

# Queensland response to draft K(P)–10 Australian Curriculum

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# Queensland response to draft K(P)–10 Australian Curriculum

## 1. Introduction

The Queensland schooling sectors, in partnership with the Queensland Studies Authority appreciate the opportunity to provide feedback on the draft K(P)–10 Australian Curriculum.

It is agreed that there is general alignment between the Australian Curriculum and the existing Queensland curriculum. Queensland appreciates the depth and scope of the work to date and understands the challenges facing the Australian Curriculum, Assessment and Reporting Authority.

This paper provides a summary of the collated Queensland feedback from:

- National forums
- State focus sessions
- Learning Area Reference Committees (LARCs)
- QSA mapping activities with staff teams
- Interviews with some Queensland trial schools using the draft K(P)–10 Australian Curriculum
- The three educational sectors representing 1400 Education Queensland schools, 288 Catholic schools and 188 Independent schools.

The paper has some introductory comments that outline the strengths and the key issues identified in the consultation. This is followed by learning area specific comments and a section about the achievement standards.

## 2. Strengths

The Queensland Studies Authority and the three schooling sectors have agreed that strengths of the four Phase 1 learning areas include:

- the rationales and aims, which present big ideas and issues
- greater content specificity to support teachers
- high expectations for all students
- an attempt to foreground inquiry in science and history
- the inclusion of Human Endeavour, Historical Skills and Literature as strands
- the inclusion of visual literacy in English

- the inclusion of Aboriginal and Torres Strait Islander perspectives, though this could be embedded more deeply and sequenced more thoroughly
- online format although some advice will be presented regarding the use of headings and numbering.

### 3. Key issues

The following key issues have been identified for consideration in the redrafting of the Phase 1 learning areas. In summary the key issues are:

#### 1. Coherence of the achievement standards

We acknowledge the extensive work done by ACARA thus far in terms of the achievement standards. The achievement standards as single statements of the learning typically expected for each year level in each learning area provide a progress map of the expectations for student learning. Of the numerous meanings attributed to 'standards' in the educational literature, this type of standard can be understood as progressive targets or milestones.

While successfully articulating a framework for growth and development, feedback on the achievement standards focused on the need for further clarity about how teachers would judge the quality of students' achievements and report the achievements on an A-E scale.

In the current Queensland curriculum documents, standards are fixed reference points used to describe how well students have achieved the objectives or Essential Learnings in syllabuses. The standards show what students know and can do and how well they know it and can do it. The descriptions of achievement standards are developed by groups of teachers and subject experts describing the actual differences in examples of student work.

During the consultation the following issues were raised consistently across all learning areas:

- The achievement standards are more representative of a learning outcome; that is, what students know and can do, than a clearly articulated standard that enables teachers to determine 'how well' a student has performed.
- The overall aims of each learning area and content organisers should be aligned to the achievement standards. Currently they are a content check list.
- The standards should include language to indicate quality such as 'depth and sophistication'.
- Greater consistency in the structure of the achievement standards within and across learning areas.
- Greater consistency in demand between and across learning areas (e.g. more comparable demand in the achievement standards between mathematics and English in K(P)-2)<sup>1</sup>.
- In the early years, the draft achievement standards include low-level verbs rather than higher order verbs and processes that would allow students to demonstrate construction of knowledge and metacognitive processes.

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<sup>1</sup> Kindergarten (K) in Queensland is referred to as Prep hence the reference K(P)-2.

## **2. Higher-order thinking in the Australian Curriculum**

- Australian Curriculum content descriptions describe specific methods of inquiry and approaches to analysis at discrete points along the year by year continua. It is recommended that more content descriptions and elaborations explicitly address the teaching of thinking skills, sequenced across learning areas at every year level.
- The application of metacognitive strategies needs to be included more consistently in the standards.

## **3. Internal consistency within the learning areas**

- Greater clarity and more direct relationships are needed between the learning area rationales and aims and the content descriptions and elaborations.
- A consistent use of terminology throughout the learning areas, particularly in English.
- A clear indication of the relationship between the proficiencies and modes in the content descriptions, particularly in mathematics and English.
- More consistent content description headings to indicate developmental sequences and related content, particularly in English and science.
- Greater developmental consistency of key concepts across year levels, particularly in mathematics and science.
- More consistent development of higher concepts as they are addressed across the strands particularly in science (e.g. energy rather than sound or light).
- A reduction in the quantity of content for all four learning areas, particularly Years 7–10, and more clarity about depth of treatment of existing content descriptions.

## **4. Consistency between learning areas**

- Expectations of the learner must be consistent between learning areas at year levels, particularly numeracy demands in mathematics and science, and literacy demands in science, history and English.
- More consistent application of the filters related to the general capabilities (GCs) to make clear developmental continua of the GCs within and across learning areas, particularly thinking skills.
- Consistent inclusion of Aboriginal and Torres Strait Islander perspectives in the content descriptions that develops across the year levels. The inclusion of specific knowledge, skills and understandings only in elaborations should be limited.

## **5. Students with needs beyond a general cohort**

- A clear statement about pre-K developmental stages would assist early years teachers.
- Consider the degree to which Year 1 content descriptions build on those for Kindergarten as this year of schooling is not mandated in seven out of eight states and territories.
- Review content descriptions and achievement standards across the learning areas (e.g. mathematics and English in (K)P–2 achievement standards for consistency and developmental appropriateness).
- Clearer messages about managing the standards for students who are not following the content year by year.

## 6. Relationship between content descriptions, dimensions and general capabilities

- Inclusion of Aboriginal and Torres Strait Islander perspectives, knowledge, skills and understandings in content descriptions in all learning areas and avoiding positioning in elaborations only.
- Improve the sequencing and broaden the content in the (K)P–2 curriculum to acknowledge more directly the diverse range of cultural, environmental and linguistic backgrounds and prior skills and knowledge of children in the Kindergarten classroom.

## 4. Other considerations

Other key issues raised by the schooling sectors are included below:

- Managing the curriculum in small schools and/or multi-age contexts. To support multi-age teaching, particularly in small schools, the curriculum needs to have clear conceptual statements that underpin the curriculum to make the progressive development of concepts across year levels explicit.
- Catering for the diverse range of learners, including English as a Second Language (ESL) students, students with learning difficulties and special needs:
  - More detail and clearer messages are required from ACARA regarding the approaches to the curriculum that will support students experiencing learning difficulties, especially how the achievement standards are used for these students.
  - Greater clarity is required about the application of Standard Australian English. The draft English curriculum identifies Standard Australian English (SAE) as the language of instruction. The curriculum needs to make explicit how ESL learners are catered for in all learning areas.
  - Greater definition and consistent application of the general capability: inter-cultural understanding and the cross-curricular dimension of Asia and Australia's engagement with Asia is also required to develop intercultural understanding in English and history in:
    - K(P)–2 through a focus on the student's own culture and cultural background
    - Years 3–6 by exploring other cultures and interaction with cultures
    - Years 7–10 by analysing the impact of contact on cultures and applying cultural understanding and empathy.
  - Clear definition of the cross-curriculum dimension: Asia and Australia's engagement with Asia by including explicit direction in content descriptions in each of K(P)–2; Years 3–6 and Years 7–10 that build student capacity to develop informed attitudes and values about contemporary and traditional Asia and to connect Australia and Asia
- The crowding of the curriculum and reduction of flexibility through unrealistic content expectations across the first four learning areas.

- The current breadth of the Australian Curriculum will impact on schools' ability to maintain the diversity of approaches to curriculum especially in independent schools. The amount of time Phase 1 learning areas will take in the formal curriculum will impact on the selection of curriculum options in the discretionary school time/space left available.
- The impact on the existing flexibility, particularly in Year 10 which is often when increased flexible options rather than mandated courses of study are offered to support increased student engagement.
- Using the 'C' standard to report in the early years. Some advice about applying the standard in the early years is required.

## 5. English

The development of an Australian Curriculum for English is regarded as a positive change and Queensland acknowledges that many of the content descriptors are aligned with the current Queensland curriculum. The rationale, aims, the foregrounding of Literature, an attempt to include visual literacy and highlight creativity throughout the document has been favourably received.

However the description of the scope of the learning area in terms of the *Language*, *Literature* and *Literacy* strands appears to be considerably less descriptive than in the Shape of the Australian Curriculum: English.

The absence of a clear overall conceptual framework which makes the interrelationship between strands apparent and connects subsets within each strand has been identified as the most problematic aspect of the Australian Curriculum for English.

### 5.1 Strengths

- The inclusion of Literature as a strand - in particular the emphasis on the 'aesthetic' qualities and 'informed appreciation' of texts selected because they are aesthetically and intellectually interesting, age and gender appropriate and represent a coverage over time and place.
- The aims of the curriculum to:
  - instil in students a love of imaginative literature and good writing generally
  - produce a generation of passionate readers
  - produce people who will read for pleasure and instruction outside of school.
- An attempt to include visual literacy.
- An attempt to find a balance between critical theory, functional grammar and creativity.
- A user-friendly glossary which is an excellent means of developing teachers' shared understanding of learning area terms.
- Year 10 descriptions provide a good foundation for senior English.



## 5.2 Content descriptions

The following issues relate to the content descriptions:

- The developmental sequence of key concepts should be more explicit and clearer particularly punctuation, spelling and reading K–5 and oracy K–10.
- The oral language aspect of the curriculum needs reviewing so that it is adequate for the needs of all students. Expressive language and receptive language should be included in the content descriptions for the early years.
- Use a clearer sequence as a means to foreground non-literary texts throughout the curriculum. Clearer expectations for the introduction of particular text types, similar to the details provided in mathematics for the implementation of four-digit numbers etc., would ensure NAPLAN genres are more aligned with a developmental and consistent national sequence.
- Reflection and the teaching of metacognition through English is not strong enough in Years K–7.
- A statement about an approach to teaching handwriting should be made.
- Selected areas seem to be prescriptive to the exclusion of others (e.g. Year 9 and 10 poetry seems to suggest that in Year 9 short poems and ballads are the only stipulated genres and in Year 10 only metonymy, oxymoron and satire are required learning). It is unclear whether, when choices are listed, these are the only ones or whether they are suggestions. Greater consistency and specificity is needed.
- The focus of the early years the focus should be on understanding and meaning in texts rather than on formal analysis of texts.
- Definition of text could also include advice about selection that includes engagement with written literature and other good examples of writing.

## 5.3 Content elaborations

The following issues relate to the content elaborations:

- The extent of elaboration is inconsistently applied between strands.
- Some elaborations are much longer than the content description which indicates the description itself may lack clarity.
- A wider range of cultural perspectives in relation to texts, needs to be included.

## 5.4 Achievement standards

The following issues relate to the achievement standards:

- The standard is a content standard and not an achievement standard.
- The lack of internal consistency from year to year means the achievement standards do not provide clarity for teachers attempting to align the curriculum with assessment.
- Consider revising the achievement standards to:
  - include the demands of all strands

- strengthen the relationship between the strands, the modes and the increasing complexity of language and texts.
- The range of context in the Year 7 achievement standards is too wide, which may limit depth of analysis and impact on the expected writing skills.
- Organising the achievement standards around the modes of Listening and Speaking, and Reading and Writing could limit them to the demands of Literacy.
- The 'C' achievement standard invites teachers to regard this as the maximum standard, thus diminishing the level of curriculum delivery. Scope for brighter or gifted students needs to be included.
- A range of standards across A to E needs to be provided to ensure consistency.
- More emphasis on speaking and writing is needed in the early years. However, A to E allocation of grades in the early years is not helpful because of the varied developmental rate of students.

## 5.5 Structure of the Curriculum

The following issues relate to the structure of the curriculum:

- A more defined conceptual framework is required that underpins the curriculum and makes all the elements — strands, content descriptions and achievement standards — clearly evident.
- Link the rationale and aims more clearly within content descriptions.
- The internal structure of the English curriculum needs to be more cohesive. Suggest the following refinements:
  - Cluster concepts to enhance continuity, consistency and coherence across the strands and remove repetition, particularly in the Language and Literacy strands.
  - Use headings to enable more cohesive clustering of content and to make developmental sequences clearer between strands and between year levels.
  - List content descriptions under consistent headings across year levels. In the Literature strand the content could be listed under general headings such as: Engaging with texts, Purposes of texts, Features of texts, Meaning of texts, Responding to texts, and Creating texts.
  - Use consistent terminology throughout the document (e.g. visual grammar).
  - Link content descriptions to continua to indicate the developmental nature of skills like comprehension.
- Organise content descriptions so it is clear how students learn that a writer's choice of particular language features contributes towards achieving the purpose of the text type.
- Make the distinction between Literacy as a strand in English and as a general capability clearer. The Literacy strand in English should identify and explain the literacy demands specific to the English learning area.

## 5.6 General capabilities

The following issues relate to the general capabilities:

- The format of the three columns for language, literature and literacy is not user friendly, as the scope and sequence is not easily apparent. Perhaps three year levels could be placed side by side on a page for easy comparison, with the three components following underneath each other.
- Thinking skills and creativity could be more consistently applied to the content descriptions in English.
- Ensure consistency in the use of the term 'creativity'. This will keep the focus on the role of the capability, both in the development of the aesthetic appreciation of language in literature and the generation and transformation of texts across modes and mediums.
- Intercultural understanding could be more explicitly included.
- Revise the Information and Communication Technologies (ICT) capabilities (and other references to new media) to ensure they are age appropriate, sufficiently developed and reflect 21st century living and learning.
- Clarify the access for ESL, LBOTE and students with special needs in the English curriculum.

## 5.7 Cross-curriculum dimensions

The following issues relate to the cross-curriculum dimensions:

- A stronger developmental sequencing of Aboriginal and Torres Strait Islander knowledge across all three strands would improve on the valuable inclusions that are predominately in the Literacy strand.
- Acknowledge in the English curriculum that Australian Aboriginal English is now the primary language of internal and wider communication for the majority of Australian Aboriginal people.

## 5.8 Digital layout

The following issues relate to the digital layout:

- The use of the same numeral for unrelated content headings across the strands is problematic, e.g. in Year 1, the No. 3 represents the elements of *Attitudinal vocabulary* (Language); *Features of texts* (Literature); and *Comprehension strategies* (Literacy).
- Use consistent headings across all year levels. This would:
  - improve the readability of the curriculum
  - make clear the development of content descriptions across year levels.
- Consistent headings would provide a more useful filter, especially if they could be linked more explicitly to related content descriptions and the modes.
- Ensure the glossary is prominently positioned so that teachers can easily locate it.
- Ensure that the display of text types is consistent — list literary and non-literary texts separately.

- Regarding the graphic:
  - Adjust the organisation of the graphic to represent the multidimensional nature of the learning area
  - Make the importance of Making Meaning more explicit: as a core element it needs text to support its central position in the graphic.
  - Include the modes of Viewing and Creating. These are needed in a 21st century curriculum.

## 6. History

The idea of an Australian Curriculum in history has been generally well received and the rationale and aims have been viewed favourably.

However the feasibility of the history curriculum depends on the time allocated for it. In its present form, the course may be seen as a long list of content areas (especially in Years 7–10) which are taught chronologically with an emphasis on details, rather than genuine historical inquiry. For similar reasons, a teacher coming new to the history learning area may need significant guidance to promote an historical inquiry approach.

The intention to shape the curriculum using identified 'big ideas' of history and to use inquiry in the teaching of history is supported. However these 'big ideas' need to be given more clarity and emphasis.

The rationale should include a statement about the relationship of history to Humanities and the Social Sciences particularly the synergies in conceptual and skill development. This is particularly important for implementation in primary schools.

### 6.1 Strengths

- The draft curriculum recognises the importance of history education for all Australian students K(P)–10.
- The sequence of topics from local and community to national and then world history is generally effective and avoids repetition.
- The document provides a clear outline of the development of historical knowledge and skills from K(P)–10.
- The overview statements are helpful to indicate historical periods in an interesting way.
- The organisational tools of overviews and depth studies help teachers to 'tell' the narratives as well as incorporate perspectives (Aboriginal and Torres Strait Islander, Asia and sustainability) in a historical context.
- History has incorporated Aboriginal and Torres Strait Islander knowledges, skills and perspectives although further advice is offered in relation to the positioning of Aboriginal and Torres Strait Islander people in the draft.

## 6.2 Content descriptions

The following issues relate to the content descriptions:

- In Year K, the literacy expectations seem unrealistic.
- The final topic in Year 5 may be better positioned in Year 6. There is too much content at the end of Year 5 and material at the start of Year 6 seems less challenging.
- In Years 7–10:
  - generally too content heavy. To manage the content in the allocated time would require a ‘content coverage’ approach, even though the curriculum recommends involvement with sources and various inquiry approaches
  - high levels of knowledge prescription. This may require significant professional development and resources to ensure teachers’ capacity to deliver the curriculum.
- Under the Historical Skills there is no evidence of an evaluative or reflective phase. Higher-order thinking skills are not adequately articulated. Evaluation and reflection should be articulated in the Historical Skills content strand, as in science (e.g. incorporate evaluation of evidence and reflection on Historical Inquiry and Perspectives in Years 9–10).
- Not a significant enough emphasis on the development of conceptual understanding across the K–10 continuum. Concepts are articulated in strand descriptions (i.e. evidence, continuity and change, cause and effect, significance, empathy, perspectives and contestability), however, a clear developmental sequence is not evident.
- School-developed studies need to be removed — these are outside the design of the Australian Curriculum.
- The conceptual grouping of content should enable students to survey across ancient and modern settings (e.g. to understand civics and citizenship).
- In Year 10, the Overview approximates a quarter of the course, which seems excessive. There is an overemphasis on the Great War.
- Links to contemporary history are not clear enough in some topics.
- Defining historical periods (dates and places) and providing a glossary of terms (or defining them when they are first used) would improve the clarity and feasibility of the document.
- The Aboriginal and Torres Strait Islander content generally suggests learning that could deepen knowledge about Aboriginal and Torres Strait Islander history and some elements of culture. The sequencing of content, however, could be reorganised to encourage consistent learning that builds on previous learnings.
- A consistent use of terminology should be applied. The following examples highlight inconsistencies:
  - Near East (elaboration, p22) and Middle East (overview statement, p 39). These should be either qualified for their historical context or replaced with a current geographic description.
  - Oriental culture (elaboration p37) should be qualified

- Asia-Pacific region or Asia and Pacific Worlds or Asian and Pacific countries or Asian and Pacific societies or part of the Asia-Pacific region (content descriptions p34, p35, p36) should be Asian region and Pacific region as they each have distinctive characteristics.
- New Australians (p16) should be qualified.

## 6.3 Content elaborations

The following issues relate to content elaborations:

- The elaborations are generally helpful and could assist teachers to refine the scope of depth studies. The elaborations are where the cross curricular dimensions are most apparent. Their optional status minimises direct engagement with all three dimensions, particularly Asia and sustainability.

## 6.4 Achievement standards

The following issues relate to the achievement standards:

- The standard is a content standard and not an achievement standard.
- The achievement standards are too general and do not clearly identify the required evidence of student learning.
- The standards pick up some knowledge and understanding but not all, and skills are inconsistently reflected in the standards (e.g. historical questioning).
- Much greater clarity about the relationship between the content descriptions and the achievement standards is required.
- The standards need to show a consistent progression from one year level to the next. Without a degree of specificity, comparability of achievement is compromised.
- Inadequate descriptors of quality to indicate depth and sophistication.

## 6.5 Structure of the Curriculum

The following issues relate to the structure of the curriculum:

- It is difficult to assess the feasibility of this curriculum without the clarification of:
  - time expectations
  - and a definition and explanation of depth studies and overview. A depth study must be a focused investigation, not a list of every possible topic associated with the study. Schools should be able to determine the focus of the depth studies given local issues and their own history and geography. Reducing the number of depth studies to be covered each year from four to three may allow for more depth.
- The use of chronology as an organisational framework has organisational disadvantages and is confusing when *What is History?* is in Year 7. This could be a framing question for the development of historical skills and embedded in each depth study to connect the methodology used to investigate each depth study topic.

- Reconsider placement of a thematic approach in Years 9–10 to encompass events and their legacy in both ancient and modern times. This will inform students' capacity to make subject selection decisions, as the draft curriculum does not provide them with an opportunity to revisit ancient history after Year 7.
- Teachers of multiage or composite classes may appreciate the flexibility in content descriptions over a two-year period to overcome the complexities of delivering different content between year levels.
- In Year 10, the Great War and its aftermath (which may benefit from being framed as an inquiry question) could be reduced, allowing time for developing skills such as perspectives and interpretations.
- There appears to be a double up between content in Year 10 and Year 11.

## 6.6 General capabilities

The following issues relate to general capabilities:

- Collaborative strategies applied in historical research and inquiry are not evident in the content description, therefore the development of teamwork in history is not evident.
- Make more explicit the relationship between ethical behaviour and intercultural understanding in content descriptions, particularly in Years 7 to 10.

## 6.7 Cross-curriculum dimensions

The following issues relate to cross-curriculum dimensions:

- A Eurocentric view is privileged as studies of Asia and Aboriginal and Torres Strait Islander histories are studied from the point of view of contact with European nations and people rather than as a study of the richness and diversity of these cultures and their national histories.
- At present, the word 'Indigenous' appears frequently but suggests a token approach to Aboriginal and Torres Strait Islander knowledge, skills and understandings.
- Include a range of traditional, 20th century and empowered representations of Aboriginal and Torres Strait Islander perspectives in topics. Currently, examples position Indigenous Australians in relation to British colonialism and settlement.
- Deepen student understanding of the historical significance of sustainability issues by exploring the:
  - impact of European land use strategies on the Australian environment (Years 5/6)
  - development of the Landcare movement (Depth study 2, Year 9)
  - impact of environmental movements in the 20th century (Depth study 3, Year 10).

- The cross-curricular dimension of Asia and Australia's engagement with Asia is not as strong in Years 4–6 and could be strengthened in the content descriptions by including, for example:
  - cultural diversity in Australia — Asia within Australia (P–2)
  - the cultural diversity of Asia and the impact of contact with cultures (Year 6)
  - cultural perspectives in evidence
  - China, Japan and India and their impact on the modern world (Years 7–10).
- A global perspective will only be achieved if there is attention on the methodology of interpreting sources used as part of the historical skills process.

## 6.8 Digital layout

The following issues relate to the digital layout:

- Change the depth studies presentation to avoid the separate numbers (e.g. Year 7 Depth Study 1. *What is History?* has six sub-points). Clarify the relationship between these points and the level of detail expected.
- In some cases there is 'over' numbering, for example; Year 10 points 1 to 5 should be a single point 'Overview of Australia in the Modern World'.
- Improve the online filter to help teachers recognise the potential for history to deliver the range of general capabilities.
- Improve the current presentation of overview and depth studies to minimise the chances an overview is taught at the beginning of each year and not returned to throughout the year.
- Hyperlink text (e.g. historical pedagogical skills identified in the Shaping Paper should be linked to relevant curriculum descriptions).

## 7. Science

The draft K(P)–10 Australian Curriculum in science is reasonably aligned to the current science curriculum in Queensland. Scientific inquiry as the underlying approach to informing the pedagogy is viewed as a strength of the proposed curriculum.

The rationale clearly articulates the importance of science and the need to develop a scientifically literate community.

There are concerns that the increase in more specific scientific knowledge (topics and general content) may prove overwhelming for teachers in Years 7 and 8 and limit opportunities for deep and sequential development of the 'big ideas' in relevant contexts.

### 7.1 Strengths

- Science is clear, structured and succinct.
- The inclusion of the Science as a Human Endeavour strand (SHE) and Science Inquiry Skills (SIS) is strongly supported. SHE aligns with the content descriptions in Science Understanding (SU) at each year level.



- Sustainability is explicitly addressed and well represented across each of the three strands; (e.g sustainability is one of the unifying ideas for Years 7–10).
- Content relating to Aboriginal and Torres Strait Islander people is explicit in the elaborations of SHE and worthwhile examples are provided in the Science and Culture descriptions at every year level.
- This document addresses the general capabilities in science smoothly across the year levels (e.g opportunities to develop literacy and numeracy are clear and appropriate).
- The use of ICTs is clearly emphasised in SIS across every year level.

## 7.2 Content descriptions

The following issues relate to content descriptions:

- Reduce the SU content descriptions in every level to allow for a greater emphasis on inquiry and leave more time for depth of study, especially in upper primary.
- While the sequence of content descriptions has the potential to build skills and knowledge progressively, SU is too content specific, which limits the contextualising of concepts like forms of energy according to resources and cohort interest (e.g. pushes and pulls only in Year 2 but not in Year 3).
- Content descriptions for Years 7 and 8 need to accommodate more explicitly primary and secondary settings and delivery by general or specialist teachers.
- Reduce the Science for Understanding statements for Year 8 (there are currently 11, almost three per school term). There will be insufficient time to develop deep understandings and the other imperatives including cross-curricular dimensions and general capabilities.
- Provide more detail in the content descriptions so the Elaborations are not required to provide all the necessary details.
- Review content descriptions for Year 9 to achieve a better balance between geological and environmental science, chemistry, physics and marine studies (e.g. some of the geology topics are repetitive).
- Some of the geology/Earth science content descriptions may be more appropriate in geography.
- Reflection in the Australian Curriculum should focus more on metacognition or the consideration of contestable theories particularly in 7–10.
- Although in Year 8 Science as a Human Endeavour, content description No. 5, Science and culture: 'Different cultural groups have different perspectives on science, is noted, this aspect of critical thinking and ethical behaviour in science could be further emphasised
- Focus more on the 'big ideas' of science and delete those SU topics that do not expand these 'big ideas'. Examples would include:
  - 'Geology of ecosystems' (Year 8)
  - 'Sound and light' (Year 9 — why these two forms of energy only?).
- Some minor sequencing issues such as:
  - Year 8 includes 'Types of substances' before learning about atoms. It would be more logical to learn about these together

- Chemical changes in Year 9 mentions photosynthesis, apparently without 'plants' in Year 9
- Mechanical Systems is beyond expectations for Year 8 students
- The chemistry units in Year 8 do not include atoms. Particle theory leads into study of atomic structure. Therefore, to leave this to Year 9 is too late
- Transfer the 'Chemical change' content specified for Year 10 to Year 9 as these offer rich opportunities for inquiry-based learning
- The 'Chemical properties' content from Year 9 should be transferred to Year 10 instead, as this content dovetails well with a study of the Periodic Table (grouping of substances based on their properties)
- Replace the geological topics with Space science in Years 8. The study of the solar system at Year 8 would link with the much bigger ideas of galactic and stellar evolution specified for Year 10.
- The lack of emphasis on the enabling sciences of physics and chemistry in Year 10 is a concern. Students preparing for senior sciences need to have the depth of quantitative work required as a basis for further study.

### 7.3 Content elaborations

The following issues relate to content elaborations:

- Further consistency is needed in content descriptions between elaborations with regards to thinking skills (e.g. requirement to pose own questions or respond to teacher posed questions).
- Reduce the number of, or simplify, lengthy content elaborations. Lengthy elaborations make some content descriptions appear more difficult or important than others.

### 7.4 Achievement standards

The following issues relate to the achievement standards:

- The achievement standards are essentially a restatement of the content.
- Currently there is limited mention of the quality of student work required.
- There is a lack of internal consistency between year levels that would be improved if there was clear conceptual development of the unifying ideas through the content descriptions.
- Science as a Human Endeavour should be more clearly present in the achievement standards.
- Ensure content descriptions consistently align with the achievement standards (e.g Year 8, SU, Content description 1: Cells, refers to structure and diversity of cells. The achievement standard (sentence 5) refers to the function of cells as well as structure and diversity).

## 7.5 Structure of the Curriculum

The following issues relate to the structure of the curriculum:

- The unifying ideas should be used to make the relationship between the rationale, the intent of the strands and the standards more apparent.
- Balance in the distribution and sequencing of topics across year levels needs further refinement.
- Expectations between mathematics and science need to be addressed so that there is consistency between year levels.

## 7.6 General capabilities

The following issues relate to the general capabilities (GC):

- Ethical behaviour is explicitly evident in Years 9 and 10. It would be worthwhile for this GC to be described in all year levels and across all strands.
- The extent of the creativity GC is limited by lower level demand regarding questioning in SIS. In Queensland at Year 3 students are expected to pose questions, make predictions, plan activities and simple investigations.

## 7.7 Cross-curriculum dimensions

The following issues relate to the cross-curriculum dimensions:

- The cross-curricular dimensions are clear in the rationale and aims. Intent is clear in the content descriptors but would benefit from clearer developmental sequencing of Aboriginal and Torres Strait Islander knowledge.
- The approach taken in regard to Aboriginal and Torres Strait Islander perspectives in science is a strength of the document overall. However, a concern is that the positioning of Aboriginal and Torres Strait Islander knowledge skills and understandings only within Science as a Human Endeavour reinforces a split of the Aboriginal and Torres Strait Islander holistic paradigm. This positioning reinforces a limited view that the only learning from the paradigm of value is about humans using, manipulating, exploiting parts of the natural environment. It would be improved further if there was a greater focus on achieving a better balance of the roles and responsibilities of human endeavour within a complex natural environment in which its parts are related to one another.

## 7.8 Digital layout

The following issues relate to the digital layout:

- Allow for a 'side by side' print out — the facility to compare year level content descriptions is convenient in its 'side by side' format. This enables educators to clearly view the content in previous and subsequent year levels. These on-screen views can be printed (three levels at a time) by printing the web pages; however, when the 'Print' button is used, the information is no longer 'side by side'. The facility to print the 'side by side' format to a PDF would be an advantage.

- Include the 'unifying ideas' and 'curriculum focus' information in the view of the content descriptors.

## 8. Mathematics

The development of an Australian Curriculum in mathematics is a positive step towards improving the teaching and learning of mathematics in Australian schools. The rationale, aims and organisation are expressed logically. A more explicit relationship between the 'big ideas' of mathematics and the content descriptions is sought.

However, more significantly, the opportunity to extend and challenge every young Australian through the Australian Curriculum has not been taken up regarding Aboriginal and Torres Strait Islander content or processes in mathematics. There are no content descriptions or elaborations identified by ACARA pertaining to Aboriginal and Torres Strait Islander perspectives in mathematics.

The only clear description of an Aboriginal and Torres Strait Islander perspective is associated with 'Intercultural Understanding' under Measurement and Geometry in Year 2. It is a content elaboration in the optional component of the curriculum.

ACARA is required through its own remit to take more direct action to acknowledge and include Aboriginal and Torres Strait Islander paradigms, knowledge and skills in the teaching of mathematics as part of the required curriculum for all young Australians.

### 8.1 Strengths

- The rationale, aims and objectives convey what is highly valued and desirable in mathematics education.
- The proficiency strands (Understanding, Fluency, Problem Solving and Reasoning) are appropriate for the study of mathematics. It is positive to see fluency as a proficiency strand in mathematics; this should lead to greater mental preparation and recall.
- Grouping the content strands in the rationale makes clear the linking between Number and Algebra, Statistics and Probability, and between Measurement and Geometry.

### 8.2 Content descriptions

The following issues relate to the content descriptions:

- Greater focus on learning processes in the early years would improve the alignment with the Early Years Learning Framework.
- Inconsistencies in geometry and algebra content — geometry in early years is lacking; in later years it is not consistent.
- There could be more emphasis on teaching problem posing and solving in the early years, particularly Years 1–3.
- Sharing with remainders is included in Kindergarten but not mentioned again until Year 4. It is inappropriate to formalise sharing activities in Kindergarten, but it is relevant in Year 4.

- Make references to mental strategies consistent (e.g. there is no mention of mental strategies for addition and subtraction until Year 4; reference to efficient mental strategies for multiplication and division is made in Year 2 but the relevant number facts are not referred to until Years 3 and 4).
- Statistics and probability could make up one third of the Australian Curriculum. There is an overemphasis on statistics — particularly in the early years where the focus should be on number.
- The expectations in content at various year levels may be a challenge for some schools. For example:
  - fluent use and understanding of index laws in Year 7
  - creation of linear models in Year 7
  - binomial factorisation in Year 9
  - solving linear inequalities in Year 9
  - solving systems of simultaneous equations in Year 9.
- Content is too broad in Years 6– 8 and does not allow for the study of any topics in depth (e.g. latitude and longitude could be covered in geography).
- The development of the content does not encourage teachers to relate the concepts from different strands. For example, in Year 8, it makes sense to introduce quadratic functions so that the students can link the algebraic understandings to the Measurement and Geometry Strand when they are working with perimeters and areas of plane shapes and Pythagoras Theorem. The concept of Functions is not introduced until Year 10 but there is scope for including functions when dealing with linear equations.
- Identifying and describing algebraic and graphical representations of parabolas, hyperbolas and exponential functions in Year 10.
- Year 10:
  - content expectations for Year 10 and 10 A presume too much prior knowledge and are not courses for engaging all young Australians in mathematics to the end of Year 10
  - 10 A is very content heavy and sets the expectation of content coverage potentially at the expense of extended, deep or contextualised learning and is too high for most learners.
- There appears to be a limited expectation of students to engage in future orientated learning opportunities (e.g. mathematical modelling).
- A more direct relationship with problem-solving in everyday contexts is needed, particularly at Years 7–10.
- Content specificity will produce challenges for teachers in multi-age settings.
- Financial literacy could be described more specifically and developmentally across the curriculum.
- The emphasis on content means there is not enough emphasis on:
  - Higher-order mathematical thinking (e.g. Reasoning, problem solving and creativity, application of continuous key mathematical concepts in multiple and differentiated contexts)

- Critical thinking: developmental problem solving and arming students with a set of problem solving strategies essential in a futures-oriented mathematics program.
- Change the emphasis in the Fractions topic from common fractions to decimal fractions to place greater emphasis on the decimal and metric system (future oriented) rather than the imperial system (a more common fractional-based system). In the topic of Fractions in Years 2–6, reference is made only to common fractions.

### 8.3 Content elaborations

The following issues relate to the content elaborations:

- The elaborations are generally useful, however, for inexperienced teachers, in the face of increased technical language and content, the elaborations may become a default curriculum.
- Review the content elaborations so they adequately represent the proficiency strands.
- Ensure all content elaborations are aligned with the content descriptions. For example, in Year 9 Algebra the content description is about linear equations, yet the elaborations refer to substitution into non-linear expressions.

### 8.4 Achievement standards

The following issues relate to the achievement standards:

- The standard is a content standard and not an achievement standard.
- There is inadequate guidance to determine ‘depth of knowledge or sophistication of skills’.
- The standards could be read as a competency check list and provide limited support to teachers developing assessment strategies and reports on assessment judgments about students.
- The content included in the standard may be used by teachers to backward map and therefore runs the risk of limiting the scope of curriculum programs. The Year 2 achievement standard of understanding numbers to 130 should be extended to 200 to ensure better developed counting skills at important transition points i.e. 109–110 and 199–200.
- Statements in the standards need to be more explicit (e.g Year 7 - students work fluently with index notation). The standard needs to describe what fluency looks like in Year 3 or 7 or 10 in a particular strand.

### 8.5 Structure of the Curriculum

The following issues relate to the structure of the curriculum:

- Make the relationship between the proficiencies and the stands clearer by developing the continua of key concepts around the weft and weave construction indicated by the rationale.

- The listing and numbering could be interpreted as the order in which content at any one year level should be taught (particularly when read in a printed form) this highlights gaps in sequence and may impact on effective continuity in teaching (e.g. pie graphs and angles).
- Concerns about inconsistent mathematical and numeracy expectations between science, geography and mathematics needs to be addressed.
- There is a lot of overlap between the beginning of the senior courses and the Year 10 courses. However there is no continuity between the sequence and scope of learning into senior years.
- The decision that all students do a mathematics to Year 10 has resulted in a Year 10 general course that caters more to students who are preparing for specialist mathematical courses in senior not a lifetime of mathematical proficiency.

## 8.6 General capabilities

The following issues relate to the general capabilities:

- The purpose of using ICTs is not always clear, e.g. the purpose of algebra spreadsheets is to see patterns and make judgments. Currently these examples read like it is the spreadsheets that is the key activity not the analysis of data through the tool.

## 8.7 Cross-curriculum dimensions

The following issues relate to the cross-curricular dimensions:

- The linking of real life contexts and the cross curricular dimension may alleviate existing gaps particularly in Aboriginal and Torres Strait Islander knowledge. Storytelling in Aboriginal and Torres Strait Islander mathematics is often a more holistic way of communicating interrelated and interconnected understandings. Mathematics through story telling is an important feature that Aboriginal and Torres Strait Islander paradigms can contribute to a national curriculum because through it all learners can use a similar process to connect with their own world and stories to unpack mathematics.

## 8.8 Digital layout

The following issues relate to the digital layout:

- Inconsistencies in topic headings make sequencing content using the filters less obvious. Greater heading consistencies would show the relationship between proficiencies and developmental content.
- The numbering of the content descriptors appear to become a teaching sequence when read down the page on screen or in print. The numbers should be hidden or the sequence should be more explicit to reinforce the order that concepts should be taught for an inexperienced teacher.
- The digital presentation hides the gaps in sequences and the overall scope of key concepts.
- There should be the functionality to print out years of learning in filtered formats.

- With reference to the graphic:
  - enhance the configuration to give a stronger message about the importance of the proficiency strands
  - Include either 'Mathematical Inquiry' or 'Mathematics Inquiry' for consistency when naming inquiry. The centre of the image notes 'inquiry and active participation'. While this is an essential key message, the image in history refers to 'Historical Inquiry', and in science, 'Science Inquiry'. There is inconsistency in the naming of inquiry across the learning areas.