English as an Additional Language or Dialect Teacher Resource

Annotated Content Descriptions
Science Foundation to Year 10
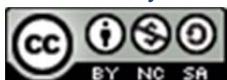
February 2014

Contents

The *Shape of the Australian Curriculum* describes ACARA's commitment to supporting equity of access to the Australian Curriculum for all students. As part of this commitment, ACARA developed the *English as an Additional Language or Dialect Teacher Resource* to support teachers as they develop teaching and learning programs in the Australian Curriculum: Foundation to Year 10 with students for whom English is an additional language or dialect (EAL/D).

The *English as an Additional Language or Dialect Teacher Resource* is available as several related publications:

- *EAL/D Overview and Advice*

- *EAL/D Learning Progression*

- *EAL/D Annotated Content Descriptions: English*

- *EAL/D Annotated Content Descriptions: Mathematics*

- *EAL/D Annotated Content Descriptions: History*

- *EAL/D Annotated Content Descriptions: Science*

- *Student Illustrations of the EAL/D Learning Progression.*

Additional components of the resource will be published as the Australian Curriculum is developed. All publications are available on the [Australian Curriculum Website](#).

The resource has been developed to:

- advise teachers about areas of the curriculum that EAL/D students may find challenging and why

- assist classroom teachers to identify where their EAL/D students are broadly positioned on a progression of English language learning

- help teachers understand students' cultural and linguistic diversity, and the ways this understanding can be used in the classroom

- provide examples of teaching strategies supportive of EAL/D students

- direct teachers to additional relevant and useful support for teaching EAL/D students.

Throughout the resource, English refers to Standard Australian English.

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This publication contains annotations that describe linguistic and cultural considerations implied by some Science content descriptions. It also suggests teaching strategies to better enable EAL/D students to access the learning described in the Science content descriptions.

The annotated content descriptions for each of English, Mathematics, Science and History have been developed to advise teachers about areas of the curriculum that EAL/D students may find challenging and why, help teachers understand students' cultural and linguistic diversity and the ways this understanding can be used in the classroom and provide examples of teaching

strategies supportive of EAL/D students.

Only content descriptions for which annotations have been written have been included in the following tables. All content descriptions are available at www.australiancurriculum.edu.au.

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding Living things have basic needs, including food and water (ACSSU002)	EAL/D students have culturally specific experiences and knowledge, with alternative perspectives on issues and phenomena.	Find out what EAL/D students know and invite them to share their knowledge, experiences and cultural artefacts, to build an inclusive space in the classroom. For example, EAL/D students may have different understandings of 'everyday' fruits, such as tropical fruits as opposed to apples and oranges. Ask students to demonstrate elements of their cultural knowledge about the range of living things experienced and specialised knowledge about them.
Science understanding Objects are made of materials that have observable properties (ACSSU003)	Subject–specific vocabulary is challenging because EAL/D students, especially those at the Beginning or Emerging phases of learning English, will have had limited exposure to these words.	Teach subject–specific vocabulary explicitly and in context. Use real objects and illustrated semantic webs/word trees to link new vocabulary to known words. Use illustrated glossaries and word walls so that vocabulary can be revisited.
Science understanding Daily and seasonal changes in our environment, including the weather, affect everyday life (ACSSU004)	EAL/D students have culturally specific experiences and knowledge that may give them alternative perspectives on issues and phenomena. Recognise that the concept of seasons based on day length and temperature may be beyond the experience of some EAL/D students from tropical environments.	Enable EAL/D students to share their knowledge and experiences. Create an inclusive space in the classroom for all students to demonstrate elements of their cultural knowledge of environmental changes and specialised knowledge about them.
Science understanding The way objects, including living things, move depends on a variety of factors, including their size and shape (ACSSU005)	The comparative adjective forms in English are intuitive to native English speakers, but not to EAL/D students. These include: adding '–er' to one– or two–syllable adjectives (for example, *This ball is fast**er***), using 'more' for adjectives with three or more syllables (for example, *This ball is **more** difficult to roll*), and the irregular	Explicitly teach comparative forms. Explain the error rather than simply correct it. Identify potentially confusing words and explicitly teach their meaning (for example, 'hard' is a property of a material, not necessarily the opposite of 'easy'). Model the sentence structures

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	comparative adjectives such as *better*, not *gooder*. Words have different meanings in different contexts, and this can be challenging for EAL/D students. Reasoning and explaining require the language of cause and effect in English. Such sentence structures appear in the later phases in the language progression of EAL/D students. Adjectives can be nominalised, usually turning into abstract nouns, which can be challenging for EAL/D students at this year level (for example, *soft – softness, hard – hardness*).	required for reasoning and explaining (for example, *The golf ball is denser, so it rolled faster*). Provide plenty of opportunities for meaningful repetition in spoken language contexts. Identify what words 'mean' by looking at the suffixes of words (for example, *hard–ness*). The suffix '–ness' turns the adjective 'hard' into 'something' – a noun.
Science as a human endeavour Science involves exploring and observing the world using the senses (ACSHE013)	In English, questions are formed in many ways and are quite challenging for EAL/D students. For example, the question *'What did it **feel** like?'* requires the learner to use the past form of the verb in their answer *'It **felt** soft'*. Verbs in the past may take on a regular form by adding '–ed' (for example, *talk/talk**ed***), or they may take an irregular form (for example, *go/went, is/was*). The irregular forms are particularly challenging for EAL/D students in the Beginning and Emerging phases of English language development.	Monitor the language of EAL/D students when they pose and answer questions, and explicitly teach English question forms. Make use of 'teaching moments' to stop and briefly discuss an irregular verb as it occurs in context (for example, *hear/heard, see/saw, feel/felt*). Display irregular verbs in word pattern charts.
Science inquiry skills Respond to questions about familiar objects and events (ACSIS014)	'Everyday' vocabulary needs to be taught explicitly. EAL/D students often don't know the English vocabulary for everyday home and family items because they use their mother tongue in these contexts.	Build visual word banks (illustrations) for everyday vocabulary. Build spoken language around formal 'play' experiences, modelling the asking and answering of questions, allowing students to copy and join in with the teacher. Use concrete objects (for example, items in the play corners, spoons,

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		cups, oven), which can be labelled to support the students' developing literacy skills as they acquire additional vocabulary.
Science inquiry skills Explore and make observations by using the senses (ACSIS011)	Experiences that we may take for granted in Australian schools (for example, cooking and sharing food) may involve foods that can't be eaten by some cultural groups. Ask parents and guardians for guidance, as some ingredients are not obvious (for example, gelatine may contain extracts from animals such as pigs).	Young children will benefit from using their home language in exploratory play where there are other speakers of their first language. After/during this exploration, mix student groups so that English speakers join in and EAL/D students can engage through hearing and making attempts at using English for the same purpose. Be explicit when associating an observation with a sensory organ (for example, seeing with eyes, hearing with ears, tasting with tastebuds). Provide a wide range of experiences for exploration that will not exclude any students (for example, activities that are gender specific, or are not appropriate at certain times, or that involve food that can't be eaten).
Science inquiry skills Engage in discussions about observations and use methods such as drawing to represent ideas (ACSIS233)	Not all EAL/D students will have had the experiences that teachers may consider 'familiar'. Discussions require an understanding of interactive group skills (for example, turn taking, and polite interruption). These routines differ across cultures. Listening to an unfamiliar language for long periods of time is very tiring for students in the Beginning and Emerging phases of language learning, and so lack of attention sometimes is an indication that the EAL/D learner has been overloaded with aural information.	Ensure that teaching is built upon shared understandings by providing experiences in the classroom (for example, experiments or data collection). Allow EAL/D students to draw before writing to provide a concrete reference tool that the teacher and learner can use to build written vocabulary. Support Beginning and Emerging phase students with interactive group discussion by providing sentence frames (for example, *That's a good idea, and I think …*). Support verbal instructions with visual supports and gestures. Revisit the EAL/D learner often while on task to reinforce instructions.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science inquiry skills Share observations and ideas (ACSIS012)	Collaboration and cooperative learning are learning styles which that are not universal. Some students will have come from a schooling system where they were required to work individually, rather than collaboratively. Discussions require an understanding of interactive group skills (for example, turn taking, polite interruption). These routines differ across cultures.	Teach group work skills explicitly. Be aware of cultural sensitivities when assigning groups. For example, (mixing boys and girls, certain ethnic groups, or different mobs). Support Beginning and Emerging phase EAL/D students with interactive group discussion by providing sentence frames (for example, *That's a good idea, and I think …*).

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding Living things live in different places, where their needs are met (ACSSU017)	Size of vocabulary is one of the best predictors of literacy success. EAL/D students will not have had the same six or seven years of exposure to English vocabulary that teachers might expect of other students, nor the same 'prior knowledge' to build upon, and so special attention must be paid to vocabulary development in the classroom. For example, words such as *desert, rainforest, creek* would not be familiar to EAL/D students.	Use shared experiences to build common vocabulary (for example, viewing different habitats and the living things that live there). Provide opportunities to revisit the vocabulary many times (for example, use of labelled concrete objects, labelled wall displays of the topic under study, personal word books where students can record new words, with accompanying visuals). Bilingual assistants and parents can help translate more abstract language to make quick and efficient links to existing conceptual understandings.
Science understanding Living things have a variety of external features (ACSSU211)	Size of vocabulary is one of the best predictors of literacy success. EAL/D students will not have had the same six or seven years of exposure to English vocabulary that teachers might expect of other students, nor the same 'prior knowledge' to build upon, and so special attention must be paid to vocabulary development in the classroom. For example, words such as *fur, fins, scales, roots* or *bark* would not be familiar to EAL/D students.	Use shared experiences to build common vocabulary (for example, exploring and naming the external features of plants and animals). Provide opportunities to revisit the vocabulary many times (for example, use of labelled concrete objects, labelled wall displays of the topic under study, personal word books where students can record new words, with accompanying visuals).
Science understanding Everyday materials can be physically changed in a variety of ways (ACSSU018)	Predicting and hypothesising in English require conditional language structures that will be difficult for EAL/D students, as they require the use of multiple verb structures and tenses (for example, I **think** the chocolate **will melt** if we **put** it in the sun).	Provide clear models of conditional sentence structures for EAL/D students to follow (for example, *I think …, will …, if …*).
Science understanding Observable changes occur in the sky and landscape	EAL/D students have culturally specific experiences and knowledge that may give them	Find out about where EAL/D students in the classroom have come from and their experiences,

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(ACSSU019)	alternative perspectives on issues and phenomena.	and make active use of these resources by asking questions and inviting their expertise (for example, describing changes to landscapes in the tropics such as flooding, high tides). Bilingual assistants, where available, and parents are good sources of information.
Science as a human endeavour Science involves asking questions about, and describing changes in, objects and events (ACSHE021)	In English, questions are formed in many ways and can be challenging for many EAL/D students. They can be formed by changing word order (for example, *Is it cold?*), or by using question words (for example, *Does it feel cold? How cold does it feel?*). NB: the verb 'feel' does not take the third person 's' in the question, but it does in the answer (ie *It feel**s** cold*).	Carefully monitor the language of EAL/D students when they pose questions, and explicitly teach English question forms by providing models of the structure of questions required for the chosen activity.
Science as a human endeavour People use science in their daily lives, including when caring for their environment and living things (ACSHE022)	EAL/D students have culturally specific experiences and knowledge that may give them alternative perspectives on issues and phenomena. Sharing their experiences and knowledge gives all students an inclusive space in the school environment, as well as providing opportunities for deep learning and intercultural understanding for the entire class.	Make active use of the cultural resources of EAL/D students when exploring science topics and acknowledge that 'daily lives' are different in every household and every country (for example, use of plants as natural remedies, different cooking styles and ingredients).
Science inquiry skills Respond to and ask questions, and make predictions about familiar objects and events (ACSIS024)	Making inferences requires a well–developed vocabulary, with good synonym knowledge. EAL/D students may have an English vocabulary limited to their classroom experiences. EAL/D students have culturally specific experiences and knowledge that may give them alternative perspectives on issues and phenomena.	Teach all students to understand the vocabulary of tasks. Build facility in spoken language use of the new vocabulary through experience in context before recording the language through such strategies as word lists and visuals to accompany new learning.

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Year 1

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science inquiry skills Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources (ACSIS025)	EAL/D students in the early phases of English language learning will require support when accessing information sources. Although all students at this year level are learning literacy skills, EAL/D students do not have the same levels of spoken language skills upon which to build their understandings of print, or to contribute fully to oral investigations. These investigations, however, provide the ideal shared experience for teachers to model and elicit spoken language from EAL/D students.	Small group work for investigations can increase the opportunities for EAL/D students to develop listening and speaking skills related to the task. Group students strategically (use same L1 speakers in groups where possible, with supportive English speakers). Provide all members of groups with tasks appropriate to their English language abilities but with equal contributory value to the task. Build spoken language around the investigations and provide labels based on key ideas/ objects.
Science inquiry skills Use informal measurements in the collection and recording of observations, with the assistance of digital technologies as appropriate (ACSIS026)	Comparative language forms – such as *big, bigger, biggest; as much as; as big as* – are particularly challenging for EAL/D students in the Beginning and Emerging phases of English language development. These students may have an English vocabulary limited to their classroom experiences.	Model language structures and vocabulary, and provide opportunities for EAL/D students to practise using language forms during the shared experience.
Science inquiry skills Use a range of methods to sort information, including drawings and provided tables (ACSIS027)	Diagrams in informative texts are informational, and are different from the images that students usually create intuitively.	Provide, explain and discuss models of scientific diagrams and tables in the same way modelled written texts are provided to students. Explain the features of the required visual texts.
Science inquiry skills Through discussion, compare observations with predictions (ACSIS212)	Comparative language forms – such as *different from, the same as, bigger, biggest* –are particularly challenging for EAL/D students in the Beginning and Emerging phases of English language development. These students may have an English vocabulary limited	For most native English speakers, this is intuitive knowledge that comes from a sense of what sounds right. EAL/D students will benefit from a direct explanation in the context of their learning. Strategies include:

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	to their classroom experiences. Discussions require an understanding of interactive group skills (for example, turn taking, polite interruption). These routines differ across cultures.	- use target language in spoken contexts prior to use in written form - build lists of comparative and superlative forms, with the words in context, in personal word books - when encountering misused comparatives in EAL/D writing and speech, explain the error not simply correct it. Support Beginning and Emerging phase students with group discussion by providing sentence frames (for example, *That's a good idea, and I think …*).
Science inquiry skills Compare observations with those of others (ACSIS213)	In order to compare their own observations with those of others, EAL/D students need to have English language skills sufficient to understand the language of the others. Students in the Beginning and Emerging phases may not have this level of comprehension.	Identify where EAL/D students are on the EAL/D learning progression scale as an aid to reasonable expectations of spoken and written comprehension. Place EAL/D students with a buddy, rather than a larger group, so that they have only one input they need to process and the buddy can better adapt their language to meet the EAL/D student's needs.
Science inquiry skills Represent and communicate observations and ideas in a variety of ways, such as oral and written language, drawing and role play (ACSIS029)	Each curriculum area uses types of spoken, written and visual texts that may not be encountered in other curriculum areas. For example, the scientific procedural text is different from a recipe or a craft procedural text. EAL/D students may not have had the same cumulative experience with the Australian Curriculum as other students, and so it can't be assumed they will have prior knowledge of text types and purposes.	Explicitly teach the types of texts required for representing and communicating scientific investigations.

Annotated Content Descriptions: Science
Year 2

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding Living things grow, change and have offspring similar to themselves (ACSSU030)	Size of vocabulary is one of the best predictors of literacy success. EAL/D students will not have had the same seven or eight years of exposure to English vocabulary that teachers might expect of other students, nor the same prior knowledge to build upon, and so special attention must be paid to vocabulary development in the classroom. For example, words such as *cocoon* and *life cycle* would not be familiar to EAL/D students and would not have been encountered in other learning areas.	Use shared experiences to build common vocabulary. Provide opportunities to revisit the vocabulary many times (for example, provide labelled concrete objects, labelled wall displays, personal word books where students can record new words, with accompanying visuals). Bilingual assistants and parents can help translate/explain more abstract language to make quick and efficient links to existing conceptual understandings.
Science understanding Different materials can be combined, including by mixing, for a particular purpose (ACSSU031)	New science vocabulary and even 'everyday' vocabulary need to be taught explicitly. EAL/D students often don't know the English vocabulary for everyday home and family items because they use their mother tongue in these contexts.	Build visual word banks for everyday vocabulary. Use concrete 'realia'. Items in the classroom can be labelled (for example, a labelled display of different materials: paper, plastic).
Science understanding Earth's resources, including water, are used in a variety of ways (ACSSU032)	The texts used in science introduce sentence structures that are new learning and challenging for EAL/D students. For example, the use of the passive voice in statements such as: *Clouds are formed by condensation; Water is used for many things*.	Provide clear models of the types of sentence structures expected in the students' writing. Monitor comprehension of challenging sentence structures.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding A push or a pull affects how an object moves, stops or changes shape (ACSSU033)	EAL/D students have culturally specific experiences and knowledge that may give them alternative perspectives on issues and phenomena. Shared experiences are an effective way of ensuring that all students start with the same foundational content knowledge.	Make active use of the diversity of the resources in the classrooms when exploring topics (for example, by asking the students to share toys from their own backgrounds). Family members and bilingual assistants are important resources to draw upon. Ensure that EAL/D students are active participants in direct experiences (for example, pushing and pulling objects). While doing the activity, EAL/D students in the Beginning and Emerging phases can 'voice' vocabulary and sentence structure being modelled by their teacher.
Science as a human endeavour Science involves asking questions about, and describing changes in, objects and events (ACSHE034)	Most nouns in English can be characterised as 'countable' or 'uncountable'. Countable nouns can be quantified with numbers (for example, *10 trees*), and we ask questions about them using 'many' (for example, *How **many** trees can you see?*). Uncountable nouns can't be quantified with numbers, and we ask questions about uncountable nouns using 'much' (for example, *How **much** water do you think is in the jar?*). This distinction comes intuitively to native speakers of English, but not to EAL/D students who have less experience with the language to hear what 'sounds right'.	Some nouns in this scientific study will be uncountable (for example, water). EAL/D students can benefit from direct explanation of when to use 'many' and when to use 'much'.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science as a human endeavour People use science in their daily lives, including when caring for their environment and living things (ACSHE035)	EAL/D students have culturally specific experiences and knowledge that may give them alternative perspectives on issues and phenomena.	Make active use of the cultural resources of EAL/D students when exploring science topics and acknowledge that 'daily lives' are different in every household and every country (for example, use of plants as natural remedies, different cooking styles and ingredients). This gives students an inclusive space in the school environment, as well as providing opportunities for deep learning and intercultural understanding for the entire class.
Science inquiry skills Respond to and ask questions, and make predictions about familiar objects and events (ACSIS037)	Predicting and hypothesising in English require conditional language structures that will be difficult for EAL/D students, as they require the use of multiple verb structures and tenses (for example, I **think** the chocolate **will melt** if we **put** it in the sun). In English, questions are formed in many ways and can be challenging for many EAL/D students. They can be formed by changing word order (for example, *Is it cold?*), or by using question words (for example, *Does it feel cold? How cold does it feel?*). NB: the verb 'feel' does not take the third person 's' in the question, but it does in the answer (ie *It feels cold*).	Teach all students to understand the vocabulary of tasks. Strategies include: - provide word lists and visuals to accompany new learning - build synonym lists - personal word books - provide sentence frames (for example, *I think …, will …, if …*). Carefully monitor the language of EAL/D students when they pose questions, and explicitly teach English question forms by providing models of the structure of questions required for the chosen activity.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science inquiry skills Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas and accessing information sources (ACSIS038)	EAL/D students in the early phases of English language learning will require support when accessing information sources. Although all students at this year level are learning literacy skills, EAL/D students do not have the same levels of spoken language upon which to build their understandings of print, or to contribute fully to oral investigations. These investigations, however, provide the ideal shared experience for teachers to model and elicit spoken language from EAL/D students.	Small group work for investigations can increase the opportunities for EAL/D students to develop listening and speaking skills related to the task. Group students strategically (use same L1 speakers in groups where possible, with supportive English speakers). Provide all members of groups with tasks appropriate to their English language abilities but with equal contributory value to the task. Provide glossaries of key words that students will encounter in their investigations.
Science inquiry skills Use a range of methods to sort information, including drawings and provided tables (ACSIS040)	Diagrams in informative texts are informational, and are different from the images that students usually create intuitively.	Provide models of scientific diagrams and tables in the same way as modelled written texts are provided to students. Discuss the features of the required visual texts. Provide scaffolds for research for EAL/D students (for example, provide the research text and guides for reading the text and retrieving the appropriate information, such as an information retrieval grid).

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science inquiry skills Through discussion, compare observations with predictions (ACSIS214)	The language of comparison in English includes the use of the comparative adjective forms. These include: adding '–er' to one– or two–syllable adjectives (for example, *This ball is heavier*), using more for adjectives with more than two syllables (for example, *This ball is **more** difficult to roll*), and adding 'the' and '–est' to form the superlative (for example, *This ball is **the** heaviest*).	For most native English speakers, this is intuitive knowledge that comes from a sense of what sounds right. EAL/D will benefit from a direct explanation in the context of their learning. Strategies include: • build lists of comparative and superlative forms, with the words in context, in personal word books • when encountering misused comparatives in EAL/D writing and speech, explain the error not simply correct it.
Science inquiry skills Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play (ACSIS042)	Each curriculum area uses types of spoken, written and visual texts that may not be encountered in other curriculum areas. For example, the scientific procedural text is different from a recipe or a craft procedural text. EAL/D students may not have had the same cumulative experience with the Australian Curriculum as other students, and so it can't be assumed they will have prior knowledge of text types and purposes. Speaking in front of groups is challenging for some EAL/D students. They may feel uncomfortable about their accent, the accuracy of their language or the range of their vocabulary.	Explicitly teach the types of texts required for carrying out scientific investigations. Provide opportunities to present in one–on–one situations or small groups. Allow EAL/D students to draw before speaking and writing. This provides Beginning and Emerging phase students with a concrete reference tool that the teacher and learner can use to build written vocabulary.

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Science understanding Living things can be grouped on the basis of observable features and can be distinguished from non–living things (ACSSU044)	Sorting living and non–living things requires language structures that may be difficult for EAL/D students, as they require the use of complex verbs (for example, *I think … because …*). This is challenging for EAL/D students to reproduce in both written and oral language. It is important to remember that visuals are also culturally loaded, and so teachers should not assume that images and context are automatically helpful for all students.	Provide clear models of complex sentences for EAL/D students to follow (for example, *I think … because …*). Provide pictures of different living things (with attached labels) for students to sort into groups, remembering that visuals are also culturally loaded (for example, pictures of Western–style toilets or cooking utensils or foods may initially be meaningless to some Beginning and Emerging EAL/D students). Ensure that a variety of visuals are used to support communication and comprehension, and try to use visuals that will be familiar to the learner.
Science understanding A change of state between solid and liquid can be caused by adding or removing heat (ACSSU046)	Predicting in English requires conditional language structures that will be difficult for EAL/D students, as they require the use of multiple verb structures and tenses (for example, *I think the chocolate will melt if we put it in the sun*). These structures are challenging for EAL/D students to reproduce in both written and oral language. Temperature is not universally measured on a Celsius scale. Some EAL/D students may have different experiences and expectations of temperature measurement scales.	Provide clear models of conditional sentences for EAL/D students to follow, (for example, *I think …, will …, if …*). Teachers can explain that interpretations and understandings presented in class represent one perspective, albeit a common interpretation in Australia. This enables students to retain their cultural knowledge without feeling ashamed of their first culture or disenfranchised from the classroom culture.
Science understanding The Earth's rotation on its axis causes regular changes, including night and day (ACSSU048)	Not all vocabulary challenges involve the technical or long words. Some of the more challenging words in English for all EAL/D students are the small words (for example, the articles *the, an, a*). The identification of objects in informative texts often requires a different use of 'articles'	Identify the ways that small words such as prepositions and articles are used in the texts being modelled for students, and explain and demonstrate their functions.

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	than students have previously encountered. For example, in science we say **the** Earth and **the** Moon, but not **the** Mars.	
Science understanding Heat can be produced in many ways and can move from one object to another (ACSSU049)	Nominalisation is a language feature of science texts that begins to appear at this level. It involves the changing of a verb (usually) into a noun (for example, *conduct – conduction*). This condenses text, and also makes it more abstract. It can be used to focus on the process rather than the people involved in the process. For example, *Our class heated the chocolate and it melted*. Or if the verb 'heated' is nominalised, we might write: ***The heating*** of the chocolate caused it to melt.	EAL/D students will need a significant amount of practice in both the unpacking of these nominalisations and the reproduction of them. Teachers can provide word lists that illustrate the change of the word between the verb and the noun for students' easy reference (for example, *evaporate – evaporation*). This allows EAL/D students to focus on the content and be less hampered by the language challenges.
Science as a human endeavour Science involves making predictions and describing patterns and relationships (ACSHE050)	The modal verbs in English (for example, *will, may, might, should, could*) modify the certainty of verbs and are a feature of hypothesising. They are a language feature that is mastered late in the language progression of EAL/D students. Some languages have no modality.	Teach EAL/D students how modality can create nuance or indicate degrees of possibility. Models of sentences with different degrees of modality can be discussed (for example, *the chocolate **might** melt, the chocolate **should** melt, the chocolate **will** melt*).
Science as a human endeavour Science knowledge helps people to understand the effect of their actions (ACSHE051)	EAL/D students have culturally specific experiences and knowledge that may give them alternative perspectives on issues and phenomena.	Learn about where EAL/D students in the classroom have come from and their experiences, and make active use of these resources by asking questions and inviting their expertise. For example, EAL/D students from rural communities (such as Afghanistan and Burma) often have sophisticated knowledge of natural patterns, plants and phenomena. Parents and bilingual assistants can be very useful.
Science inquiry skills With guidance, identify	In English, questions are formed in many ways and can be challenging	Carefully monitor the language of EAL/D students when they pose

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (ACSIS053)	for many EAL/D students. They can be formed by changing word order (for example, *Is it cold?*), or by using question words (for example, *Does it feel cold? How cold does it feel?*). NB: the verb 'feel' does not take the third person 's' in the question, but it does in the answer (ie *It feels cold*).	questions, and explicitly teach English question forms by providing models of the structure of questions required for the chosen activity.
Science inquiry skills Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate (ACSIS055)	Abbreviations are used often in informative texts, but an understanding of 'familiar' abbreviations should not be assumed with EAL/D students.	Teach the source words of the abbreviations to support the students' understanding of the concept that the abbreviation is representing (for example, kg = kilogram, kilo = 1000, cm = centimetre, cent = 100).
Science inquiry skills Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends (ACSIS057)	Diagrams in informative texts are informational, and are different from the images that students usually create intuitively. For example, in science diagrams require accuracy in scale relationships and colour when recording an experiment.	Provide models of scientific diagrams and tables in the same way as modelled written texts are provided to students. Discuss the features of the required visual texts.
Science inquiry skills Compare results with predictions, suggesting possible reasons for findings (ACSIS215)	Reasoning and explaining require the language of cause and effect in English, which entails sentence structures that appear later in the language progression of EAL/D students. This includes the use of connecting words for specific purposes (for example, *The golf ball is denser, so it rolled faster*).	Provide clear models of the sentences required for EAL/D students to follow, including a word bank of conjunctions appropriate to function (for example, cause and effect: *so, as a result, this results in, therefore*).
Science inquiry skills Represent and communicate ideas and explanations in a variety of ways such as diagrams, physical representations and simple reports (ACSIS060)	Text structures shift subtly across the curriculum areas (for example, scientific procedures have a structure of hypothesis, method and results that differs from other procedural texts that students may have encountered, such as recipes).	Explicitly outline the differences in types of procedures or reports required in science by providing clear models that indicate the text structure and models of sentences characteristic of the text. Build glossaries that explain and define technical vocabulary. Allow EAL/D students to draw before writing (for example, draw

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
		the process of making honey prior to writing the explanation). This provides Beginning and Emerging phase students with a concrete reference tool that the teacher and learner can use to build written vocabulary.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding Living things have life cycles (ACSSU072)	Size of vocabulary is one of the best predictors of literacy success. EAL/D students will not have had the same seven or eight years of exposure to English vocabulary that teachers might expect of other students, nor the same 'prior knowledge' to build upon, and so special attention must be paid to vocabulary development in the classroom. For example, words such as 'cocoon' and 'life cycle' would not be familiar to EAL/D students and would not have been encountered in other learning areas. Many words in English can be categorised under different word classes dependent on the context of the sentence. For example, 'a lamb is a young (adjective) sheep.' compared with 'Sheep feed their young (noun) milk.	Use shared experiences to build common vocabulary. Provide opportunities to revisit the vocabulary many times (for example, use of labelled concrete objects, labelled wall displays of the topic under study, including life cycle diagrams, personal word books where students can record new words, with accompanying visuals). Bilingual assistants and family members can help translate more abstract language to make quick and efficient links to existing conceptual understandings. Scan texts prior to handing them out to students and pre–teach potentially confusing language (for example, notice words that perform unusual functions in the text).
Science understanding Living things, including plants and animals, depend on each other and the environment to survive (ACSSU073)	Shared experiences are an effective way of ensuring that all students start with the same foundational content knowledge. As students move through the year levels, the academic language encountered becomes increasingly abstract and complex, including the use of increasingly technical vocabulary.	Ensure that EAL/D students are active participants in direct experiences (for example, experiments). Unpack multi–morphemic vocabulary to assist students to understand the meaning of the word (for example, 'micro–organ – ism').
Science understanding Natural and processed materials have a range of physical properties; these properties can influence their use (ACSSU074)	Even 'everyday' vocabulary needs to be taught explicitly. EAL/D students often don't know the English vocabulary for everyday home and family items because they use their mother tongue in these contexts.	Build visual word banks for everyday vocabulary, remembering that visuals are also culturally loaded (for example, pictures of Western–style toilets or cooking utensils or foods may initially be meaningless to some students in the Beginning and Emerging phases of English language learning). Use and label concrete 'realia'. Items in the classroom (for example, a labelled display of

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
		different materials: paper, plastic).
Science understanding Earth's surface changes over time as a result of natural processes and human activity(ACSSU075)	When we speak about processes, we often move to the passive voice, which is a challenging structure for all EAL/D students. The passive voice allows us to remove the actor as the theme of the sentence, when the actor is not important or is not the focus of the sentence's main message, for example, 'Water is used for many purposes' (by whom?); 'Clouds are formed by condensation.	Give students in the Beginning and Emerging phases of English language learning alternative sentence structures (active voice) and visuals to scaffold their understanding, so that they can focus on content rather than language. Explicitly teach students in the Developing and Consolidating phases of English language learning the way the passive structure is formed, and why it is used, particularly when describing processes.
Science understanding Forces can be exerted by one object on another through direct contact or from a distance (ACSSU076)	Shared experiences are an effective way of ensuring that all students start with the same foundational content knowledge.	Ensure that EAL/D students are active participants in direct experiences (for example, pushing and pulling objects). Whilst doing the activity, EAL/D students in the Beginning and Emerging phases of English language learning can 'voice' vocabulary and sentence structure being modelled by their teacher.
Science as a human endeavour Science involves making predictions and describing patterns and relationships (ACSHE061)	Predicting requires an understanding and use of modal language – – the language which that mediates certainty in English. For example (modal verbs such as *might, may, should happen*, and modal adverbs such as *possibly, definitely*).	Teach EAL/D students to understand how modality can create nuance or indicate degrees of possibility. Models of sentences with different degrees of modality can be discussed. For example, (*the chocolate **might** melt, the chocolate **should** melt, the chocolate **will** melt*).
Science as a human endeavour Science knowledge helps people to understand the effect of their actions (ACSHE062)	As we students move through the year levels, the academic language encountered becomes increasingly abstract and complex. For example, phrases become *'loss of habitat for living things'*).	As pre– reading activities, read through texts to track 'what's happening' and' who or what it is happening to' in order to ensure that EAL/D students can follow the threads of who, what, how, and

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
	An important feature of written language is 'ellipsis' – where words are implied rather than stated (for example, *Population growth results in loss of habitat. This [loss of habitat] is disastrous for native species*).	why through the text. Use illustrations in the text, to construct pictures and diagrams to explain cause and affect relationships.
Science inquiry skills With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (ACSIS064)	Predicting requires an understanding and use of modal language – – the language which that describes certainty in English. For example, (modal verbs such as *might, may, should happen*, and modal adverbs such as *possibly, definitely*). Hypothesising in English requires conditional language structures which that will be difficult for EAL/D students, as they require the use of multiple verb structures and tenses (for example, "*I **think** the chocolate **will melt** if we **put** it in the sun'*). These structures are challenging for EAL/D students to reproduce in both written and oral language.	Teach EAL/D students to understand how modality can create nuance or indicate degrees of possibility. Discuss models of sentences with different degrees of modality (for example, 'the chocolate might melt', 'the chocolate should melt', 'the chocolate will melt'). Provide clear models of conditional sentences for EAL/D students to follow (for example, I think …, will …, if …).
Science inquiry skills Suggest ways to plan and conduct investigations to find answers to questions (ACSIS065)	Reasoning and explaining require the language of cause and effect in English, which requires entails sentence structures which that appear later in the EAL/D language progression, including the use of connecting words for specific purposes For example, ('*The golf ball is heavy, **so** it rolled faster'*).	Provide clear models of the sentences required for EAL/D students to follow, including a word bank of conjunctions appropriate to function. (For example, cause and effect: '*so', 'as a result', 'this results in', 'therefore'*).
Science inquiry skills Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate (ACSIS066)	Abbreviations are used often in informative texts, but an understanding of 'familiar' abbreviations should not be assumed with EAL/D students.	Teach the source words of the abbreviations to support student understanding of the concept that the abbreviation is representing (for example, kg = kilo gram, kilo = 1000, cm = centimetre, cent = 100).
Science inquiry skills Use a range of methods	Diagrams in informative texts provide information, and are different from the	Teach spoken vocabulary and complex sentence structures in

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
including tables and simple column graphs to represent data and to identify patterns and trends (ACSIS068)	images that students usually create intuitively. In Science diagrams require accuracy in size relationships and colour when recording an experiment. Subject– specific language (*data, column, table, equivalent*,) may have different meanings in other contexts, and so specific contextualised teaching of vocabulary is required.	context simultaneously, and deconstruct scientific diagrams and tables. Discuss the features of the required visual texts.
Science inquiry skills Compare results with predictions, suggesting possible reasons for findings (ACSIS216)	The language of comparison in English includes the use of the comparative adjective forms. These include: adding ' er' to one– or two– syllable adjectives (for example, 'The metal became softer'), using 'more' for adjectives with three or more syllables (for example, 'The metal became more malleable'), and the irregular comparative adjectives such as 'better', not 'gooder'. For most native English speakers, this is intuitive knowledge that comes from a sense of what sounds right.	Teach EAL/D students how to construct sentences to describe comparisons. Provide sentence models that students can modify by adding their own content.
Science inquiry skills Represent and communicate ideas and explanations in a variety of ways such as diagrams, physical representations and simple reports (ACSIS071)	Text structures shift subtly across the curriculum areas (for example, scientific procedures have a structure of hypothesis, method and results that differs from other procedural texts that students may have encountered, such as recipes). Text structures differ within curriculum areas, with explanations, arguments and reports all requiring specific text structures, language features and vocabulary choices. All students have to learn these for specific learning areas. EAL/D students have to learn new vocabulary and how to construct sentences as well as how to develop texts.	Outline explicitly the differences in types of procedures or reports required in Science by working through texts with students before expecting independent construction. Provide clear models that indicate the text structure and models of sentences characteristic of the text. Build semantic webs, wall dictionaries, glossaries that explain and define technical vocabulary. Allow EAL/D students to use diagrams and physical representations to communicate their ideas.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)	Language choices change according to language use. Describing, exploring, explaining and reporting are all language uses that require different vocabulary and sentence choices. Beginning and Emerging phase students will have limited language resources. Not all vocabulary challenges involve the technical or long words. Some of the more challenging words in English for all EAL/D students are the small words (for example, the articles *the, an, a*). The identification of objects in informative texts often requires a different use of 'articles' than students have previously encountered. For example, in science we might say, ***The saltwater crocodile** is one of Australia's most dangerous animals*, where 'the' is used to refer to *all* saltwater crocodiles as a species, not *one* specific saltwater crocodile.	Provide Beginning and Emerging phase students with alternative ways to show their understanding of concepts (for example, through drawing, labelling, choosing from a range of answers, tables and notes, rather than writing complete texts). Consolidating and Developing phase students should be provided with reading and writing frameworks that support them to recognise the language choices associated with different language uses. Pay attention to the ways that small words such as prepositions and articles are used in the texts being modelled for students, and explain their functions.
Science understanding The Earth is part of a system of planets orbiting around a star (the sun) (ACSSU078)	EAL/D students have culturally specific experiences and knowledge that may give them alternative perspectives on issues and phenomena.	Make active use of the cultural resources of EAL/D students when exploring science topics (for example, many cultures use the moon as their guide for calendars, or to guide agriculture). These discussions offer opportunities for deep learning and intercultural understanding for the entire class.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding Light from a source forms shadows and can be absorbed, reflected and refracted (ACSSU080)	Size of vocabulary is one of the best predictors of literacy success. Subject–specific vocabulary is particularly challenging for EAL/D students, as they will have had limited exposure to these words (for example, *refraction, transparent*). Many words in English can be categorised under different word classes dependent on the context of the sentence. For example, *The sun is a source of **light*** (noun). *When we **light*** (verb) *the candle we can see shadows*.	Build vocabulary banks with semantic webs, where semantically linked words are gathered together. Build class glossaries, where technical words are given common sense definitions, supported by illustrations. Scan texts prior to handing them out to students and pre–teach potentially confusing language (for example, notice words that perform unusual functions in the text).
Science as a human endeavour Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena (ACSHE081)	While some EAL/D students may be literate in L1, research in school requires developed literacy skills in English, including knowledge of and access to information sources that may be beyond the language levels of EAL/D students.	Provide scaffolds for research for EAL/D students (for example, provide the research texts, as well as guides for reading the text and retrieving the appropriate information, such as an information retrieval grid and focused questions).
Science as a human endeavour Important contributions to the advancement of science have been made by people from a range of cultures (ACSHE082)	EAL/D students may bring developed knowledge about elements of this to the classroom.	Structure the program so that all students can contribute knowledge to the topic in a range of ways (for example, allow varieties of input: visual, artefact, oral).
Science as a human endeavour Scientific understandings, discoveries and inventions are used to solve problems that directly affect people's lives (ACSHE083)	Many ways of understanding the world around us that are taken for granted in Australian classrooms, and that are assumed knowledge in the curriculum, are not universal understandings. For example, technologies have had lesser impacts on the lives of people in other countries or in remote regions of Australia than those in urban communities in Australia.	Make active use of the cultural resources of EAL/D students when exploring science topics and acknowledge that 'daily lives' are different in every household and every country. Learning about the different experiences and expectations of the EAL/D students in the classroom will help to close knowledge gaps for the entire class.
Science inquiry skills With guidance, pose questions	Hypothesising and predicting in English require conditional language	Provide clear models of conditional sentences for EAL/D

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be (ACSIS231)	structures that will be difficult for EAL/D students, as they require the use of multiple verb structures and tenses (for example, *I **think** the chocolate **will melt** if we **put** it in the sun*). These structures are challenging for EAL/D students to reproduce in both written and oral language. The modal verbs in English (for example, *will, may, might, should, could*) modify the certainty of verbs and are mastered late in the language progression of EAL/D students. Many languages have no modality. Students from these backgrounds will need to be taught how a degree of certainty can create nuance or indicate deference. Modality is also marked through adverbs (for example, *possibly, certainly, probably*).	students to follow, (for example, *I think …, will …, if …*). Teach the differences in degrees of certainty achieved by the use of a variety of modal words.
Science inquiry skills With guidance, plan appropriate investigation methods to answer questions or solve problems (ACSIS086)	English questions are formed in many ways and can be challenging for many EAL/D students. They can be formed by changing word order (for example, *Is it cold?*), or by using question words (for example, *Does it feel cold? How cold does it feel?*). NB: the verb 'feel' does not take the third person 's' in the question, but it does in the answer (ie *It feel**s** cold*).	Carefully monitor the language of EAL/D students when they pose questions, and explicitly teach English question forms by providing models of the structure of questions required for the chosen activity.
Science inquiry skills Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate (ACSIS087)	EAL/D students may not have the English language skills, nor the long–term cumulative exposure to the Australian Curriculum, and so will not necessarily be familiar with tools and units of measurement.	Always provide clear guidelines and check for previous understandings.
Science inquiry skills Construct and use a range of representations, including tables and graphs, to represent and	Reasoning and explaining require the language of cause and effect in English (for example, *The beans in the first tray were not watered; **as a***	Provide Beginning and Emerging phase students with alternative ways to demonstrate their understanding of concepts,

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
describe observations, patterns or relationships in data using digital technologies as appropriate (ACSIS090)	*result they died*). These structures come later in the EAL/D learning progression for EAL/D students. Many conjunctions in English perform multiple language functions, dependent on context. For example, 'while' can mean 'at the same time' (for example, *Pour the liquid while stirring*), or it can mean 'although' (for example, ***While*** *many animals care for their young, snakes do not*).	including through demonstration with concrete objects. Provide Developing and Consolidating phase students with clear models of the sentence structures required to describe cause and effect, including lists of appropriate conjunctions (for example, *as a result, this means, therefore, so*). All EAL/D students will benefit from an explicit unpacking of the function of conjunctions in scientific texts.
Science inquiry skills Communicate ideas, explanations and processes in a variety of ways, including multimodal texts (ACSIS93)	Text structures shift subtly across the curriculum areas and within curriculum areas. Reports, explanations, arguments and procedures are all different types of text, and also slightly different in science than what they are in history.	Teach the features of the texts required in the context of the curriculum area, and pay attention to the ways that texts differ across the curriculum areas. Provide clear structures and models for the target text. The writing cycle of deconstruction, joint construction and independent writing is a strong framework for EAL/D students.

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding The growth and survival of living things is affected by the physical conditions of their environment (ACSSU094)	Beginning and Emerging phase students will be attempting to explain concepts with limited language and so may not be able to demonstrate what they know.	Provide these students with alternative ways in which they can show their understandings, such as drawing, labelling, choosing from a range of answers, tables, and notes or completing graphic organisers.
Science understanding Changes to materials can be reversible, such as melting, freezing, evaporating; or irreversible, such as burning and rusting (ACSSU095)	Chemical sciences utilise nominalised language (where a verb is changed into a noun – for example, *evaporate = evaporation*).	Provide reference lists of these words to enable students to better unpack and understand the process being discussed.
Science understanding Sudden geological changes or extreme weather conditions can affect the Earth's surface (ACSSU096)	EAL/D students, particularly Aboriginal and Torres Strait Islander students, may bring alternative perspectives to geological changes, the reasons behind extreme weather or the changes in the Earth's surface.	It is important that these perspectives are treated with respect and that alternative explanations are not dealt with in a tokenistic or native way. Allow students to retain their cultural beliefs while teaching them the scientific explanations for such phenomena.
Science understanding Energy from a variety of sources can be used to generate electricity (ACSSU219)	EAL/D students may not bring background knowledge of energy and its sources to the classroom.	Find out what EAL/D students already know and do not assume background knowledge when discussing these topics.
Science understanding Electrical circuits provide a means of transferring and transforming electricity (ACSSU097)	EAL/D students may not bring background knowledge of electrical energy to the classroom.	Find out what EAL/D students already know and do not assume background knowledge when discussing these topics.
Science as a human endeavour Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena (ACSHE098)	Research requires developed literacy skills, including knowledge of and ability to navigate through information sources that may be beyond the language progression of EAL/D students. Predictions require the use of the conditional tenses (for example, *if x then y; if x occurred then y would occur; if x had occurred then y would*	Provide scaffolds for research for EAL/D students (for example, appropriate research texts and graphic organisers such as retrieval charts). Explain that the conditional tenses are used in this kind of investigation and explicitly model the format required for

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
	have occurred).	responses.
Science as a human endeavour Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena (ACSHE098)	Research requires developed literacy skills, including knowledge of and ability to navigate through information sources that may be beyond the language progression of EAL/D students. Predictions require the use of the conditional tenses (for example, *if x then y; if x occurred then y would occur; if x had occurred then y would have occurred*).	Provide scaffolds for research for EAL/D students (for example, appropriate research texts and graphic organisers such as retrieval charts). Explain that the conditional tenses are used in this kind of investigation and explicitly model the format required for responses.
Science as a human endeavour Important contributions to the advancement of science have been made by people from a range of cultures (ACSHE099)	EAL/D students may bring developed knowledge about elements of this to the classroom.	Students should be invited to contribute what they know to class discussions. If they are hesitant to talk, teachers can make reference to their understandings or frame information from their culture in positive ways.
Science as a human endeavour Scientific understandings, discoveries and inventions are used to solve problems that directly affect people's lives (ACSHE100)	Many ways of understanding the world around us that are taken for granted in Australian classrooms, and that are assumed knowledge in the curriculum, are not universal understandings. For example, technologies have had lesser impacts on the lives of people in other countries or in remote regions of Australia than those in urban communities in Australia.	Make active use of the cultural resources of EAL/D students when exploring science topics and acknowledge that 'daily lives' are different in every household and every country. Learning about the different expectations and experiences of the EAL/D students in the classroom will help to close knowledge gaps for the entire class.
Science as a human endeavour Scientific knowledge is used to inform personal and community decisions (ACSHE220)	In some cultures, community decisions are based upon beliefs of elders or tribal chiefs, and it is not expected that these decisions will be challenged by other community members based solely on scientific understandings.	Frame this concept in the context of urban Australian decisions and accept that decisions not made on these bases may have other, culturally sound reasons for being made. Explain that in the science classroom, scientific knowledge, based on empirical evidence, is deemed correct.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science inquiry skills With guidance, ask questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be (ACSIS232)	Hypothesising and predicting in English require conditional language structures that will be difficult for EAL/D students, as they require the use of multiple verb structures and tenses (for example, *I **think** the chocolate **will melt** if we **put** it in the sun*). These structures are challenging for EAL/D students to reproduce in both written and oral language.	Provide clear models of conditional sentences for EAL/D students to follow (for example, *I think …, will …, if …*).
Science inquiry skills With guidance, select appropriate investigation methods to answer questions or solve problems (ACSIS103)	In English, questions are formed in many ways and can be challenging for many EAL/D students. They can be formed by changing word order (for example, *Is it cold?*), or by using question words (for example, *Does it feel cold? How cold does it feel?*). NB: the verb 'feel' does not take the third person 's' in the question, but it does in the answer (ie *It feel**s** cold*).	Carefully monitor the language of EAL/D students when they pose questions, and explicitly teach English question forms by providing models of the structure of questions required for the chosen activity.
Science inquiry skills Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate (ACSIS104)	EAL/D students may not have the English language skills, nor the long–term cumulative exposure to the Australian Curriculum, and so will not necessarily be 'familiar' with tools, units of measurement.	Always provide clear guidelines and check for previous understandings.
Science inquiry skills Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (ACSIS107)	Reasoning and explaining require the language of cause and effect in English (for example, ***First** I had 10 ml of solution, **then** I put ten more ml **because** I was going up in lots of 10; The golf ball is denser, **so** it rolled faster*). These structures come later in the EAL/D learning progression for EAL/D students.	Provide Beginning and Emerging phase students with alternative ways to demonstrate their understanding of concepts, including through demonstration with concrete objects. Provide Developing and Consolidating phase students with clear models of the sentence structures required to describe cause and effect, including lists of appropriate conjunctions (for example, *as a result, this means, therefore, so*).

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science inquiry skills Compare data with predictions and use as evidence in developing explanations (ACSIS221)	The language of comparison in English includes the use of the comparative adjective forms. These include: adding '–er' to one– or two–syllable adjectives (for example, *The metal became soft**er***), using 'more' for adjectives with three or more syllables (for example, *The metal became **more** malleable*), and the irregular comparative adjectives such as *better*, not *gooder*. For most native English speakers, this is intuitive knowledge that comes from a sense of what sounds right.	Teach EAL/D students how to construct sentences to describe comparisons. Provide sentence models that students can modify by adding their own content.
Science inquiry skills Communicate ideas, explanations and processes in a variety of ways, including multimodal texts (ACSIS110)	Text structures shift subtly across the curriculum areas and within curriculum areas. Reports, explanations, arguments and procedures are all different types of text, and also slightly different in science than they are in other learning areas.	Teach the features of the texts required in the context of the curriculum area, and pay attention to the ways that information and ideas are structured in science texts. Provide clear structures and models for the target text. The writing cycle of deconstruction, joint construction and independent writing provides a strong framework for EAL/D students.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding There are differences within and between groups of organisms; classification helps organise this diversity (ACSSU111)	Different cultures use different ways of classifying objects according to their needs. For example, an Aboriginal student may classify plants according to edible or inedible, rather than species.	Differing perspectives on grouping should be used as an instructional experience, rather than being viewed as deficient.
Science understanding Interactions between organisms can be described in terms of food chains and food webs; human activity can affect these interactions (ACSSU112)	New, subject–specific vocabulary can be confusing for EAL/D students.	Represent these food chains and food webs pictorially where possible, and then add the vocabulary to the relevant elements as a class activity.
Science understanding Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques (ACSSU113)	The use of highly nominalised vocabulary when discussing mixtures (*filtration, decantation, evaporation, crystallisation*, and *distillation*) may cause confusion in EAL/D students.	Provide a word list that illustrates the change of the word between the verb and the noun for students' easy reference (for example, *filter – filtration, decant – decantation, evaporate – evaporation*).
Science understanding Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and moon (ACSSU115)	These phenomena may have been explained with different reasoning in a student's first culture. This can be seen as a different perspective, rather than deficient.	Explain that scientific research has led to such discoveries and that these discoveries change our view of the world as time advances (for example, the renaming of the brontosaurus, or the reclassification of Pluto).
Science understanding Some of Earth's resources are renewable, but others are non–renewable (ACSSU222)	Scientific vocabulary can be daunting for EAL/D students.	Show students the morphemic breakdown of words where possible, so that they can use this in other instances to decode unfamiliar vocabulary (for example, *non + renew + able*).
Science as a human endeavour Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have profoundly changed people's understanding of the world (ACSHE119)	EAL/D students may come from cultures where recent Western discoveries are not yet current practice.	Affirm the students' first culture and allow them time to question and reflect on this knowledge. Use examples such as Pluto first being thought of as a planet and now reclassified as a star to illustrate that people's understandings can change in light of new discoveries.

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science as a human endeavour Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations (ACSHE120)	Students from different cultures will have different perspectives as to what is or is not ethical. For example, the perspectives of students from first world and third world countries may differ because something that may be unethical in one country is a question of survival in another. Similarly, what is not ethical in one country may be cultural heritage in another.	Exercise sensitivity when discussing ethical issues. Differences should be noted but not seen as deficient.
Science as a human endeavour Science understanding influences the development of practices in areas of human activity, such as industry, agriculture and marine and terrestrial resource management (ACSHE121)	Subject–specific vocabulary can be confusing for EAL/D students and difficult to remember.	Create word walls where students can group words with common roots (for example, *terrestrial, Mediterranean, terracotta, terrain*). This will assist them in remembering meaning and spelling.
Science inquiry skills Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (ACSIS124)	In English, questions are formed in many ways and can be challenging for many EAL/D students. They can be formed by changing word order (for example, *Will this electrical circuit work?*), or by using question words (for example, *Does this material conduct electricity? What materials conduct electricity?*). Predictions involve hypothesising. This requires the use of conditional language structures, which entails using multiple verb structures and tenses.	Provide models of the structure of questions required for this activity. Provide clear models of conditional sentence structures for EAL/D students to follow (for example, *I think that x will happen if y occurs*).
Science inquiry skills Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125)	Many students will have come from a schooling system where they were required to work individually, rather than collaboratively. There may be cultural sensitivities when assigning groups. While the students will need to overcome these in time, they may be deeply ingrained and teachers should pay	Group work skills need to be outlined explicitly and rewarded positively. Investigate potential issues (such as mixing boys and girls, certain ethnic groups, or different mobs) with the ESL specialist, the bilingual teacher's assistant or with the

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
	attention to these in the first instance. There may also be certain unseen cultural distinctions within students of the same cultural group, meaning that one student has more or less 'power' than another.	student/s before this commences.
Science inquiry skills In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (ACSIS125)	Experiment reports have a specific written structure and language features that need to be explicitly taught (for example, a science experiment report firstly states its aim, then safety considerations, then the procedure, then the observations/results and then an evaluation). Each of these requires a different form of the verbs used.	EAL/D students will benefit from specific instruction about which language features to use and when, particularly for the passive voice, as this is learned much later in language development. Consider the text form, the grammar and the language required for each type of text, and provide a model to make this explicit before requiring output from students.
Science inquiry skills Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (ACSIS129)	Summary and drawing conclusions are skills that require high levels of comprehension and the use of specific language (for example, relative pronouns such as *which*; conjunctions such as *while*, which can mean 'although' or 'at the same time' depending on context; and nominalised verbs such as *erosion, condensation, incineration*).	Give specific instruction about which language features to use and when, and provide exemplar models. Use retrieval charts or other graphic organisers to assist in the retrieval of main points and reduce the possibility of plagiarism.
Science inquiry skills Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method (ACSIS131)	This requires a written response that entails description, consideration of efficacy (*if ... then*), and an evaluation (*could have, may be better achieved if ...*).	Model these language features and provide exemplar models for students to use when expressing their own findings.
Science inquiry skills Communicate ideas, findings and solutions to problems using scientific language and representations, using digital technologies as appropriate	Scientific language is dense, using advanced linguistic features such as nominalisation, complex sentences and the passive voice. These features are usually learned in the Consolidating phase of language learning. Students in the Beginning,	Encourage EAL/D students to engage with scientific language in a way that is commensurate with their abilities (for example, Beginning phase students should be encouraged to use scientific vocabulary where

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
(ACSIS133)	Emerging and Developing phases will experience difficulty in reproducing this language.	possible; Emerging phase students should begin to use compound sentences and, with guidance, complex sentences; and Developing phase students should be encouraged to develop their awareness of using the passive voice when communicating ideas.

Annotated Content Descriptions: Science
Year 8

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce (ACSSU150)	Describing systems requires sequencing language (for example, 'first', 'next', 'then').	Provide a list of these words and model when they can be used.
Science understanding Differences between elements, compounds and mixtures can be described at a particle level (ACSSU152)	Describing difference requires comparative language (for example, 'different from', 'similar to').	Teach this comparative language and allow students to practise it, before requiring them to use it independently.
Science understanding Minerals and rocks, including sedimentary, igneous and metamorphic, are formed by processes that occur within the Earth over time (ACSSU153)	Geologic terminology is often morphemic and derived from Greek or Latin origins. These 'long' words are confusing for EAL/D students who are both learning a language and learning the content through this language.	Provide EAL/D students with a list of common affixes used in geological sciences (for example, 'ic–', 'geo–', 'meta–') and allow them opportunities for investigating and experimenting with these affixes.
Science as a Human Endeavour Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have profoundly changed people's understanding of the world (ACSHE134)	EAL/D students may come from cultures where recent Western discoveries are not yet current practice.	Affirm the students' first culture and allow them time to question and reflect on this knowledge. Use examples such as the reclassification of Pluto to illustrate that people's understandings can change in light of new discoveries.
Science as a human endeavour Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations (ACSHE135)	Students from different cultures will have different perspectives as to what is or is not ethical. For example, the perspectives of students from first world and third world countries may differ because something that may be unethical in one country is a question of survival in another. Similarly, what is not ethical in one country may be cultural heritage in another.	Exercise sensitivity when discussing ethical issues. Differences should be noted but not seen as deficient.

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Science as a human endeavour People use understanding and skills from across the disciplines of science in their occupations (ACSHE227)	Common occupations in urban Australia may not be well known by some EAL/D students. Their use of science in occupations may be far superior to ours (such as nuclear physicists) or absent from what they conceive as common occupations (such as shepherd).	Explore similarities and the differences that exist between countries and what is required for the more common occupations in each. Ensure that these discussions are sensitive to the cultural heritage of all students present.
Science inquiry skills Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (ACSIS139)	Forming scientific questions in English will be unfamiliar to students in the Beginning and Emerging phases of English language learning.	Explicitly teach the forms of questions required (for example, the use of question words such as 'why', 'when', 'how', and the way we invert word order if we don't use these words, for example, 'Can we ...?').
Science inquiry skills Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS140)	Many students will have come from a schooling system where they were required to work individually, rather than collaboratively. There may be cultural sensitivities when assigning groups. While the students will need to overcome these sensitivities in time, they may be deeply ingrained and teachers should pay attention to them in the first instance. There may also be certain unseen cultural distinctions within students of the same cultural group, meaning that one student has more or less 'power' than another.	Outline group work skills explicitly and respond to participation positively. Investigate potential issues (such as mixing boys and girls, certain ethnic groups, or different mobs) with an ESL specialist, a bilingual teacher's assistant or with the student/s before this commences.
Science inquiry skills In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (ACSIS141)	Experiment reports are a specific written type of text and have language features that need to be explicitly taught. A science experiment report firstly states its aim (using the infinitive form of the verb – for example, 'to observe what happens when water is heated to 100 degrees Celsius'); then safety considerations (using the imperative form of the verb – for example, 'wear safety glasses because ...'); then the	Provide EAL/D students with specific instruction about which language features to use and when, particularly for the passive voice, as this is a feature that is learned much later in the EAL/D language development continuum.

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
	materials needed (in a list); then the procedure; then the observations/results (using verbs in the past simple tense and the passive voice); and then an evaluation. The active voice, where the subject begins the clause, is more common and familiar to students. The passive voice is far less common, and may confuse EAL/D students, as they will expect the 'do–er' to be at the beginning of the clause (for example, 'A car hit a train' vs. 'A train was hit by a car').	
Science inquiry skills Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (ACSIS145)	Summary of this kind requires a high level of language competence and the ability to comprehend, paraphrase, find synonyms and manipulate the grammatical structures that students read in secondary sources to form a new text.	Support students with graphic organisers such as retrieval charts to organise their information before commencing the summary, and provide exemplar texts and a bank of commonly used phrases to assist them in composing their summaries.
Science inquiry skills Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method (ACSIS146)	This requires a written response that entails description, consideration of efficacy (for example, 'if ... then'), and an evaluation (for example, 'could have', 'may be better achieved if').	Model these language features and provide exemplar models for students to use when expressing their own findings.
Science inquiry skills Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate (ACSIS148)	The subject–specific vocabulary required for this task may cause EAL/D students problems. If the required task is in the form of an oral presentation, some students may be disadvantaged due to difficulties in pronunciation.	Provide word walls and allow students to use bilingual dictionaries to support their writing. Allow students to use visual prompts and cues and digital technologies to support their presentation. Assist them in pronunciation of key terms prior to the presentation.

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding Multicellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment (ACSSU175)	This will require knowledge of the 'cause and effect' structure in writing and of words associated with this (for example, *causes, makes, leads to, forms, so, results in*).	Provide examples of these terms and model texts that use them. Create cloze activities that require students to use these words in context.
Science understanding Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; energy and matter flow through these systems (ACSSU176)	Sequencing terms are needed to describe energy and matter flows (for example, *first, secondly, next, then, at this time, finally*).	Provide examples of these terms and model texts that use them. Create cloze activities that require students to use these words in context.
Science understanding Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction, mass is not created or destroyed (ACSSU178)	When describing abstract concepts, EAL/D students may become lost in the information.	Use visuals, models and labelled diagrams to support students' understanding.
Science understanding The theory of plate tectonics can be used to explain global patterns of geological activity and continental movement (ACSSU180)	Geological studies involve a high level of subject–specific vocabulary that may be unknown to EAL/D students.	Provide illustrated words list where possible and try to explain the morphological knowledge needed to group terms together (for example, *ozoic*, or *eon – eonotherm*). Use visuals, models and labelled diagrams to support students' understanding.
Science as a human endeavour Scientific understandings, including models and theories, are contestable and are refined over time through a process of review by the scientific community (ACSHE157)	Not all EAL/D students have come from an education system where knowledge is contestable. As they may have been trained not to question knowledge over many years, this may be a difficult skill for them.	Reassure EAL/D students that they may question accepted knowledge or expert opinion if it is based on empirical fact. Give specific examples of where this has happened and ask them for examples from their home culture if relevant.
Science inquiry skills Formulate questions or hypotheses that can be investigated scientifically	Forming questions in English will pose problems for students in the Beginning and Emerging phases of language learning.	Explicitly teach the forms of questions required (for example, the use of question words such as *why*, *when*, *how*,

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
(ACSIS164)		and the way we invert word order if we don't use these words – *Can we ...*).
Science inquiry skills Plan, select and use appropriate investigation methods, including fieldwork and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods (ACSIS165)	Fieldwork requires a distinct series of steps and an accepted way of reporting on these, which EAL/D students may not be familiar with.	Explicitly teach the steps involved, the information required and the format of the final product (including required vocabulary and tense structures).
Science inquiry skills Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSIS166)	Experiments are a specific written type of text and have language features that need to be explicitly taught. For example, a science experiment report firstly states its aim (using the infinitive form of the verb – for example, *to observe what happens when water is heated to 100 degrees Celsius*), then safety considerations (using the imperative form of the verb – for example, *wear safety glasses because ...*), then the materials needed (in a list), then the procedure (using passive verbs in the past tense), then the observations results (using verbs in the past simple tense), and then an evaluation (discussion – in the passive past simple tense; and a conclusion – in the passive present tense).	EAL/D student will benefit from specific instruction about which language features to use and when, particularly for the passive voice, as this is a construction that is learned much later in the language development continuum.
Science inquiry skills Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS169)	These tasks require specific knowledge of the accepted ways of reporting the analysis, describing the relationships observed and how to identify inconsistencies. Language in these functions is used in an abstract sense and often in the passive voice (for example, *it is suggested, the temperature was lowered by the use of x, the*	Explicitly model the text structures, language and tenses required through classroom modelling and the use of exemplar texts and/or guided writing outlines.

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
	incidence of x has been reduced since the inclusion of y).	
Science inquiry skills Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS170)	Conclusions are often made using the passive voice (for example, *It can be concluded that ...*).	Provide examples of how these conclusions are appropriately expressed.
Science inquiry skills Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSIS171)	Abstract and technical vocabulary is used in evaluations. While the evaluation may not be challenging for EAL/D students, expressing their ideas may be.	Model exemplar texts that deconstruct the text structure, language and linguistic features required for this skill.
Science inquiry skills Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems (ACSIS172)	Some cultures do not teach students to evaluate knowledge or to critically analyse any form of 'expert information'. Students from these backgrounds may not be confident to express themselves in this way.	Explain that this kind of activity is not disrespectful or rude, but a necessary part of scientific investigation.
Science inquiry skills Communicate scientific ideas and information for a particular purpose, including constructing evidence–based arguments and using appropriate scientific language, conventions and representations (ACSIS174)	Abstract and technical vocabulary is used for this skill. While the ideas, information and arguments may not be challenging for EAL/D students to construct in their own language, expressing their ideas appropriately in English may be.	Model exemplar texts that deconstruct the text structure, language and linguistic features required for this skill.

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science understanding The atomic structure and properties of elements can be used to organise them in the Periodic Table (ACSSU186)	Some EAL/D students will be significantly advanced in using this table, while others will be unfamiliar with it and may have great difficulty in remembering and comprehending it. The abstract nature of the table and its complex structure may cause confusion, as will the morphemic names given to substances/elements, such as *Fe* – from the Latin 'ferrus'. These Latin derivations will also mean that students with a Latin–based language, such as Spanish, French or Italian, may find the elements easier to remember and place than those from other backgrounds.	Teach the origin of the words used in the table. Allow extra time for limited schooling students to comprehend the table. Intensive teaching may be required.
Science understanding Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere (ACSSU189)	Much of the language for this is abstract and complex, but it is also morphemic (for example, the use of 'sphere').	Show students how they can break these words down into morphemes (for example, *bio – sphere*), and from this approximate the meaning of unknown words.
Science understanding The motion of objects can be described and predicted using the laws of physics (ACSSU229)	The abbreviations associated with this knowledge (for example, those for velocity) may not be known by EAL/D students, particularly those from backgrounds that use other scripts.	Teach the abbreviations with their whole term and construct reference lists for the students.
Science as a human endeavour Scientific understandings, including models and theories, are contestable and are refined over time through a process of review by the scientific community (ACSHE191)	Not all EAL/D students have come from an education system where knowledge is contestable. As they may have been trained not to question knowledge over many years, this may be a difficult skill for them.	Reassure EAL/D students that they may question accepted knowledge or expert opinion if it is based on empirical fact. Give specific examples of where this has happened and ask them for examples from their home culture if relevant.

English as Additional Language or Dialect Teacher Resource
Annotated Content Descriptions: Science Foundation to Year 10

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CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science inquiry skills Formulate questions or hypotheses that can be investigated scientifically (ACSIS198)	Forming questions in English will pose problems for students with fewer linguistic resources. Hypothesising requires use of the conditional language structure, which is difficult for many EAL/D students.	Explicitly teach the forms of questions required (for example, the use of question words such as *why*, *when*, *how*, and the way we invert word order if we don't use these words – *Can we …*). Provide clear models of conditional sentence structures (for example, *I think that x will happen if y occurs*).
Science inquiry skills Plan, select and use appropriate investigation methods, including fieldwork and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods (ACSIS199)	Experiment reports are a specific written type of text and have language features that need to be explicitly taught. For example, a science experiment report firstly states its aim (using the infinitive form of the verb – for example, *to observe what happens when water is heated to 100 degrees Celsius*), then safety considerations (using the imperative form of the verb – for example, *wear safety glasses because ...*), then the materials needed (in a list), then the procedure (using passive verbs in the past tense), then the observations/results (using verbs in the past simple tense), and then an evaluation (discussion – in the passive past simple; and a conclusion – in the passive present tense). This is also true of fieldwork.	EAL/D student will benefit from specific instruction about which language features to use and when, particularly for the passive voice, as this is a construction that is learned much later in the language development continuum.
Science inquiry skills Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS203)	These tasks require specific knowledge of the accepted ways of reporting the analysis, describing the relationships observed and how to identify inconsistencies. Language in these functions is used in an abstract sense and often in the passive voice.	Explicitly model the text structures, language and tenses required through classroom modelling and the use of exemplar texts and/or guided writing outlines.
Science inquiry skills Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS204)	Conclusions are often made using the passive voice (for example, *It can be concluded that ...*).	Provide examples of how these conclusions are appropriately expressed.

CONTENT DESCRIPTIONS	LANGUAGE/CULTURAL CONSIDERATIONS	TEACHING STRATEGIES
Science inquiry skills Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSIS205)	Abstract and technical vocabulary is used in evaluations. While the evaluation may not be challenging for EAL/D students, expressing their ideas may be.	Model exemplar texts that deconstruct the text structure, language and linguistic features required for this skill.
Science inquiry skills Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems (ACSIS206)	Some cultures do not teach students to evaluate knowledge or to critically analyse any form of 'expert information'. Students from this background may not be confident to express themselves in this way.	Explain that this kind of activity is not disrespectful or rude, but a necessary part of scientific investigation.
Science inquiry skills Communicate scientific ideas and information for a particular purpose, including constructing evidence–based arguments and using appropriate scientific language, conventions and representations (ACSIS208)	Abstract and technical vocabulary is used for this skill. While the ideas, information and arguments may not be challenging for EAL/D students to construct in their own language, expressing their ideas appropriately in English may be. Vocabulary, in particular, is often multi–morphemic (for example, *micro–organism = micro – organ – ism*); or nominalised (for example, *condensation – condense*); or constructed from extended noun phrases (for example, *A cyclone is a violent, tropical storm that is usually accompanied by torrential, lashing rain and powerfully destructive winds*).	Model exemplar texts that deconstruct the text structure, language and linguistic features required for this skill. Teach the morphemic origins of vocabulary (for example, *semi– = half; pod– = foot; –ject = throw*). Provide lists of nominalisations and the verbs from which they originated (for example, *absorption – absorb*). Assist students to reconstruct dense noun phrases as oral language, so that they can appreciate how it is 'repackaged' into scientific language (for example, *A tornado is a kind of cloud. It is shaped like a funnel and moves very quickly. It reaches down from a storm cloud to touch the Earth's surface*). (Fang, Z. 2006, International Journal of Science Education: The Language Demands of Science Reading in Middle School, vol. 28, no. 5).