schools should bear in mind that the main aim of Stage 6 Life Skills courses is to extend the curriculum and reporting arrangements that were established in Stage 5 for students with special education needs. The Board expects that the majority of students who enrol in Stage 6 Life Skills courses will be students with an intellectual disability.

In general, students enrolling in Stage 6 Life Skills courses will have completed at least four courses based on Life Skills outcomes and content in Stage 5.

In special circumstances, a student who has not undertaken at least four courses based on Life Skills outcomes and content in Stage 5 may wish to enrol in Life Skills courses for Stage 6.

These special circumstances might include situations where:

- a student has attempted regular syllabuses for the School Certificate but has experienced significant difficulty
- a student transfers from interstate or overseas
- a student has a deteriorating condition.

In these and similar circumstances, schools should only enrol students in Stage 6 Life Skills courses as a result of careful planning. The planning should establish why options other than Stage 6 Life Skills courses, such as accumulation or special provisions for the HSC examinations, are not appropriate.

The individual transition-planning process

When entering students for Stage 6 Life Skills courses, the Principal is certifying that the student is eligible and that the decision is the result of an individual transition-planning process.

Schools will make decisions about whether to enrol individual students in Stage 6 Life Skills courses in the context of an individual transition-planning process that is completed for both Year 11 and Year 12. The process must address how the pattern of study and attainment of the Higher School Certificate will contribute to the student's transition from school to adult life.

Transition-planning documentation

The completion of a transition-planning process for each student is a condition of access to Stage 6 Life Skills courses.

Schools do not need to forward transition-planning documentation to the Office of the Board.

The transition-planning documentation for each student should show evidence of:

- involvement of the student, and other significant individuals in the student's life, in the planning process
- clear directions and goals for the student's studies
- priorities for instruction
- identification of relevant settings and strategies
- resource requirements (across home, school and community settings as appropriate)
- strategies for monitoring progress
- clearly defined time frames.

The documentation should show that the planned learning experiences and teaching activities are:

- appropriate to the chronological age of the student
- functional and life-skills oriented where appropriate
- developed across a range of settings
- planned collaboratively to meet present and future needs.

It should also address the student's specific needs at the point of transition from school to post-school.

Planning a pattern of study for students undertaking Stage 6 Life Skills courses

- Life Skills courses may form all or part of a pattern of study for students based on the individual transition-planning process.
- Modules, outcomes and content from selected Stage 6 Life Skills courses will be chosen on the basis that they meet the individual needs, goals and priorities for each student.
- Students are not required to complete all the modules within a Life Skills course nor are they required to complete all the outcomes and content within each module of a Life Skills course.

The flow chart following demonstrates the links between individual transition planning, and the selection of courses to meet the needs of individual students and the Preliminary and HSC pattern of study requirements.

Individual Transition-planning Process

Student's Stage 5 Pattern of Study

List all courses (reflecting School Certificate key learning area requirements) being undertaken by the student and any workplace learning experiences

Student's Strengths, Interests and Abilities

Summarise student's strengths, interests and abilities relevant to transition planning

Areas for Student's Further Development

Summarise specific areas for further development

Individual Transition-planning Meeting – End of Stage 5

- Ensure that student, parents, carers, appropriate school staff and other relevant people are fully involved in the meeting
- Agree on goals for post-school
- If agreed that student goals will best be met by remaining at school to complete the HSC, determine pattern of study for Year 11 (Preliminary year)
- Document decisions made and associated responsibilities

Outline Pattern of Study for Year 11 – Preliminary Year – 12 Units

- List all courses to be undertaken by the student*, ensuring that these reflect student goals and priorities and the HSC requirements
- For **Stage 6 Life Skills courses**, list the selected modules, outcomes and content which will constitute each student's educational program as determined by the individual transition-planning process
- Identify relevant settings, strategies
- Identify resource requirements (across home, school and community settings as appropriate)
- Identify strategies for monitoring progress and clear time frames

Individual Transition-planning Meeting – End of Preliminary Year

- Ensure that student, parents, carers, appropriate school staff and other relevant people are fully involved in the meeting
- Review outcomes achieved in Preliminary year
- Review and confirm student post-school goals
- Determine pattern of study for HSC Year – Year 12
- Document decisions made and associated responsibilities

Outline Pattern of Study for Year 12 – HSC Year – 10 Units

- List all courses being undertaken (reflecting HSC requirements) by the student*, ensuring that these reflect agreed student goals and priorities and the HSC requirements
- For **Stage 6 Life Skills courses**, list the selected modules, outcomes and content which will constitute the student's educational program as determined by the individual transition-planning process
- Identify relevant settings, strategies and clear time frames
- Identify resource requirements (across home, school and community settings as appropriate)
- Identify strategies for monitoring progress within the context of the Profile of Student Achievement

Note:

* Stage 6 – Note that students entered for Stage 6 Life Skills courses may access Industry Curriculum Framework course options, and other Board Developed or Board Endorsed courses.

Satisfactory completion of Life Skills courses

A student will be considered to have completed a Stage 6 Life Skills course satisfactorily if, in the Principal's view, the student has:

- followed a program developed from the relevant Life Skills syllabus
- applied themselves with diligence and sustained effort to the set tasks and experiences of the program
- achieved some or all of the course outcomes (see Profile of Student Achievement below).

There are no time requirements for any Board Developed or Board Endorsed course. The Board expects, however, that most students would meet the outcomes for a 2 Unit Preliminary course and a 2 Unit HSC course over approximately 240 indicative hours in total (ie 120 indicative hours each).

What students receive on successful completion

As detailed in the Board of Studies *ACE Manual*, all students who meet the pattern of study requirements and satisfactorily complete the required studies will receive a Higher School Certificate testamur, a Record of Achievement and a Profile of Student Achievement.

Testamur

The testamur is the Higher School Certificate. It shows the name of the student and the school, and includes a statement that the student has met the requirements for the credential.

Record of Achievement

A HSC Record of Achievement will be provided to any student who completes a Life Skills course. It lists all courses satisfactorily completed and the result for each course. A Record of Achievement is cumulative and lists all courses completed for Stage 6 in previous years.

Profile of Student Achievement

The Profile of Student Achievement is a report completed by the school on the student's individual achievements. The Board of Studies provides schools with a Profile of Student Achievement booklet for each student. The Profile of Student Achievement lists the outcomes for each Life Skills course. As the student demonstrates that they have achieved a learning outcome, the relevant section of the Profile of Student Achievement is signed and dated by the relevant school teacher.

Before the student leaves school, the Profile of Student Achievement is verified by the school principal as a true and accurate record of all learning outcomes demonstrated by the student. The Profile of Student Achievement is a record of all outcomes attained by the student.

Assistance and advice

School systems or sectors are able to advise schools on transition-planning and on options for students with special education needs. Schools seeking to enrol students in Stage 6 Life Skills courses may contact their system or sector's special education staff for information on transition-planning and options for their students.

Information and advice on any aspect of Life Skills Stage 6 courses are also available from the Senior Curriculum Officer (Special Education) at the Office of the Board of Studies. Board of Studies Liaison Officers can also advise on matters such as HSC entries and appeals.

The Board of Studies and the Office of the Board of Studies are committed to consultation and to responding to the needs of all students and schools. Schools and parents involved with the education of students with special needs are welcome to contact the Office of the Board of Studies at any time with comments or suggestions on the Life Skills courses or any other aspect of the Board's policies or requirements relating to students with special education needs.

Occupational health and safety

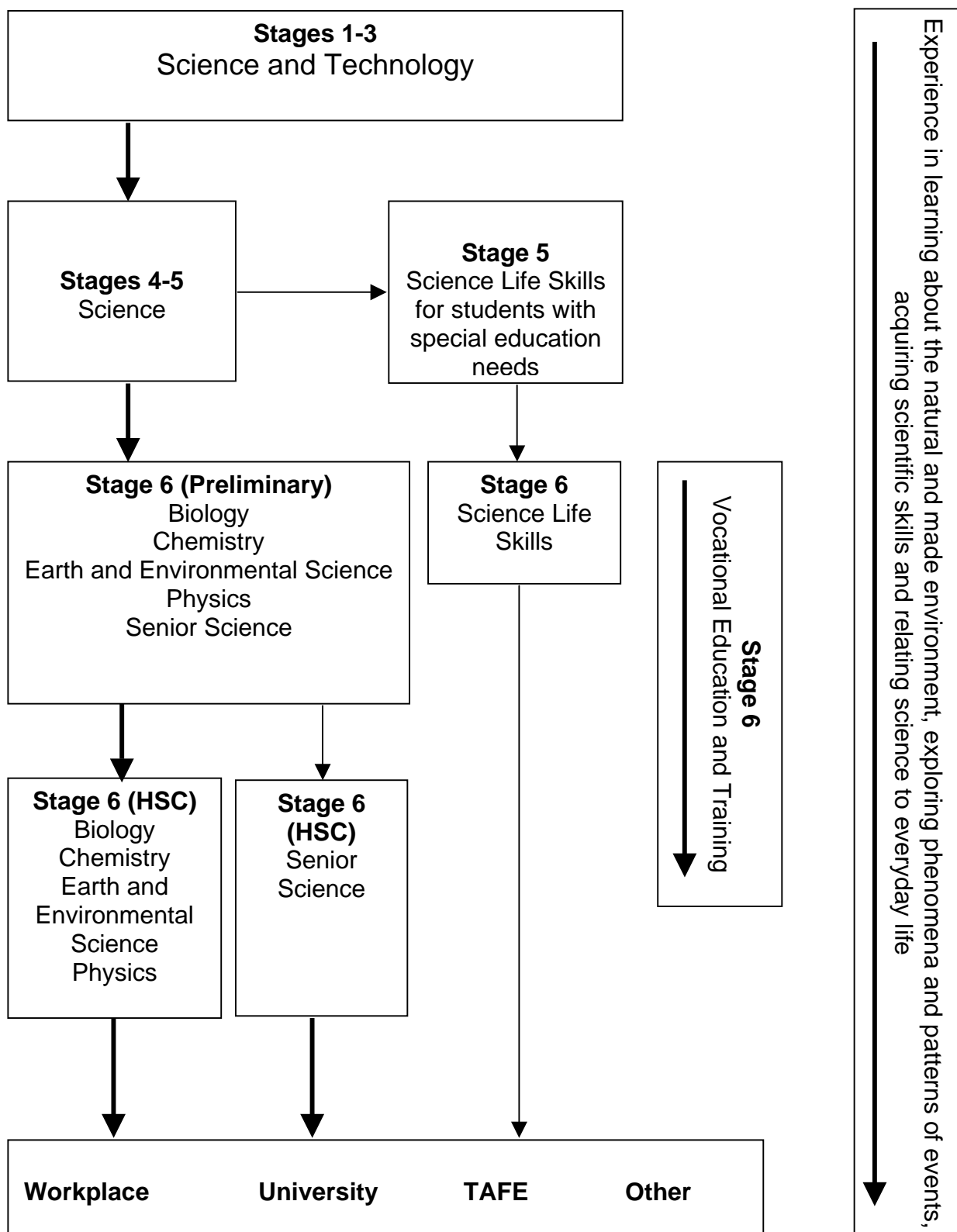
In developing units of work for Life Skills courses, teachers should consider the occupational health and safety issues of working with students. Safe working practices and environments should be provided at all times.

Care must be taken at all times in the practical activities students engage in. Non-slip mats can be provided in wet areas and the height and type of tables considered to suit the physical needs of students. Electrical hazards should be avoided at all times. For example, attention must be given to the safe use of tools, materials and technologies. If students are using tools or machinery, the dangers of working with such items should be explained. Students should be trained to work with tools and machinery. The adequate ventilation of classrooms, particularly when any hazardous substances are used, should be considered. Extractor fans, for example, can greatly assist in the removal of fumes from classrooms.

Further information about working with hazardous substances is available in the document *Chemical Safety in Schools Package* produced by the Department of Education and Training, 1998.

Exposure to excessive noise levels may lead to impaired hearing. The frequency and loudness of sound should be taken into account in the planning of any activities.

3 Continuum of Learning for Stage 6 Science Life Skills Students



4 Aim

Stage 6 Science Life Skills is designed to:

- develop knowledge and understanding of the relationship between people and the natural environment
- develop skills and responsible attitudes that enable students to use and manage the earth's resources in everyday living situations.

5 Objectives

Students will:

- develop knowledge and understanding of the earth's natural environment through observation of changing phenomena
- develop knowledge and understanding through investigating living things and their interaction with the environment
- develop knowledge, understanding, skills and values in the use and management of the earth's resources
- develop knowledge, skills and a positive attitude towards the use of plants as an essential component of the environment
- develop knowledge, understanding and skills to care for and manage animals in a socially and environmentally responsible manner
- develop knowledge, understanding and skills in relation to the use of energy in daily living situations

6 Course Structure

Each course has six modules, which focus on generalising knowledge, understanding, skills, values and attitudes across a range of post-school environments. The structure of each Stage 6 Life Skills course is designed to provide a broad and balanced approach to meet individual student needs within the context of the transition-planning process.

The Stage 6 Science Life Skills course has an indicative time allocation of 120 hours in each of the Preliminary and HSC courses. The choice of outcomes and content from the modules within each course, and the time spent on the content, should reflect the needs of individual students.

Generally the outcomes contained in the Stage 6 Science Life Skills course progress in degree of difficulty. The outcomes, however, are not based on a developmental hierarchy. Therefore students are not required to satisfy previous outcomes before engaging with particular outcomes and content later in each module.

The content points listed with each outcome form the basis of the learning opportunities for students. Teachers may choose the most relevant aspects of the content to meet the particular needs of individual students. Any examples provided with the content points are suggested strategies only. Teachers may use the examples provided or develop other examples to meet the particular needs of individual students.

Module	Module Description
The Earth and Its Surroundings	Students will develop a basic understanding of the factors that influence the earth's environment and its relationship with the sun and other bodies in the universe. The module emphasises the importance of climate and weather and the need to maintain a balance in nature.
Living Things	Students will develop skills in identifying the essential differences between living and non-living things. This module will provide students with opportunities to develop greater knowledge and understanding of the nature, range and habitats of a wide variety of living things.
Managing Resources in the Local Environment	This module explores the nature, type and importance of resources. Students will have opportunities to develop knowledge, understanding, skills and values in relation to the effective and responsible use and management of resources in the environment.
Horticulture	This module provides an opportunity for students to identify and value the many ways plants are used in the environment. Students will also have an opportunity to develop skills in planning, and participating in the management of, a garden.
Animal Care	Animals are a fundamental aspect of the human environment and it is important that students develop knowledge and understanding of and skills in animal care and management. The module provides opportunities for students to take part in the effective care and management of animals.
Obtaining and Using Energy	Students will have opportunities to develop a knowledge and understanding of the sources, types and nature of energy used in daily environments.

7 Objectives and Outcomes

Objective Students will:	Outcomes A student:
1. develop knowledge and understanding of the earth's natural environment through observation of changing phenomena	1.1 gains a general understanding of the concept of the Earth in space
	1.2 understands the features of various natural and made environments
	1.3 recognises the significance for all living things of the basic components that make up the Earth and its surroundings
	1.4 demonstrates knowledge and understanding of variations in climate and weather within the local environment, across Australia and globally
	1.5 demonstrates knowledge and understanding of the interdependence of species and their environments
	1.6 recognises the importance of human action in maintaining a balance in nature
2. develop knowledge and understanding through investigating living things and their interaction with the environment	2.1 indicates the essential differences between living and non-living things
	2.2 demonstrates knowledge and understanding of the substances needed by living things in order to survive
	2.3 recognises the importance of energy from the sun for living things
	2.4 demonstrates knowledge and understanding of the wide variety and range of living things
	2.5 demonstrates knowledge and understanding of the range of habitats of living things and the adaptations evident across species
	2.6 identifies features of specific living things, in the local environment, across Australia and globally, that make them special or valued

Objective Students will:	Outcomes A student:
3. develop knowledge, understanding, skills and values in the use and management of the earth's resources	3.1 recognises the nature, types and importance of resources
	3.2 understands the differences between natural and constructed resources
	3.3 understands the differences between renewable and non-renewable resources
	3.4 understands and undertakes personal and community responsibilities for managing resources
	3.5 understands and contributes to recycling and related processes
	3.6 demonstrates knowledge and understanding of the causes and effects of pollution
4. develop knowledge, skills and a positive attitude towards the use of plants as an essential component of the environment	4.1 recognises and identifies the various ways that people use plants
	4.2 understands the importance of plants in the environment
	4.3 observes and identifies the factors that influence plant growth
	4.4 demonstrates knowledge, understanding and skills in growing and propagating plants
	4.5 demonstrates knowledge and understanding of and skills in garden management
	4.6 demonstrates knowledge and understanding and skills in the use of chemicals and biological controls
	4.7 understands the needs and importance of native plants

Objective Students will:	Outcomes A student:
5. develop knowledge, understanding and skills to care for and manage animals in a socially and environmentally responsible manner	5.1 recognises, identifies and understands animals in the local natural environment
	5.2 demonstrates knowledge and understanding of the variety of animals people keep in their homes
	5.3 demonstrates knowledge of and skills in keeping a variety of animals
	5.4 understands and abides by regulations relating to animal care and management
	5.5 demonstrates knowledge of and skills in health care for animals, including knowledge of when to seek assistance
	5.6 identifies requirements and understands issues for people working with animals on farms
6. develop knowledge, understanding and skills in relation to the use of energy in daily living situations	6.1 recognises and understands that energy is needed to undertake a range of activities
	6.2 demonstrates knowledge and understanding of sources of energy and how they are used in daily living
	6.3 demonstrates knowledge and understanding of the nature and operation of electrical and mechanical machines
	6.4 recognises the need to use energy sources in an effective and responsible manner

8 Key Competencies

The Stage 6 Science Life Skills Course provides a powerful context within which to develop general competencies considered essential for the acquisition of effective, higher order thinking skills necessary for further education, work and everyday life.

The following key competencies are embedded in Science Life Skills to enhance student learning.

- collecting, analysing and organising information
- communicating ideas and information
- planning and organising activities
- working with others in teams
- using mathematical ideas and techniques
- solving problems
- using technology.

These key competencies are developed through the objectives, modules, outcomes and content within the Stage 6 Science Life Skills Course, and within the context of addressing individual student need.

9 Modules

Module 1: The Earth and Its Surroundings

Module Description

Students will develop a basic understanding of the factors that influence the earth's environment and its relationship with the sun and other bodies in the universe. The module emphasises the importance of climate and weather and the need to maintain a balance in nature.

Outcome

1.1 Gains a general understanding of the concept of the Earth in space

Content

Students:

- identify the Earth as the planet where we live

- recognise and identify by direct observation other bodies in space
 - eg – moon
 - stars
 - sun

- recognise and identify by direct observation that changes occur over time
 - eg – day/night
 - rising/setting sun
 - stars and moon appear at night
 - sun appears during the day

- recognise and identify by direct observation that the bodies in space move
 - eg – apparent movement of sun
 - movement of moon

- identify that the movement of the sun and moon affect our daily routines
 - eg – people generally sleep at night and are active in the daytime

- demonstrate actions that are taken in relation to changes that are associated with the daily rotation of the earth on its axis
 - eg – sleep at appropriate time
 - work mainly in daylight hours

- recognise and identify by direct observation that planetary changes occur over longer periods of time
 - eg – seasonal changes affect the growth and availability of fruit and vegetables
 - weather
 - hibernation of animals

- demonstrate skills in adapting to seasonal changes
 - eg – plant seasonal flowers and vegetables
 - choose clothes for season
 - plan holidays
- recognise and identify tidal changes by direct observation
 - eg – high/low tide
- recognise and identify tidal changes and their effect on daily living
 - eg – fishing, leisure and recreation activities
- demonstrate the skills to adapt to tidal changes in some activities
 - eg – surfing
 - fishing
 - boating
 - prawning
- recognise and identify dangers associated with the sun
 - eg – at the time of an eclipse
 - sunburn
 - dehydration
- demonstrate skills in taking precautions against dangers associated with the sun
 - eg – use sunscreen
 - wear protective clothing
 - avoid looking at the sun
- indicate the ways in which people can explore space
 - eg – through a telescope
 - through organisations such as the National Aeronautic and Space Administration
- recognise and identify some of the advantages that space exploration has contributed to human welfare
 - eg – heart pacemakers
 - thermal blankets
 - building materials
 - mobile phones
 - miniaturisation of computing systems
- gather information about space exploration
 - eg – use the Internet
 - use a library
 - undertake projects

Outcome

1.2 Understands the features of various natural and made environments

Content

Students:

- recognise and identify various types of environments
 - eg – oceans
 - forests
 - rivers
 - deserts

- indicate recognition that specific environments have different physical characteristics
 - eg – deserts are hot and dry
 - alpine environments are cold and mountainous
 - rainforests are dense and wet

- indicate recognition that different environments have different species of plants and animals
 - eg – desert habitats have snakes, cactus
 - coastal habitats have shellfish, mangroves

- recognise by direct observation that people make changes to the environment to suit their needs
 - eg – build cities
 - construct dams
 - clear land for farming

- identify by direct observation the features of their own environments
 - eg – urban
 - city
 - town
 - rural

- classify environments according to their features
 - eg – shops or buildings
 - large areas of land used for farms

- demonstrate ways in which they could change their personal environments
 - eg – establish a garden
 - build a fish or frog pond
 - plant trees

- gather information about the features of natural and made environments
 - eg – make a collage
 - present a project

Outcome

1.3 Recognises the significance for all living things of the basic components that make up the Earth and its surroundings

Content

Students:

- indicate recognition of the basic non-living components of which the earth is made
eg – point to areas of land and water on a globe of the world
- indicate recognition that the sun is necessary for life to exist on earth
- observe that the earth provides living spaces for a variety of living things
eg – worms live and grow in the ground
– trees live and grow in the ground
– fish live and grow in oceans and rivers
- recognise that the atmosphere has gases that enable living things to survive
eg – the oxygen we need to breathe is in the air
- identify the Earth as the source of substances that allow life to exist
eg – nutrients in the soil
– water for drinking
– air to breathe

Outcome

1.4 Demonstrates knowledge and understanding of variations in climate and weather within the local environment, across Australia and globally

Content

Students:

- observe and recognise changing weather conditions
 - eg – hot
 - rainy
 - cloudy
 - cold
 - windy
- identify components of weather that will affect daily living
 - eg – temperature
 - rain
 - fog
- demonstrate skills in adapting to weather in everyday living situations
 - eg – choose appropriate clothing for the weather
- predict possible changes in weather
 - eg – observe storm clouds
 - notice changes in temperature, wind
- plan for possible changes in the weather
 - eg – take an umbrella
 - take washing off line
 - close windows
- identify dangers associated with extreme weather
 - eg – high winds
 - hail
 - electrical storms
- demonstrate the steps that can be taken to protect people and property from adverse weather
 - eg – put goods under cover
 - clean gutters
 - put car in garage
 - have tarpaulins ready
- identify and indicate the purpose of a variety of instruments used to predict and measure weather activities
 - eg – a thermometer to measure temperature
 - a barometer to measure air pressure
 - a rain gauge to measure rainfall
- undertake first hand investigations using a range of weather instruments
 - eg – a thermometer
 - a barometer
 - a rain gauge

- recognise that weather patterns, and therefore climates, are different in different places
 - eg – Sydney weather is different from Katoomba weather
- develop skills in interpreting differences in weather patterns
 - eg – listen to or watch weather forecasts on radio or television
 - look at or read weather maps
 - make observations when on holidays
- recognise and identify large scale disasters that occur because of weather or climate conditions
 - eg – floods
 - cyclones
 - hurricanes
 - bushfires
- develop skills in predicting the effect of large scale disasters
 - eg – death of native species
 - economic loss
- identify disaster rescue services
 - eg – State Emergency Services
 - Bushfire Patrol
 - Coast Guard
- develop skills to contact appropriate disaster relief services if needed
 - eg – dial 000
 - contact insurance companies
 - contact State Emergency Service
- recognise and identify global weather patterns
 - eg – cyclones
 - drought

Outcome

1.5 Demonstrates knowledge and understanding of the interdependence of species and their environments

Content

Students:

- observe that living things do not exist in isolation
 - eg – name plants and animals that live together
 - find out those different animals that live in the same place
- recognise how living things use each other for food
 - eg – recognise that a cat eats mice and birds
 - find out where pets' food comes from
- identify by direct observation simple food chains in local area
 - eg – visit local pond/creek/dam:
 - plant → snail → duck
 - weed → small fish → large fish
 - plant → caterpillar → bird
- identify by observation that animals may eat more than one kind of food
 - eg – watch a bird in the garden or playground
 - visit a zoo or farm at feeding time
- recognise that dead plants and animals and waste products are a food source
 - eg – maggots eat dead animals
 - fungus grows on rotting wood
 - mushrooms grow in cow pat
- recognise that a change in the number of a species can affect the whole ecosystem
 - eg – the presence of carp in the rivers reduces the number of perch
 - blue-green algae in rivers kills fish
- gather data from a local environment to show change in the ecosystem
 - eg – number of fish in local stream in a specific area – data collected over time
- indicate recognition that changes in the natural ecosystem may affect human activities
 - eg – commercial fishing quotas are needed because of reduced number of fish
 - international whale quotas
 - endangered species of native birds in Australia
- develop skills in predicting changes in the local environment as a result of human activity
 - eg – reduction in the number of particular species of plants and animals

Outcome

1.6 Recognises the importance of human action in maintaining a balance in nature

Content

Students:

- recognise by observation changes brought about by people
 - eg – damming of rivers
 - farming
 - use of pesticides
 - deforestation
 - household chemicals in water ways
- identify the effects on the ecosystem brought about by human activity
 - eg – cutting down trees results in removing homes for birds and possums
 - spraying insects can poison birds' food supply
 - heavy metal contamination (such as mercury) in water poisons fish
- identify regulations to control people's effect on the ecosystem
 - eg – fishing quotas
 - regulations to prevent the dumping of oil/petrol/waste in sewer
 - regulations to prevent dumping of toxic waste in landfill
 - regulations to prevent dumping tyres in bushland
- gather information about the ways in which information about regulations is give to the community
 - eg – signs about prohibited fishing
 - pamphlets on dumping of rubbish
- develop skills in accepting personal responsibilities in maintaining a balance in nature
 - eg – fishing only for personal use
 - cutting or using only enough wood for personal use
 - locking cat up at night
 - using only the amount of material that is required
- demonstrate ways in which people can respond to issues of maintaining a balance in nature
 - eg – joining Greenpeace
 - writing to a newspaper
- demonstrate ways in which damage to ecosystems can be reduced
 - eg – buying and using biodegradable detergents
 - growing native plant species

Outcome

2.2 Demonstrates knowledge and understanding of the substances needed by living things in order to survive

Content

Students:

- indicate recognition that living things need air to survive
 - eg – observe people breathing
 - observe that living things die without air
- demonstrate the need for good ventilation
 - eg – open windows when appropriate
 - keep pets in well-ventilated areas
- identify by direct observation that living things need water to survive
 - eg – plants without water die
 - people drink water to live
- develop skills in maintaining an adequate water supply for living things in the immediate environment
 - eg – keep pet water bowls full
 - water plants in garden
- identify by direct observation that living things need food to survive
 - eg – dogs and cats need an adequate supply of food
 - birds need an adequate supply of seeds or fruit
- develop skills in maintaining an appropriate food supply for living things in the immediate environment
 - eg – feed pets daily
- identify and investigate the ways in which living things use food
 - eg – for growth
 - to provide energy for activities
- recognise and classify a range of foods needed by animals to survive
 - eg – protein — meat/fish/lentils
 - carbohydrates — bread/pasta/fruits
 - fats/oils – butter, olive oil, margarine
- recognise and gather information about the need for other inorganic nutrients
 - eg – vitamins
 - minerals
- gather information about and discuss the implications for living things of inadequate diets
 - eg – lack of iron → anaemia
 - lack of calcium → poor bone growth/strength

- recognise plants as unique living things that manufacture their own food from simple inorganic nutrients
- recognise the interdependence of plants and animals
 - eg – draw or assemble pictorial representations of food chains
 - note that all food chains start with plants

Outcome

2.3 Recognises the importance of energy from the sun for living things

Content

Students:

- identify by direct observation that green plants need sunlight to survive
 - eg – plants in dark areas have poor growth or die
 - vegetable gardens need to be in the sun to thrive
- identify by direct observation the sun as a source of heat for living things
 - eg – the sun makes people feel warm
 - plants' growth rates vary with temperature
 - animals' activity varies with temperature
- indicate recognition that light from the sun affects the activity of living things
 - eg – most flowers open in the sunlight and close at night
 - some animals are active at night and sleep during the day
 - most humans sleep at night and are active during the day
- observe living things that live in habitats with different amounts of sunlight
 - eg – visit a nocturnal house at the zoo
 - watch lizards in the garden or playground
- identify the sun as the source of energy for photosynthesis in plants
- identify and investigate other specific effects of sunlight on plants in addition to photosynthesis
 - eg – phototropism
- identify and gather information about specific effects of sunlight on animals
 - eg – vitamin D production in humans
 - biorhythms

Outcome

2.4 Demonstrates knowledge and understanding of the wide variety and range of living things

Content

Students:

- identify by direct observation a variety of living things in the local environment
 - eg – cat
 - dog
 - tree
 - mouse
 - possum
 - worm
- identify and classify living things into groups using one or more observable features
 - eg – plant or animal
- identify and classify a variety of animals in the local environment into groups using one or more observable features
 - eg – birds
 - reptiles
 - mammals
 - worms
 - insects
- indicate recognition of the different ways in which animals are used by humans
 - eg – specific animals are used as pets
 - some animals are used for food
 - some insects are used in agriculture
- identify and investigate a specific animal of importance to humans in the local area
 - eg – bees for food (honey)
- identify and classify into groups a variety of plants in the local area using one or more observable features
 - eg – ferns, flowering plants (angiosperms), conifers (gymnosperms), algae
- indicate recognition that some plants have greater importance to humans than others
 - eg – food plants such as grains
- identify and investigate a specific plant of importance to humans in the local area
 - eg – citrus tree

Outcome

2.5 Demonstrates knowledge and understanding of the range of habitats of living things and the adaptations evident across species

Content

Students:

- identify by observation a range of habitats for living things in the local area
 - eg – at their school
 - in their backyard
 - in the local park, beach or river
- identify and gather information about a range of habitats for living things in places other than the local area
- identify by direct observation the special features of a specific habitat in the local area
 - eg – soil
 - water
 - different types of animal species
 - different types of plant species
- identify by direct observation special features of organisms that live in a specific local habitat
 - eg – fish have fins and gills
 - cacti have spines not leaves
- gather information about special features of organisms that live in habitats other than the local area
 - eg – cacti in desert
- construct a habitat to suit a specific organism's needs and features
 - eg – set up a fish tank or pond appropriately
 - set up a bird aviary
 - help in regenerating a local bush area
- predict the possible habitat of an animal, given its features
 - eg – fins and gills mean a water environment

Outcome

2.6 Identifies features of specific living things, in the local environment, across Australia and globally, that make them special or valued

Content

Students:

- indicate recognition that some types of organisms are considered special or valued
 - eg – platypus
 - green and golden bell frog
- identify the particular features of types of organisms that make them special or valued within an environment
 - eg – number
 - limited distribution
 - endangered
 - highly unusual features
- identify by direct observation features of organisms that are considered special or valued plants/animals found in the local area
- identify and gather information about the features of organisms native to Australia
 - eg – platypus
 - echidna
 - eucalypt
 - grevillea
- identify and gather information about the features of special or valued organisms native to other parts of the world
 - eg – panda
 - mountain gorillas
 - some orchids
- indicate recognition of the value of studying organisms that are considered special or valued
 - eg – to gain understanding of their needs and behaviours
 - to prevent extinction

Module 3: Managing Resources in the Local Environment

Module Description

This module explores the nature, type and importance of resources. Students will have opportunities to develop knowledge, understanding, skills and values in relation to the effective and responsible use and management of resources in the environment.

Outcome

3.1 Recognises the nature, types and importance of resources

Content

Students:

- indicate recognition of a wide range of substances used daily by people at home, at school, in the workplace
 - eg – food
 - paper
 - plastic
 - wood
 - concrete
 - bricks
- identify and classify by direct observation a variety of resources used by people
 - eg – water, fuels, rocks/minerals, chemicals, plants and animals
- identify by direct observation a range of purposes for which people use resources in the school and local community
 - eg – rocks for building and road construction
 - fuels as energy sources to work machines
 - chemicals for cleansers, lubricants
 - plants for timber and food
 - water for irrigation, power generation
- identify ways that using resources make life more comfortable and convenient for people
 - eg – technical aids
 - houses for shelter
 - packaging
- demonstrate ways in which resources can be used to enhance daily living
 - eg – use rocks to landscape the garden
 - use foil for cooking

- gather information about the different type of resources used in school and local community projects
 - eg – buildings — bricks, timber and metals
 - parks — rocks, concrete and plants
- relate the resource to the places where it can be obtained in the local area
 - eg – rock quarries
 - pine plantations
 - sand mining
 - paper manufacturing
 - brick works
 - saw mill

Outcome

3.2 Understands the differences between natural and constructed resources

Content

Students:

- classify resources into natural and constructed categories
 - eg – bricks and concrete are manufactured
 - timber and sand can be used in natural form
- indicate recognition of examples of natural resources
 - eg – plants
 - animals
 - sand
 - rocks
 - water
 - natural bushland
- identify and undertake firsthand investigations of natural resources used in daily life
 - eg – wood
 - water
 - plants
- indicate recognition of constructed resources
 - eg – chemicals
 - plastics
 - fabrics
 - alloys
 - buildings
 - parklands
 - sporting fields
- identify and undertake firsthand investigations of constructed resources used in daily life
 - eg – hair and skin care products
 - degreasers
 - lubricants
 - pesticides
 - cosmetics
- recognise that long-term use of constructed resources could be detrimental to personal health and the environment
 - eg – exposure to chemicals may affect health
 - constructed resources can pollute the environment
- select and use natural resources in preference to constructed resources
 - eg – timber instead of non-PET plastic
 - natural soap instead of detergent

Outcome

3.3 Understands the differences between renewable and non-renewable resources

Content

Students:

- classify resources into renewable and non-renewable categories
 - eg – wood as opposed to oil
 - paper as opposed to plastics
- identify by direct observation a range of renewable resources
 - eg – trees, water
 - plant or animal food sources
- identify by direct observation a range of non-renewable resources
 - eg – oil
 - coal
 - non-PET plastics
- gather information about renewable resources being used in the local area
 - eg – at school
 - in the community
 - in the workplace
- gather information about non-renewable resources being used in the local area
 - eg – at school
 - in the community
 - in the workplace

Outcome

3.4 Understands and undertakes personal and community responsibilities for managing resources

Content

Students:

- recognise that individuals and the community have a responsibility for managing resources
 - eg – conserving water
 - rubbish disposal
- identify responsibilities associated with resource use
 - eg – don't waste water
 - conserve fuels
 - recycle materials
 - reduction of household waste
 - use of environmentally friendly products
- describe actions an individual can take at home to manage resources responsibly
 - eg – reduce household water consumption by turning off water while brushing teeth
 - reduce household energy consumption by turning off lights in rooms not being used
 - reduce household use of chemicals by using only a small amount of detergent when washing up
- develop skills in managing resources in the home responsibly
 - eg – turn tap off when cleaning teeth
 - use biodegradable detergents
 - turn off lights when not needed
 - cook more than one dish in the oven at one time
 - put lunches in reusable containers or plastic wrap
- identify and demonstrate some actions a community can take to manage resources responsibly
 - eg – reduction in household waste
 - conservation of natural bushland
 - responsible use of waterways
- develop skills in responsible management of resources in the community
 - eg – put rubbish in bins
 - avoid throwing rubbish from car
 - don't dispose of rubbish in waterways
 - don't take items from the natural bushland
- demonstrate community involvement in managing resources
 - eg – join in 'Clean Up Australia Day'
 - join conservation group such as Landcare
 - take part in Neighbourhood Watch

Outcome

3.5 Understands and contributes to recycling and related processes

Content

Students:

- understand that some materials can be recycled
 - eg – margarine containers
 - building materials
 - wrapping paper
 - ice cream containers
- identify materials in the home that can be recycled
 - eg – vegetable peelings
 - plastic bottles
 - aluminium cans
 - newspapers
- observe and identify arrangements to maximise recycling at home
 - eg – bins for rubbish
 - divided bin for recycling
 - box container for plastics, papers, cans or glass
 - compost
- describe ways in which recyclable materials and non-recyclable materials can be sorted at home
 - eg – put PET bottles in recycling bin
 - put glass in recycling bin
 - put papers in box container
- develop skills in recycling materials where possible
 - eg – compost scraps
 - re-use paper
- develop skills in responsibly disposing of non-recyclable materials at home
 - eg – place in garbage waste bin
- identify recycling or garbage waste processes in the community
 - eg – waste paper collection
 - garbage collection
- identify collection points for recyclable or non-recyclable materials within the community
 - eg – garbage tip
 - collection bins for used clothing
- develop skills in arranging for materials to be taken to recycling agencies or disposed of appropriately
 - eg – arrange for pick-up by local council
 - arrange for garden waste collection
- develop skills in assisting in the transfer of materials to collection or recycling depot
 - eg – obtain trailer and transport load to depot
 - place materials in appropriate transportable containers

Outcome

3.6 Demonstrates knowledge and understanding of the causes and effects of pollution

Content

Students:

- indicates recognition that air and water may not always be clean
 - eg – smog
 - dirty water
- identify some causes of pollution of air and water
 - eg – chemicals
 - burning
 - vehicle emissions
 - industrial or agricultural activity
- identify household chemicals that may be a cause of pollution
 - eg – fats or oils from the kitchen
 - detergents
 - oil products
 - pesticides or herbicides in garden
- develop skills in reducing chemical pollution from their own household waste
 - eg – do not put cooking oil down sink
 - reduce the quantity of detergent used
 - use biodegradable detergents
 - dispose of sump oil appropriately
 - use natural controls rather than pesticides in the garden
- describe household burning activities that may be a cause of pollution
 - eg – burning garden waste
 - burning plastics that may give off toxic fumes
 - burning wood and fossil fuels that give off carbon dioxide
- develop skills in reducing pollution from burning household waste
 - eg – compost garden waste
 - recycle plastics
 - reduce consumption of fossil fuels by good practices such as insulation
- gather information about vehicle emissions that may be a cause of pollution
 - eg – lead fuels
 - emission of CO₂
- describe and demonstrate ways to reduce pollution from vehicle emission
 - eg – use unleaded fuels
 - use public transport
 - use car pool
 - walk or ride a bike

- identify industrial and agricultural activity that may be a cause of pollution
 - eg – heavy metals in waterways
 - gas emissions
 - pesticide spraying of crops
 - overuse of fertilisers

- recognise and gather information about health problems caused by pollution
 - eg – skin diseases
 - allergies
 - breathing problems

- undertake firsthand investigations to monitor the quality of some aspects of the local environment
 - eg – use a water-testing kit to monitor water quality
 - record the reported air pollution index over a period of time

- gather information about the effects of pollution on other living things
 - eg – mercury poisoning in fish
 - pesticide poisoning in birds

Module 4: Horticulture

Module Description

This module provides an opportunity for students to identify and value the many ways plants are used in the environment. Students will also have an opportunity to develop skills in planning, and participating in the management of, a garden.

Outcome

4.1 Recognises and identifies the various ways that people use plants

Content

Students:

- indicate recognition that people use plants in a variety of ways
 - eg – grow gardens
 - plant trees
 - grow crops
- identify by direct observation the parts of a plant
 - eg – roots
 - stem
 - leaves
- describe some uses of a range of plants
 - eg – food
 - medicines
 - fuel
 - shelter
- undertake firsthand investigations to classify a range of plants and/or the parts of those plants used for food
 - eg – roots — carrots, parsnips, radishes
 - stems — celery, rhubarb, bok choy
 - leaves — spinach, lettuce, cabbage
 - seeds — nuts, pinenuts, rice
 - flowers — cauliflowers, nasturtiums, broccoli
 - fruits — oranges, apples, grapes
- recognise and identify ways in which plants are used for shelter or shade
 - eg – birds nest in trees
 - people grow trees near homes for shade
 - koalas live in trees
- identify and classify plants used to enhance everyday life
 - eg – medicines
 - cooking ingredients
 - grooming
 - decoration of environment

- describe other ways in which plants can be used
 - eg – timber for construction
 - wood for fuel
 - peat for fuel
- identify ways plants can be made into products for everyday living
 - eg – making bowls
 - crafting furniture
 - rushes for weaving
- develop skills in making products from plants
 - eg – weave a basket
 - carve a bowl
 - construct a box from wood

Outcome

4.2 Understands the importance of plants in the environment

Content

Students:

- recognise that plants serve a variety of purposes in the environment
 - eg – a tree provides shade
 - food for animals
 - shelter for insects and animals
- identify that plants are the primary source of food on earth
 - eg – follow a local food chain to its plant source
- recognise that plants can be a source of other substances
 - eg – plants produce part of the air we breathe
- observe different ways in which plants enhance surroundings
 - eg – gardens and parks
 - sensory gardens
 - indoor plants
- undertake firsthand investigations of beautification programs in the local area
 - eg – bushland regeneration
 - home gardens
- undertake firsthand investigations to demonstrate the importance of plants holding soil together
 - eg – lack of plants leads to soil run-off in heavy rain and to soil erosion
- identify by direct observation problem soil erosion areas in local environment
 - eg – collect data by observation and field trips
- undertake firsthand investigations of and demonstrate ways of controlling soil erosion in the local area
 - eg – planting trees or grasses
 - building retaining walls
- identify and gather information about problems created by agricultural practices
 - eg – salinity
 - rising water table
 - loss of soil nutrients

Outcome

4.3 Observes and identifies the factors that influence plant growth

Content

Students:

- identify the basic needs of plants for growth
 - eg – sun – water
 - soil – temperature
- observe the effects of water on plants
 - eg – wilting when water not available
 - fungal disease due to excessive watering
 - rotting of plants
- observe and recognise that plants can be affected by seasonal change
 - eg – winter — too cold for growth
 - spring — moist and warm
 - summer — hot and dry
 - autumn — changeable
- develop skills in providing an appropriate amount of water for a plant
 - eg – watering when soil is dry
- identify by direct observation types of soil
 - eg – sandy
 - clay
 - loam
- undertake firsthand investigations of ways to improve soil structure
 - eg – adding organic matter such as compost
 - aerating the soil by digging
- develop skills to improve soil structure successfully
 - eg – adding sand to clay soil
 - adding organic matter
- identify and predict problems in plant growth
 - eg – yellow leaves
 - poor flowering
 - small fruit
- identify a range of plant nutrients
 - eg – iron
 - magnesium
 - phosphate
- undertake firsthand investigations to identify a specific nutritional problem and take steps to rectify the problem
 - eg – test soil
 - add fertiliser
- undertake investigations of different methods of growing plants out of season
 - eg – indoor growth
 - hydroponics

- greenhouses

Outcome

4.4 Demonstrates knowledge, understanding and skills in growing and propagating plants

Content

Students:

- identify different ways of propagating plants
 - eg – seeds and cuttings
- identify factors important in propagating plants by seed
 - eg – depth of planting
 - time of planting
 - appropriate soil or medium
 - watering
 - spacing of plants
- undertake firsthand investigations of the various methods used to plant seeds
 - eg – in ground
 - in containers
- identify factors important in propagating plants by bulbs and tubers
 - eg – depth of planting
 - temperature of soil
 - time of planting
 - watering
 - spacing
- develop skills in propagating plants from bulbs and tubers
- identify factors important in propagating plants by cutting
 - eg – tip cuttings
 - removing flower heads
 - removing excess leaves
 - time of year
 - appropriate soil or medium
 - hormone powders and treatments
- develop skills in propagating plants by cutting
- describe other specialised ways of propagating plants and the factors that need to be considered in their propagation
 - eg – layering of raspberry canes
 - grafting of fruit trees
 - leaf cutting (African violet)
- develop skills in propagating plants by grafting
 - eg – cut in appropriate place
 - use binding tapes
 - choose appropriate root stock
- develop skills in propagating plants by layering
 - eg – choose an appropriate plant
 - pin to the ground

- develop skills in propagating plants by leaf cutting
 - eg – choose appropriate plants (African violets, begonias)
 - allow leaf to dry if needed
 - make cuts in leaf in appropriate place to produce new plant
- gather information about and undertake investigations of hydroponics as an alternative way of growing specific plants
 - eg – hydroponic lettuce in supermarket
- develop skills in setting up a hydroponic garden
 - eg – choose correct medium
 - maintain nutrient mix

Outcome

4.5 Demonstrates knowledge and understanding of and skills in garden management

Content

Students:

- recognise suitable areas for gardens
 - eg – in back or front yard
 - in school courtyard
 - on a large parcel of land
- recognise and identify the reasons for cultivating gardens
 - eg – to grow vegetables, flowers, shrubs or a combination of these
- identify resources needed for construction of a garden
 - eg – access to water supply
 - containment of garden area
 - suitable plants
 - tools
- develop skills in planning a garden
 - eg – use computer software programs
 - research using books
 - develop own plan
- classify and select plants which will grow in particular seasons
 - eg – sweet peas — autumn
 - bulbs — spring
 - trees — yearly
- identify and classify plants by length of growing cycle
 - eg – annuals need replanting each year
 - biennials need to be planted every 2 years
 - perennials remain in the ground
- demonstrate different ways to prepare gardens
 - eg – rework existing garden
 - start new garden bed
- identify types of plants suitable for a specific garden
 - eg – flowers
 - vegetables
- obtain plants or seeds for a garden
 - eg – nursery
 - cuttings
 - supermarket

- establish a garden
 - eg – prepare soil area
 - obtain plants
 - build containment barriers if a raised bed
- identify by direct observation when garden maintenance is required
 - eg – wilting leaves
 - overcrowding of plants
 - dry soil
- demonstrate skills in maintaining a garden
 - eg – weeding
 - pruning
 - watering
 - fertilising
 - clipping
- organise a daily or weekly planner to manage garden
 - eg – water regularly
 - fertilise when necessary
 - weed regularly
- recognise that garden soil may need enrichment
 - eg – fertilise soil (nutrients)
 - apply phosphates (vegetables)
- use soil nutrients appropriately
 - eg – select appropriate fertiliser such as inorganic or organic; long acting or short acting fertilisers
- identify by direct observation tools needed in a garden
 - eg – fork
 - spade
 - rake
 - trowel
 - secateurs
- demonstrate the purpose of each tool
 - eg – a spade turns soil
 - a rake gathers weeds
 - a trowel digs holes
- identify potential hazards of garden tools
 - eg – stepping on rakes
 - tetanus from cuts
- use and maintain garden tools appropriately
 - eg – use a fork to break up soil
 - store tools in safe place
 - keep tools in good working order
- maintain a garden over a period of time

Outcome

4.6 Demonstrates knowledge and understanding and skills in the use of chemicals and biological controls

Content

Students:

- identify and classify pests that can damage a garden
 - eg – insects — aphids, locusts, beetles
 - birds — cockatoos, parrots
 - mammals — flying foxes, possums
 - fungi — rust, black spot
- gather information about different ways of controlling pests in the garden
- demonstrate different ways of eradicating pests in the garden
 - eg – spray plants
 - cover plants
 - add chemicals to soil
- identify uses of chemicals in a garden to control pests and enhance growth
 - eg – herbicides
 - insecticides
- recognise a range of chemicals used on gardens
 - eg – fertilisers
 - white oil
 - weed killers
- discuss why chemicals are needed on gardens
 - eg – to prevent insect infestation
 - to prevent discolouration of leaves
- predict some dangers associated with chemical use on or in a garden
 - eg – spray may be carried by breeze
 - danger of breathing in fumes
 - airborne spray may contaminate the wrong plants
 - danger of fungus in potting mix
- develop skills in employing precautions for using chemicals safely and appropriately in the garden
 - eg – wear face mask when spraying
 - wear gloves when handling potting mix
 - check quantities of chemical when mixing with water
- demonstrate the ways in which garden chemicals are stored safely
 - eg – store in locked cupboard/locked garden shed
 - keep containers dry
 - do not place chemicals in unmarked containers

- use chemicals on a garden safely and effectively
 - eg – use dusting powder on cabbage leaves/tomatoes
 - spray white oil on leaves
 - spray weeds with herbicide according to directions

- undertake firsthand investigations of environmentally friendly methods to control garden pests
 - eg – scarecrow in vegetable garden
 - string deterrent over tomatoes
 - cloth cover over ferns
 - companion planting

- develop skills in using environmentally friendly methods to control pests effectively
 - eg – build a cover over the garden
 - companion planting such as garlic with roses to control aphids
 - scatter plants such as vegetables with marigolds

Outcome

4.7 Understands the needs and importance of native plants

Content

Students:

- identify native plants
 - eg – eucalypt
 - grevillea
 - waratah
 - lilly pilly

- gather information about the specific requirements of native plants
 - eg – pollination methods
 - soil type
 - water supply
 - drainage

- identify the reasons for the cultivation of native plants
 - eg – as a food source
 - to ensure maintenance of plant species and of animal species that are reliant on natives
 - to maintain natural heritage

- gather information about organisations/places where cultivation of native species occurs
 - eg – Forestry Commission
 - native garden nurseries
 - naturally by self-propagation
 - the Royal Botanic Gardens Sydney
 - local parks and reserves

- predict changes that result from the impact of specific hazards on native plants
 - eg – bushfire
 - flood
 - cyclone
 - development
 - weed infestation

- observe how native plants survive hazards
 - eg – regrowth after a bushfire or flood

- develop skills in cultivating native plants successfully
 - eg – propagate plants
 - protect seedling plants
 - treat seeds to ensure germination

Module 5: Animal Care

Module Description

Animals are a fundamental aspect of the human environment and it is important that students develop knowledge and understanding of and skills in animal care and management. The module provides opportunities for students to take part in the effective care and management of animals.

Outcome

5.1 Recognises, identifies and understands animals in the local natural environment

Content

Students:

- indicate recognition of animals found in the local environment
 - eg – sort pictures into familiar and unfamiliar animals
 - point to animals on outings
- identify and classify species located in the local environment
 - eg – birds — budgerigar, mynah, seagull
 - marsupials — possums, wallabies, flying foxes
- identify and classify into groups native animals found in the local, natural environment
 - eg – kangaroo
 - emu
 - possum
 - wombat
- identify and classify into groups introduced animals
 - eg – foxes
 - rabbits
- discuss food requirements of animals in the local natural environment
 - eg – fish
 - possum
 - parrots
 - kangaroo
- observe habitats of animals in the local natural environment
 - eg – bushland
 - wetland
 - dry areas

- gather information about why native animals are endangered
 - eg – the clearing of land and the removal of trees in order to build houses results in the removal of animal habitats, food sources and plants
 - the use of pesticides can result in danger to animals
- discuss why native animals are protected
 - eg – to preserve them for the enjoyment of future generations
 - to preserve part of our natural heritage
- develop skills in caring for the natural environment
 - eg – participate in school or Landcare projects
 - participate in a conservation group
- distinguish between feral and native animals
 - eg – cats, foxes
- recognise the effects of feral animals
 - eg – eating crops
 - killing native animals
- gather information to identify the dangers and difficulties caused by feral animals
 - eg – killing of native species
 - competition for food and other natural resources
- identify animals in the local environment that may be a danger to people
 - eg – spiders
 - stray dogs
 - snakes
- discuss why animals may be a danger to people
 - eg – because they have been maltreated and have become savage
 - because they inject venoms that cause illness, paralysis or death
 - because they protect their territory
- devise strategies to avoid dangers posed by some animals
 - eg – wear jeans and boots on a bushwalk
 - do not approach or touch unfamiliar animals
 - avoid unnecessary intrusions on an animal's territory
- develop skills in taking precautions to avoid danger posed by some animals
 - eg – dress appropriately for a bushwalk
 - use gloves when gardening and clearing bush

Outcome

5.2 Demonstrates knowledge and understanding of the variety of animals people keep in their homes

Content

Students:

- undertake investigations to identify the requirements of different animals for food, space and exercise
 - eg – a large dog requires a big backyard, regular exercise and large amounts of food
 - a budgie requires a suitably-sized cage, seed, water and ventilation
- demonstrate strategies to satisfy animals' requirements
 - eg – take large dogs for daily walks
 - refill birds' food and water daily
- identify and classify animals suitable for people to keep in flats, units or townhouses
 - eg – in a flat or unit it may be possible to keep a mouse, bird or goldfish
 - in a townhouse it may be possible to keep a mouse, a bird, a goldfish, a small dog, a cat or a rabbit
- identify and classify animals suitable for people to keep in houses
 - eg – in a house it may be possible to keep a rabbit, a cat, a goat, a dog, a guinea pig
- identify and classify animals suitable for people to keep on a farm
 - eg – on a farm it may be possible to keep chickens, cows, ducks, horses, sheep, goats
- discuss behaviours of domestic animals and predict the effects of keeping a number of animals together
 - eg – a dog may chase a cat
 - a cat may chase a bird

Outcome

5.3 Demonstrates knowledge of and skills in keeping a variety of animals

Content

Students:

- identify the essential requirements for keeping animals
 - eg – daily feeding
 - regular grooming
 - fresh water
 - exercise
 - clean surroundings
 - attention from veterinarian when necessary
- identify environments appropriate for a variety of pets
 - eg – a kennel or yard for a dog
 - a bowl or tank for fish
 - a cage for mice or birds
 - a paddock for a horse or goat
- recognise that animals kept as pets rely on people for their basic needs
 - eg – a dog is reliant on its owner for food, water and care
- discuss the need for a pet owner's commitments to and the responsibilities associated with the health, care and safety of their pets
 - eg – immunisation
 - worming
 - confining animals to home area
- demonstrate strategies that could be taken to care for pets if owners are away or on holidays
 - eg – take pets on holiday also
 - arrange boarding
 - arrange to leave pets with friends
 - arrange to have a neighbour care for pets
- discuss the financial commitments associated with owning pets
 - eg – food costs
 - registration fees
 - veterinary fees
 - accessories such as bowls, leads
 - boarding fees
- develop skills required to take care of pets
 - eg – feed pet appropriately
 - clean environment regularly
 - treat pet with care
- develop skills in training and managing pets successfully
 - eg – train a dog to follow
 - train a cat to use litter tray
 - keep animals in at night
- demonstrate appropriate hygiene practices in keeping animals
 - eg – wash hands
 - dispose of waste appropriately

Outcome

5.4 Understands and abides by regulations relating to animal care and management

Content

Students:

- discuss local government regulations regarding the registration and keeping of animals
 - eg – registration
 - micro-chipping
 - animal restraints
 - disposal of waste
 - restricted areas
 - take steps to minimise barking
 - walk a dog on a lead
 - use a ‘pooper-scooper’ or equivalent
- gather information about general health regulations related to the keeping of animals
 - eg – the number of animals that can be housed appropriately in a defined area
 - the size of the area must be appropriate to the type of pet
 - destroying animals with exotic diseases
- discuss why special regulations have been developed about specific animals
 - eg – a licence is required to keep reptiles
 - guide dogs accompany owner on public transport
- gather information about the regulations imposed by residential groups on the keeping of animals in flats, units, villas and townhouses
 - eg – the types of pets permitted
 - the keeping of animals inside
 - dealing with barking dogs

Outcome

5.5 Demonstrates knowledge of and skills in health care for animals, including knowledge of when to seek assistance

Content

Students:

- identify ways that animals indicate they are ill or distressed
 - eg – whining
 - barking
 - scratching
- develop skills in administering or arranging for basic regular health care for animals
 - eg – worm dogs and cats
 - immunise animals when necessary
- recognise that sick or injured animals may behave differently
 - eg – animal may become aggressive
 - animal may react to touch by running away
- develop skills in handling sick or injured animals appropriately
 - eg – wear protective gloves
 - place in a confined area
 - contact veterinarian, RSPCA if needed
- identify when animals need a veterinarian, and act appropriately
 - eg – transport animal to veterinarian after accident (small animal)
 - transport animal to veterinarian for vaccination or operation
 - call veterinarian to animal for a severe injury or to deliver young
- demonstrate appropriate ways to transport a sick or injured animal
 - eg – transport a cat in a basket
 - transport a dog in a car using harness
- identify appropriate agencies to assist if native animals are injured
 - eg – contact WIRES, RSPCA or Council pound
- demonstrate skills in caring for a sick or injured animal
 - eg – administer medication
 - clean wound
 - keep in a quiet, confined area

Outcome

5.6 Identifies requirements and understands issues for people working with animals on farms

Content

Students:

- identify and classify animals that are farmed commercially (in the local environment if appropriate)
 - eg – deer
 - poultry
 - dairy cattle
 - fish

- identify requirements of farm animals (specific to the local area if appropriate)
 - eg – dairy cattle require green, moist grasses
 - emus require a large space and high fences
 - rabbits require a small space

- identify purposes for which commercial animals may be kept
 - eg – food (cattle, sheep, poultry)
 - hide (leather for shoes, sheep skin for rugs)
 - fleece (wool for knitting)
 - recreation and food (fish)

- research and identify the purposes for which animals are farmed
 - eg – poultry — eggs, meat, breeding
 - cattle — provide different meat product at different stages of growth: yearling (veal), older cattle (beef)

- identify strategies for safe work on farms
 - eg – tetanus injections
 - protective clothing
 - safe handling of animals

- investigate and identify some ethical issues associated with commercial farming
 - eg – raising chickens in battery conditions
 - overcrowding on feed lots
 - genetic engineering

6 Obtaining and Using Energy

Module Description

Students will have opportunities to develop a knowledge and understanding of the sources, types and nature of energy used in daily environments.

Outcome

6.1 Recognises and understands that energy is needed to undertake a range of activities

Content

Students:

- observe and indicate recognition that energy can cause change
 - eg – heat cooks food
 - wind moves a sailboat
 - a falling rock squashes things
- identify by direct observation a variety of machines that need energy to work
 - eg – bicycle, motorbike, car, clock, lawn mower, workplace machinery
- discuss the energy source for a variety of machines
 - eg – watches (battery), clocks (battery or electricity)
 - lawn mowers (petrol or electricity)
 - power tools (battery or electricity)
 - workplace machinery (electricity, oil, gas)
 - hot water system (solar, electricity, gas)
 - bicycle (mechanical)
- identify energy supplies that can be replaced by themselves or others
 - eg – batteries, petrol, gas in cylinders
- predict the consequences of an energy supply being unavailable
 - eg – if batteries are 'dead' — watch stops
 - if lawn mower is out of petrol — lawn mower stops
 - if car is out of petrol — car stops
- distinguish between batteries that can be recharged and those that cannot
- demonstrate skills in replacing energy supplies
 - eg – change/recharge batteries
 - refuel car/mower
 - refill gas cylinder
 - contact electricity or gas company if supply is cut
- gather information about the ways in which energy is obtained
 - eg – sun
 - wind provides kinetic energy
 - fuel such as gas or oil can provide heat and light
 - water is used to generate electricity

Outcome

6.2 Demonstrate knowledge and understanding of sources of energy and how they are used in daily living

Content

Students:

- identify the sun as a major source of energy
 - eg – heat
 - light
 - influences ocean currents
- identify by direct observation a variety of uses for energy in a range of environments
 - eg – electricity for lighting — lamp or lights
 - electricity for heating — radiant heaters
 - gas for cooking — stoves
 - petrol for movement — car
 - electricity for sound — radio or television
- undertake investigations to identify different energy uses in the school or home environment
 - eg – lawn mowers — petrol
 - electricity or gas for heating
 - delivery vehicles — diesel or petrol
 - power tools — electricity
 - kitchen appliances — electricity or gas
- undertake investigations to demonstrate how energy is changed from one form to another to be of practical use
 - eg – electricity makes lights work
 - electricity or gas is converted to heat in a stove
 - sound is converted into electrical energy — voice-activated machines
 - kinetic energy is converted into electricity in generators
 - light is changed to chemical energy by cameras
- identify sources and undertake investigations of the use of energy in heating and cooling systems
 - eg – refrigerators
 - air conditioners
- undertake investigations to show that energy is changed from one form to another
 - eg – use light to read
 - use voice-activated machines
- identify and gather information about sources of energy used for travel
 - eg – cars — petrol, diesel or gas
 - boats — diesel, petrol or wind
 - planes — aviation fuel

- gather information about the uses of solar energy in the local environment
 - eg – survey use of solar hot water systems in the local area
 - survey use of solar pool heating in the local area

- gather information about the increasing importance and use of solar energy in everyday life and why it is important in Australia
 - eg – solar powered calculators
 - solar batteries on satellites
 - solar cells for home electricity supply
 - solar hot water systems
 - solar pool heating

- develop skills in using solar powered products
 - eg – use solar powered calculator

Outcome

6.3 Demonstrates knowledge and understanding of the nature and operation of electrical and mechanical machines

Content

Students:

- identify by direct observation machines used in everyday life that do not require electricity
 - eg – bicycle
 - egg beater
 - push mower
- identify by direct observation machines that require electricity
 - eg – electric beaters
 - electric jug
- identify the basic operational features of mechanically operated machines
 - eg – gear selection for speed/force
 - wheel size
- undertake investigations of the basic operational features of machines requiring fuel
 - eg – gear system
 - engine capacity
 - fuel type
 - cooling system
- investigate and identify the basic operational features of electrical machines
 - eg – need for a complete circuit
 - factors that affect the amount of current flowing in a circuit
 - how electricity is measured
 - the amount of electricity used by a range of appliances and machinery

Outcome

6.4 Recognises the need to use energy sources in an effective and responsible manner

Content

Students:

- identify which energy sources are the most efficient and cost effective in particular circumstances
 - eg – gas stove or electric stove
 - gas heating or oil heating
 - natural gas or liquid propane gas
- investigate and identify ways that energy use could be reduced in the home
 - eg – choice of lighting
 - use of gas as opposed to electricity
- demonstrate strategies that can be used to conserve energy
 - eg – turn off lights when area is not in use
 - use a microwave instead of a conventional oven
 - purchase electrical appliances which have high efficiency ratings
 - use insulation to reduce heating and cooling costs
 - use energy efficient light globes
- observe how energy is used in the local community
 - eg – survey use of street lights
 - investigate heating and cooling in public buildings
- indicate recognition that conventional energy sources are finite
 - eg – coal, oil, natural gas
- gather information about the environmental impact of different energy sources and the implications of their use
 - eg – greenhouse effect
 - nuclear waste problems
- gather information about ways alternative energy sources are being developed
 - eg – wind generators
 - nuclear energy
- discuss sources of energy that have the least impact on the environment
 - eg – solar energy
 - hydro-electricity
 - wind-generated electricity

10 Post-school Opportunities

The study of Stage 6 Science Life Skills assists students to prepare for employment, further education and training and full and active participation in community life. In particular there are opportunities for students to gain recognition in vocational education and training. Teachers and students should be aware of these opportunities.

Recognition of Student Achievement in Vocational Education and Training (VET)

Wherever appropriate, the skills and knowledge acquired by students in their study of HSC courses should be recognised by industry and training organisations. Recognition of student achievement means that students who have satisfactorily completed HSC courses will not be required to repeat their learning in courses in TAFE NSW or other Registered Training Organisations (RTOs).

RTOs, such as TAFE NSW, provide industry training and issue qualifications within the Australian Qualifications Framework (AQF).

The degree of recognition available to students in each subject is based on the similarity of outcomes between HSC courses and industry training packages endorsed within the AQF. Training packages are documents that link an industry's competency standards to AQF qualifications. More information about industry training packages can be found on the National Training Information Service (NTIS) website (www.ntis.gov.au).

Recognition by TAFE NSW

TAFE NSW conducts courses in a wide range of industry areas, as outlined each year in the *TAFE NSW Handbook*. Under current arrangements, the recognition available to students in relevant courses conducted by TAFE is described in the *HSC/TAFE Credit Transfer Guide*. This guide is produced by the Board of Studies and TAFE NSW and is distributed annually to all schools and colleges. Teachers should refer to this guide and be aware of the recognition available to their students. Information in relation to Life Skills courses can be found on the TAFE NSW website (www.tafensw.edu.au).

Recognition by other Registered Training Organisations

Students may also negotiate recognition into a training package qualification with another Registered Training Organisation. Each student will need to provide the RTO with evidence of satisfactory achievement so that the degree of recognition available can be determined.

11 Assessment and Reporting

11.1 Assessment

Assessing student achievement is the process of collecting information on student performance in relation to the knowledge and skills objectives of the course and the related outcomes.

Within the Stage 6 Science Life Skills course, the individual transition-planning process will determine the educational priorities for each student, from which modules and outcomes are studied and content covered. The content points listed with each outcome not only form the basis of the learning opportunities for students, but also provide examples of assessable activities on which teacher judgement will be based.

Assessment should take account of the individual ways that students demonstrate achievement of syllabus objectives and outcomes based on the content covered in the course. To cater for such individuality, a range of assessment materials should be used, appropriate for the outcomes to be measured, and relevant to students' capabilities. Such assessment instruments may include:

- observation of participation
- observation of performance of practical activities
- work experience reports
- oral reports and presentations
- group work
- journal writing
- written tasks.

Evidence of achievement of module outcomes can be based on ongoing observations during teaching and learning or from assessment tasks specifically designed to assess achievement at particular points.

Students may demonstrate achievement of outcomes across a range of situations or environments including the school, home, community and workplace. Assessment should reflect the student's ability to generalise the knowledge, skills, and values and attitudes to a range of adult environments.

Students entered for Life Skills courses may achieve the designated outcomes independently or with support. The type of support will vary according to the particular needs of the student and the requirements of the task. Examples of support may include:

- the provision of extended amounts of time
- physical and/or verbal assistance from others
- the provision of technological aids
- adjustments to the environment based on the specific needs of individual students.

Provision has been made in the Profile of Student Achievement for teachers to record where an outcome has been achieved independently or with support, and to list the most relevant examples of syllabus content that demonstrate achievement towards particular outcomes.

11.2 Reporting using the Profile of Student Achievement

The Board of Studies will provide schools with a Profile of Student Achievement booklet for each student. The Profile of Student Achievement lists the outcomes for each Life Skills course. Schools will use the Profile to report on student performance for each of the syllabus outcomes that the student has been working towards. As the student demonstrates that they have achieved a learning outcome, the relevant section of the Profile of Student Achievement will be signed off and dated by the relevant school teacher.

Using the Profile of Student Achievement, students' achievement of the designated outcomes, independently or with support, will be reported. Where a student is still working towards independent achievement of particular outcomes, teachers will indicate on the Profile of Student Achievement the level of the student's achievement with support, using a practical example.

Before the student leaves school, the Profile of Student Achievement is verified by the school principal as a true and accurate record of all learning outcomes demonstrated by the student. The Profile of Student Achievement is a permanent record of all outcomes attained by the student.

In addition, students who meet the pattern of study requirements and satisfactorily complete the required studies will receive a Higher School Certificate testamur and a Record of Achievement.

12 Glossary for

Augmentative Communication	<p>Any method of communication other than speech that is used either:</p> <ul style="list-style-type: none">– with speech where speech is difficult to understand– to facilitate increased use of speech– instead of speech, where speech will not develop. Communication modes such as signing or using communication aids ‘augment’ informal communication behaviours such as natural gestures, facial expression and body language.
Board Developed Courses	<p>Refer to Section 10 of the Board of Studies <i>Assessment, Certification and Examination Manual</i>.</p>
Board Endorsed Courses (including Content Endorsed Courses)	<p>Refer to Section 10 of the Board of Studies <i>Assessment, Certification and Examination Manual</i>.</p>
Collaborative planning	<p>Involves a team of people who have significant knowledge and understanding of the student, or the capacity to assist in the decision-making process. These people may include:</p> <ul style="list-style-type: none">• the student• parents/caregivers• teachers and other school personnel• transition personnel• Department of Community Services personnel• an advocate• others as appropriate.
Communication aid	<p>Usually non-electronic and accessed directly by touch or indirectly by eye-gaze. May include picture boards, communication books, object boards, etc.</p>
Communication device	<p>Any augmentative/alternative communication equipment. May be electronic with text or voice output options (VOCA) and accessed directly or indirectly by use of a switch.</p>
CPR	<p>Cardiopulmonary Resuscitation (CPR) is the method of performing EAR and ECC in tandem. This can be performed by one or two operators.</p>
EAR	<p>The term Expired Air Resuscitation (EAR) is used to describe the mouth-to-mouth, mouth-to-nose and mouth-to-mask methods of artificial ventilation of the lungs in addition to the mouth-to-mouth-and-nose method used on infants.</p>

ECC	External cardiac compression.
Individual transition-planning process	This is a mechanism that assists the school, student, parents/caregivers and other relevant personnel to select and work towards goals that will maximise the student's independence and quality of life. The transition-planning process focuses particularly on enabling the most appropriate educational program to be planned, with a view to preparing a student for post-school life.
Modules	Areas of study within each course that relate to particular content.
No-Go-Tell	A series of safety steps or strategies that can be used in unsafe or threatening situations. It involves the skills required to say no in threatening situations, to get away from the unsafe situation and to seek help, advice and support.
Personal communication/strategies system	Individually customised system of communication using augmentative strategies and supports. These are determined by assessment of physical and/or expressive/receptive need of the individual and may include one or a combination of the following supports: real objects, remnants, photographs, line drawings, signing and electronic voice output communication devices (VOCAs).
Personal health care procedures	Include feeding, toileting and suctioning of fluids.
Post-school environments	Within the context of transition-planning, students will be prepared for participation in a range of post-school environments including: <ul style="list-style-type: none">• employment• further education, training and other programs• community living.
Professional health care support	Includes nurses, medical practitioners and therapists.
Protective behaviours	Actions (personal safety skills) taken by both children and adults to help keep themselves safe and work towards reducing violence in the community. They help everyone to stay safe from the risks that surround us in our everyday life.
Subject	A subject is a name given to a defined area of knowledge. Several courses may be offered in a subject.

Syllabus	A document that describes a course/s of study for a subject. A syllabus includes statements of purpose, objectives, outcomes, content and indicative time.
Syllabus package	This includes a syllabus document with additional information on assessment and support material.
VET (Vocational Education and Training)	VET is industry-specific training that may lead to the award of a VET credential under the Australian Qualifications Framework.